Social, Environmental and Climate Assessment Procedures

Managing risks to create opportunities

2017 EDITION

IFAD

Investing in rural people

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GUIDANCE STATEMENTS

ABBREVIATIONS AND ACRONYMS

COSOP	country strategic opportunities programme
CPM	country programme manager
CPMT	Country Programme Management Team
CSN	country strategy note
DRM	disaster risk management
ECD	Environment and Climate Division
ENRM	environment and natural resource management
ESA	environmental and social assessment
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FAO	Food and Agriculture Organization of the United Nations
FPIC	free, prior and informed consent
FSP	financial service provider
GHG	greenhouse gas
GIS	geographic information system
GMO	genetically modified organism
GS	guidance statement
HIA	Health Impact Assessment
HIV	human immunodeficiency virus
IFAD	International Fund for Agricultural Development
ILO	World Labour Organization
IMT	intermediate means of transport
IPCC	Intergovernmental Panel on Climate Change
IPM	integrated pest management
IPP	Indigenous Peoples Plan
MSE	microenterprise and small enterprise
NCD	non-communicable disease
NGO	non-governmental organization
PCR	physical cultural resources
PPE	personal protective equipment
RAF	Resettlement Action Framework
RAP	Resettlement Action Plan
RB-COSOP	results-based country strategic opportunities programme
RMF	Road Maintenance Framework
SDG	Sustainable Development Goal
SECAP	Social, Environmental and Climate Assessment Procedures
SFM	sustainable forest management
STI	sexually transmitted infection
TB	tuberculosis
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change

UNICEF	United Nations Children's Fund
WHO	World Health Organization

Executive summary

International Fund for Agricultural Development (IFAD) commitment to advancing sustainable development

1. IFAD remains committed to mainstreaming social, environmental and climate change solutions. IFAD's first Social, Environmental and Climate Assessment Procedures (SECAP) were reviewed by the Executive Board in December 2014 and became effective on 1 January 2015.[1] These procedures refined IFAD's guiding values and principles, and defined an improved course of action for assessing social, environmental and climate risks to enhance the sustainability of results-based country strategic opportunities programmes (RB-COSOPs), country strategy notes (CSNs), programmes and projects. This update to the SECAP (hereafter referred to as "edition"), along with the guidance statements, sets out the mandatory requirements and other elements that must be integrated throughout the project life cycle. The procedures apply to all investment projects and supersede the ones in the version.

Why has IFAD updated its social, environmental and climate procedures?

2. This edition describes how to better mainstream environmental, social and climate change considerations into the project cycle, and demonstrates IFAD's commitment to go beyond "doing no harm" to maximizing development gains. It also takes into consideration the Sustainable Development Goals (SDGs) and other international relevant agreements.[2] It seeks to ensure that IFAD's policies and strategies and its investments are designed to leave no one behind since sustainable development must be achieved for all – especially the poorest and most vulnerable to climate change.

3. This edition: (i) draws on lessons learned in SECAP's implementation from 2015 to the present (annex 2); (ii) clarifies the mandatory and non-mandatory requirements applicable to IFAD-supported investments; (iii) further aligns IFAD's environmental and social standards and practices with those of other multilateral financial institutions; (iv) reflects IFAD's complementary policies[3] and climate mainstreaming agenda;[4] (v) enables IFAD's continued access to international environment and climate financing; and (vi) better aligns IFAD's programming with the General Conditions for Agricultural Development Financing.[5] This edition focuses on identifying and managing social, environmental and climate risks while maximizing opportunities. It will support borrowers in their efforts to reduce poverty, generate sustainable environmental and social benefits, build national capacity, fulfil their

[1] https://www.ifad.org/topic/gef/secap/overview/tags/mlgef.
[2] 2030 Agenda and its 17 Sustainable Development Goals (SDGs), the Paris Climate Agreement, the Sendai Framework for Disaster Risk Reduction, and the Addis Ababa Action Agenda on financing sustainable development.
[3] Including, but not restricted to, policies on targeting (2006), gender equality and women's empowerment (2012), and indigenous peoples (2009). Available at: www.ifad.org/operations/policy/policydocs.htm.
[4] See paragraph 38 of the IFAD10 programme of work: https://webapps.ifad.org/members/repl/10/2/docs/IFAD10-2-R-4.pdf.
[5] https://www.ifad.org/documents/10180/e72d1b36-58ed-4630-b683-7b22f4075e73; see section 7.01(a)(vi).

SDG commitments and advance individual countries' nationally determined contributions under the Paris Climate Agreement.

4. SECAP's primary audience is programme staff and project teams, who are responsible for developing, implementing and supervising IFAD-supported projects, followed by government entities executing IFAD's investments.

5. This edition sets out an enhanced minimum risk-assessment process that recognizes the heterogeneity of responses, given widely different country and community circumstances. Through better risk identification, the procedures aim to avoid environmental and social harm while creating space for doing good. They are not an articulation of – nor do they represent the entirety of – IFAD's ambitious social, environmental and climate mainstreaming efforts. The Fund's wider efforts on these cross-cutting themes are set out in its Strategic Framework 2016-2025[6] and other IFAD policy documents.

6. This edition is the product of a broad consultation process, which has involved IFAD staff, project staff, and selected resource persons from multilateral and bilateral development agencies.

What are the main procedural changes?

7. The key changes introduced in this edition are presented (in italics) in table 1.

Table 1. Key measures and updates in the SECAP

Key measures	Key updates in the SECAP
Enhanced systematic integration of social, environmental and climate change considerations	• Detailed and clear description of the steps and entry points in the project cycle to improve the quality and impact of IFAD-funded programmes and projects. • *Roles and responsibilities at each step of the SECAP process clarified.* • *Tools and methods to assess and document environmental, social and climate-change risks.* • Focus on adaptation/mitigation opportunities for climate-resilient investments. • *Requirements for additional financing.* • *Emphasis on social assessment, including community health, safety and labour issues.*
Re-emphasis of commitment to principles of transparency and accountability, and support for resolution of complaints for alleged non-compliance with IFAD social and environmental policies and standards	• Disclosure of draft environmental and social impact assessments, draft resettlement plans, draft mitigation plans and frameworks, documentation of indigenous peoples' consultation processes and other documents at the quality assurance stage (or other key stages in project implementation).

[6] https://www.ifad.org/documents/10180/edb9b9d4-664e-42dc-a31e-db096e6a71b5.

Key measures	Key updates in the SECAP
	• IFAD complaints procedure to respond to alleged non-compliance with its social and environmental policies and mandatory aspects of SECAP. • *Emphasizes engagement with communities and stakeholders likely to be affected by IFAD-funded operations.* • *Requires borrower to provide a grievance mechanism proportioned to risks and impact.* • *Requires environmental and social audits for selected projects.*
Emphasis on precautionary approach to: resettlement, health, physical and cultural resources, chance finds, financial service providers, safety of dams and subprojects	• *Greater clarity on physical and economic resettlement and revised screening guidance.* • Screening guidance for physical and cultural resources. • *Revised guidance statements (GS) on: rangeland-based livestock production (GS 6); water (GS 7); dams and their safety (GS 8); rural roads (GS 10); value chains (GS 11); rural finance (GS 12); and physical and economic resettlement (GS 13).* • *New guidance statement 14 on community health provides specific requirements for assessing health impact and safety issues.*
Strengthening of social, environmental and climate risk classification of projects, and the steps needed	• *Indicative list under each category revised.* • A climate risk classification of "high", "moderate" or "low" in projects. Greater clarity on determining risks. • Basic climate risk analysis mandatory for all projects with "moderate" classification. • *Environmental and social management frameworks developed for specific projects where information on location and impacts is insufficient.* • *The SECAP review notes for category B projects must include a matrix on the environmental and social management plan.*
Strengthening of social, environmental and climate issues in RB-COSOPs/CSNs and projects	• *Abridged SECAP preparatory study for CSN.* • *New SECAP tracker as repository for key information and monitoring. Grants and Investment Projects System (GRIPS) and Operational Results Management System (ORMS) revised to reflect project cycle entry points and compliance monitoring and reporting, respectively.*

Mandatory elements of SECAP

8. All projects entering the pipeline are subject to an environmental, social and climate risk screening, and are assigned a risk category for environment and social standards (A, B, C) and for climate vulnerability (high, moderate, low).[7] These findings, along with subsequent analysis and assessments, must be reflected in the project's SECAP review note. Projects with environment and social category "C" and climate risk "low" do not require any further analysis.

9. Mandatory elements of SECAP are elaborated as follows:

   - **All category B projects** must have a SECAP review note, including a matrix of the Environmental and Social Management Plan (ESMP) at the design stage. The identified social and environmental risks and opportunities management measures must be reflected in the project design and the project design report. The ESMP matrix must be integrated into the project's implementation manual or developed as a stand-alone guidance document for the project management unit late in the design stage or early in implementation.

   - **All category A projects** must have an Environmental and Social Impact Assessment (ESIA) at the design stage (or relevant stage of implementation). The draft and final ESIA reports and other relevant documents[8] must be disclosed in a timely and accessible manner at the quality assurance stage (or other stages during project implementation).[9]

   - **For all projects with a "moderate" climate risk classification**, a basic climate risk analysis must be conducted during the project design stage and included in the SECAP review note. Adaptation and mitigation measures must be mainstreamed into the project design and project design report.

   - **For all projects with "high" climate risk classification**, an in-depth climate risk analysis must be conducted during project design and adaptation, and risk-mitigation measures must be mainstreamed into the project design and project design report.

[7] Since implementation of SECAP began in 2015, 95 per cent and 89 per cent, respectively, of IFAD's projects have been classified as environment and social category B, and climate risk classification "moderate".
[8] Including the Environmental and Social Management Framework, draft Resettlement Action Plan and Resettlement Action Framework, draft mitigation plans and documentation of free, prior and informed consent, and Indigenous Peoples Plan consultation processes.
[9] When frameworks (such as the Environmental and Social Management Framework and the Resettlement Action Framework) and free, prior and informed consent implementation plans are disclosed at the quality assurance stage.

SECAP elements applicable depending on each specific case

10. Depending on the scale and nature of the potential risks and impacts, different assessment tools and elements will apply irrespective of the environment and social category.

- Where necessary, a SECAP preparatory study can be undertaken during the development of RB-COSOPs or CSNs.
- When projects result in physical or economic displacement (affecting access and user rights to land and other resources), the borrower or grant recipient should obtain free, prior and informed consent (FPIC) from the affected people, document the stakeholder engagement and consultation process, and prepare resettlement plans or frameworks. The documents must be disclosed in a timely and accessible manner at the quality assurance or relevant implementation stage.
- When impacting indigenous peoples, the borrower or the grant recipient must seek FPIC from the concerned communities, document the stakeholder engagement and consultation process, and prepare an Indigenous Peoples Plan.[10] Whenever FPIC is not possible during project design, the FPIC implementation plan should specify how FPIC will be sought during early implementation. The FPIC plan and related documents must be disclosed in a timely and accessible manner at the quality assurance and relevant stage during implementation.
- Consultation with communities and stakeholders must be maintained throughout the project life cycle, especially in high-risk projects.
- When community health is significantly affected, a health-impact assessment must be conducted and mitigation measures included in the project design.
- When there is a significant increase in the use of agrochemicals, a pesticide management or mitigation plan is required.
- For all category A projects and some category B projects, a project-level grievance redress mechanism must be established or existing formal and informal systems strengthened.
- Some category B activities may require specific analysis to be undertaken or an Environmental and Social Management Framework (ESMF) to be developed**.**
- Relevant environmental and social clauses or covenants must be included in the financing agreements for projects requiring ESIAs, technical studies, FPICs, ESMPs and frameworks during project implementation.
- For some category A projects, an ex post ESIA may be required at the completion stage.

[10] When an Indigenous Peoples Plan is necessary, it must include the sociocultural and land tenure assessment, the specific strategy for working with indigenous peoples, and the free, prior and informed consent agreement.

11. The integration of SECAP into IFAD's project cycle is represented schematically in figure 2.

12. The procedures comprise thirteen revised guidance statements and one new guidance statement on community health. These statements are to assist in the development of programmes and projects, and their number is limited to what is required to achieve the objectives and optimal functioning of the procedures involved.

13. The procedures are integrated into IFAD's quality enhancement and quality assurance processes and entry points. The procedures are designed to enable Country Programme Management Teams, governments, communities, producers' organizations, and development partners with which IFAD works to fulfil shared environmental, social, climate and risk management objectives.

14. The procedures and the guidance statements are "live" documents that will undergo continuous improvement[11] as knowledge and experience evolve, and as IFAD policies and priorities change.

[11] This will be carried out in close coordination with the Programme Management Department's project implementation units and development partners, including international financial institutions and client countries.

Context

IFAD tagline "Investing in rural people"

International Fund for Agricultural Development (IFAD) commitment to advancing sustainable development

1. IFAD remains committed to mainstreaming social, environmental and climate change solutions. IFAD's first Social, Environmental and Climate Assessment Procedures (SECAP) were reviewed by the Executive Board in December 2014 and became effective on 1 January 2015.[12] These procedures refined IFAD's guiding values and principles, and defined an improved course of action for assessing social, environmental and climate risks to enhance the sustainability of results-based country strategic opportunities programmes (RB-COSOPs), country strategy notes (CSNs), programmes and projects. This update to the SECAP (hereafter referred to as "edition"), along with the guidance statements, sets out the mandatory requirements and other elements that must be integrated throughout the project life cycle. The procedures apply to all investment projects and supersede the ones in the previous version.

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[14] Including, but not restricted to, policies on targeting (2006), gender equality and women's empowerment (2012), and indigenous peoples (2009). Available at: www.ifad.org/operations/policy/policydocs.htm.
[15] See paragraph 38 of the IFAD10 programme of work. webapps.ifad.org/members/repl/10/2/docs/IFAD10-2-R-4.pdf.
[16] www.ifad.org/documents/10180/e72d1b36-58ed-4630-b683-7b22f4075e73; see section 7.01(a)(vi).

sustainable environmental and social benefits, build national capacity, fulfil their SDG commitments, and advance individual countries' nationally determined contributions under the Paris Climate Agreement.

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Box 1. Guiding values and principles for SECAP

The values and principles in many of IFAD's policies, strategies and guidelines are relevant to these procedures.

For example, they:

(i) **Address the vulnerability and adaptation priorities of rural people.** Examine the cause-effect relationship between rural poverty, environmental degradation, social impacts and climate change. Ensure the efficient use of natural resources, subject to their regenerative capacity. Promote approaches to (re)build social cohesion and good governance of natural resources. Respect and make use of endogenous knowledge and gender-sensitive technologies, drawing especially on the unique knowledge of women and indigenous peoples. [ENRM Policy , Indigenous People's Policy and Climate Change Strategy]

(ii) **Promote the conservation, rehabilitation and sustainable use of natural resources and key ecosystems in an integrated manner.** Ensure that IFAD operations do not lead to natural or cultural resource degradation, including clearing of tropical forests, unsustainable use of natural resources, the threat/loss of biodiversity and ecosystem services, or threats to resources of historical, religious or cultural significance. This applies especially to agricultural intensification activities and value chain development. [ENRM Policy]

(iii) **Minimize adverse social impacts and incorporate externalities.** Avoid and mitigate any potential adverse impacts on health and safety, labour and working conditions, and well-being of workers and local communities. Avoid any potential diseconomies imposed by an IFAD-financed operation on the environment external to the project boundaries (contextual/unintended consequences). Where possible, address the affected areas through joint projects (which may constitute an entire command area or watershed) and partnerships to minimize social, economic and environmental impacts in the affected area and, where possible, to incorporate the externalities. [Targeting and ENRM Policy]

(iv) **Implement participatory approaches, with special emphasis on the participation of and benefits to women, youth and site-specific targeted groups.**[a] Strengthen local

institutions, including user groups, essential for promoting environmental sustainability and social cohesion. Promote appropriate incentive systems at all levels and maximize the opportunities for local grass-roots organizations and clients, with special emphasis on equal participation of women and youth in programme/project design and implementation, as well as in cost recovery and delivery systems. [Gender and TargetingPolicies]

(v) **Promote the development of indigenous peoples and other marginalized groups.** Enhance their livelihoods: secure ownership/access to ancestral land and territories; strengthen their institutions; promote free, prior and informed consent, and document and report outcomes of the consultations; and value indigenous knowledge systems. Apply the principles and procedures in the IFAD Engagement with Indigenous Peoples Policy. [Indigenous Peoples Policy, TargetingPolicy]

(vi) **Avoid involuntary resettlement wherever possible.** While working on "doing good", IFAD will adhere to a "do no harm" principle at all times, so as to minimize potential adverse physical and economic impacts. Explore viable alternative project designs to address risks and to restore livelihoods to improve the standards of living of affected persons. The approach and level of measures taken will be proportional to the range of IFAD's operations. [Land Policy]

(vii) **Promote sound agricultural and manufacturing processes.** These include traditional, indigenous and climate-smart technologies, integrated pest management, and use of biological control. When the use of agrochemicals is necessary, ensure (through enhanced environmental awareness, farmer training, improved field extension services, etc.) that their application, storage and disposal is in line with international standards. Requires clients to apply international standards, including safe and healthy working conditions, and have in place and maintain sound environment and social management systems. [ENRM Policy]

(viii) **Promote SECAP compliance monitoring.** Monitor the implementation of the environmental and social management plan and the effectiveness of stakeholder engagement by the borrower. Focus on projects identified as "high risk", or located in areas that are environmentally or socially sensitive, to ensure continued diligence in pursuing the project's development objectives. [ENRM Policy, Supervision and Project Completion Guidelines]

(ix) **Ensure stakeholder consultation, transparency and accountability through the life of programmes and projects.** Engage in early and continuing meaningful consultation with the full range of stakeholders in formulation, implementation and monitoring of programmes and projects. Maintain transparency and accountability by disclosing draft and final environmental and social impact assessments and other relevant documents (at the quality assurance stage or key stages during project implementation) to stakeholders and by responding to their concerns and complaints in a timely manner. [Disclosure Policy]

(x) **Support borrowers in achieving good international practices** by supporting the realization of United Nations principles expressed in the Universal Declaration of Human Rights and the toolkits for mainstreaming employment and decent work.

[a] See IFAD Targeting Policy for definitions of targeted groups.

6. This edition sets out the requirements for borrowers relating to the identification and assessment of social, environmental and climate risks associated with IFAD-supported investment projects and regional and global grants, including funding from the Global Environment Facility and the Green Climate Fund. The Fund's wider efforts on these key cross-cutting themes are set out in its Strategic Framework 2016-2025 and in the various IFAD policy documents mentioned above.

7. The procedures will: (i) help IFAD in identifying potential social, environmental and climate risks and their significance and determine the level of management required to address potential risks impacts on IFAD-supported investment projects and global and regional grant-funded programmes; (ii) support borrowers and IFAD in improving decision-making and promoting the sustainability of project outcomes through ongoing stakeholder engagement; (iii) assist borrowers in fulfilling their international and national social, environmental and climate obligations; (iv) ensure IFAD's practices are aligned with similar procedures of other multilateral financial institutions, and with its own environment and natural resource management policy and climate change strategy; and (v) enable IFAD to continue accessing environmental and climate financing, such as the Global Environment Facility and the Green Climate Fund or other similar funds.

8. The imperative to recognize and act upon the linkages between poverty, environmental, climate, nutrition and social issues in IFAD's operations is particularly strong given the generally adverse evolution of the world's ecosystems. As a specialized agency of the United Nations, IFAD actively embraces the principles of sustainable development by: (i) adopting good international practices, including on climate change; (ii) working towards greater convergence and harmonization of safeguard practices among Global Environment Facility agencies, multilateral financial institutions and other development partners; (iii) improving internal processes and capacity; and (iv) mobilizing environmental and climate finance.

9. IFAD has played a key role in dealing with threats to the global commons, such as biodiversity loss, deteriorating international waters, climate change, desertification and land degradation, which endanger the livelihoods of nearly one billion poor rural people around the globe. Climate variability and change will further increase uncertainty and exacerbate weather-related disasters, biodiversity loss, and land and water scarcity. These threats present new and urgent challenges, especially to extremely poor rural communities, many of which (about three quarters of them) are dependent on agriculture and related activities for their livelihoods. The Fund's commitment to sustainable development is also illustrated in its Strategic Framework,[17] wherein a balance of economic growth, social sustainability,[18] agricultural productivity and production, environmental protection, and sustainable natural resource management is considered fundamental to its core mandate of rural poverty reduction. Through these efforts, the Fund has built up a portfolio of investments devoted to sound management of environmental and social issues, climate resilience and rural poverty reduction, and continues to make progress in "mainstreaming" environmental, social and

[17] www.ifad.org/sf/index.htm.

[18] Social sustainability includes notions of social cohesion, inclusion, non-discrimination, equity and equality, sustainable livelihoods, good health and well-being, maintenance of social capital, positive social change and development outcomes.

climate adaptation/mitigation objectives into its operations (loans, grants and policy dialogue). IFAD will take a proactive and innovative approach to promote projects and initiatives that are specifically designed to deliver significant environmental, social and climate adaptation and mitigation benefits.

10. The procedures draw on lessons learned from the experiences of IFAD and other partners on environmental, social and climate change issues. They are informed by the Framework for Advancing Environmental and Social Sustainability in the United Nations System[19] and the World Bank's new Environmental and Social Framework,[20] and respond to a changing global context and take into account current realities that influence environmental and social sustainability, such as: (i) the links between poverty reduction, health and sustainable natural resource management; (ii) the increased role of community participation, including targeted groups and indigenous peoples, in decision-making and governance processes; (iii) significant advances in refining measures to address social impacts on the health, safety and well-being of workers and project-affected communities; (iv) the changing roles of the private and public sectors and civil society; (v) generating local and global environmental benefits and opportunities to address challenges such as climate change and desertification; (vi) country-level environmental and climate analysis to inform both country strategies and dialogue; (vii) innovative markets and mechanisms for global environmental public goods; and (viii) application of best practices and standards of the international community.

11. IFAD will monitor and evaluate the performance of its projects on a continuing basis and provide staff (IFAD, project and implementing agencies) with appropriate training on the substance of SECAP. Table 2 presents the new introductions to IFAD's approach to social, environment and climate issues (in italics).

[19] www.unemg.org/consultative-processes/environmental-and-social-sustainability.
[20] https://consultations.worldbank.org/Data/hub/files/consultation-template/review-and-update-world-bank-safeguard-policies/en/materials/the_esf_clean_final_for_public_disclosure_post_board_august_4.pdf.

Table 2. What is IFAD's enhanced approach to social, environmental and climate issues? (Updates and changes in italics)

Key elements	Actions	IFAD tools/instruments
Key lessons learned 2015-2017[a] 1. *Address strategic issues affecting agriculture and rural development.* 2. *Assess risks and opportunities at concept stage and/or at early design.* 3. *Costs and technical capacity to conduct assessments and studies.* 4. *Promote adaptive management throughout project cycle to address risks.* 5. *Attention to social dimension.* 6. Focus on community ownership. 7. *Guidance to address financial institution related risks.* 8. *Improve due diligence during project implementation.*	1. Analyse poverty – social, environment, nutrition, climate links – and incorporate in strategic documents. 2. *Conduct assessment and/or studies proportional to risks and ensure findings are addressed in the project design.* 3. *Regularly assess effectiveness of the Environmental and Social Management Plan (ESMP) and monitor the project category/classification.* 4. *Conduct specific impact assessments when necessary, as informed by the tracking systems.* 5. *Engage stakeholders throughout the project life cycle.* 6. *Conduct social assessments.* 7. Screen and categorize all subprojects, including financial institution. 8. *Continuing dialogue between IFAD and the project implementation unit.*	1. *SECAP RB-COSOP and CSN preparatory studies, country diagnostic studies, climate and environment profiles.* 2. *Screening questions, SECAP review note and how-to notes.* 3. *Country Programme Management Team (CPMT), Adaptation for Smallholder Agriculture Programme (ASAP) 2 and consultant roster.* 4. *ESMP, supervision reports, Grants and Investments Projects System (GRIPS).* 5. *Social impact assessment.* 6. *Stakeholder engagement plan.* 7. *Guidance statements on rural finance.* 8. *Startup workshop and supervision guidelines, portfolio reviews and Operational Results Management System (ORMS).*

Key elements	Actions	IFAD tools/instruments
Changing context • Globalization • Increasing role of public-private partnerships • Green growth • Stronger role of regional organizations and civil society • Increasing role of research • Improved environmental governance • Environmental and social safeguards • Enhance accountability, transparency and participation	• Manage risks associated with climate change, physical and economic resettlement, dams, *safety and health, labour and working conditions, cultural resources and subprojects* • Build on comparative advantage/strategic partnerships • Promote multiple-benefit approaches (best practices and policy dialogue) • *Promote continuous meaningful stakeholder consultation. Utilize formal and informal grievance mechanisms at the project level*	• Earth observation tools • Scaling-up approach • South-South cooperation • Compliance with relevant international codes of conduct (e.g. distribution and use of pesticides) • Stakeholder analysis • *Revised Complaints Procedure* • Disclosure policy

Key elements	Actions	IFAD tools/instruments
Changing IFAD • Ten environment and natural resource management (ENRM)[b] core principles • Eleven ENRM best practice statements • Risk management • Focus on quality at entry • Focus on women, youth and indigenous peoples • Focus on sustainable agriculture intensification • Focus on country in fragile situations • Focus on health, nutrition, safety and working conditions	• Focus on optimizing local and global environmental, social and adaptation/mitigation opportunities • Support innovative environment and carbon financing mechanisms • *Focus on supervision and implementation support* • Promote integrated social, environmental and climate screening • *Promote training of IFAD, project and implementation agencies staff* • *Track environmental/social categories and climate risk classifications* • Integration of climate issues • Emphasize sustainable natural resource management • Focus on involuntary resettlement • Focus on climate issues	• Adaptation for Smallholder Agriculture Programme (ASAP) • ENRM policy[c] and climate change strategy[d] • Results and Impact Management System (RIMS) • Impact assessments • Integrated social, environmental and climate screening • Institutional strengthening, including community-based natural resource management • *IFAD Operation Academy* • Household and gender analysis[e] • Risk/vulnerability assessments • Participatory tools • Free, prior and informed consent • *New guidance statement on health*

[a] Annex 2 provides detailed information.

[b] Environment and Natural Resources Management Policy: www.ifad.org/topic/resource/tags/climate_change/2096936.

[c] www.ifad.org/climate/policy/enrm_e.pdf.

[d] www.ifad.org/topic/tags/climate_change/2154532.

[e] See IFAD toolkit on targeting and gender in the project cycle.

12. Mandatory elements of SECAP are elaborated as follows:

- **All projects entering the pipeline** are subject to an environmental, social and climate risk screening, and are assigned a risk category for environment and social standards (A, B, C) and for climate vulnerability (high, moderate, low).[21] These findings, along with subsequent analysis and assessments, must be reflected in the project's SECAP review note. Projects with environment and social category "C" and climate risk "low" do not require any further analysis.
- **All category B projects** must have a SECAP review note, including a matrix of the Environmental and Social Management Plan (ESMP) at the design stage. The identified social and environmental risks and opportunities management measures must be reflected in the project design and the project design report. The ESMP matrix must be integrated into the project's implementation manual or developed as a stand-alone guidance document for the project management unit late in the design stage or early in implementation.
- **All category A projects** must have an Environmental and Social Impact Assessment (ESIA) at the design stage (or relevant stage of implementation). The draft and final ESIA reports and other relevant documents[22] must be disclosed in a timely and accessible manner at the quality assurance stage (or other stages during project implementation).[23]
- **For all projects with a "moderate" climate risk classification**, a basic climate risk analysis must be conducted during the project design stage and included in the SECAP review note. Adaptation and mitigation measures must be mainstreamed into the project design and project design report.
- **For all projects with "high" climate risk classification**, an in-depth climate risk analysis must be conducted during project design and adaptation, and risk-mitigation measures must be mainstreamed into the project design and project design report.

13. Depending on the scale and nature of the potential risks and impacts, different assessment tools and elements will apply irrespective of the environment and social category.

- Where necessary, a SECAP preparatory study can be undertaken during the development of RB-COSOPs or CSNs.
- When projects result in physical or economic displacement (affecting access and user rights to land and other resources), the borrower or grant recipient should obtain free, prior and informed consent (FPIC) from the affected people, document stakeholder engagement and consultation process, and prepare resettlement plans or frameworks. The documents must

[21] Since implementation of SECAP began in 2015, 95 per cent and 89 per cent, respectively, of IFAD's projects have been classified as environment and social category B and climate risk classification "moderate".
[22] Including the Environmental and Social Management Framework, draft Resettlement Action Plan and Resettlement Action Framework, draft mitigation plans and documentation of free, prior and informed consent (FPIC), and Indigenous Peoples Plan consultation processes.
[23] When frameworks (such as Environmental and Social Management Framework and draft Resettlement Action Plan) and FPIC implementation plans are disclosed at the quality assurance stage.

be disclosed in a timely and accessible manner at the quality assurance or relevant implementation stage.

- When impacting indigenous peoples, the borrower or the grant recipient must seek FPIC from the concerned communities, document the stakeholder engagement and consultation process, and prepare an Indigenous Peoples Plan.[24] Whenever FPIC is not possible during project design, the FPIC implementation plan should specify how FPIC will be sought during early implementation. The FPIC plan and related documents must be disclosed in a timely and accessible manner at the quality assurance or relevant stage during implementation.
- Consultation with communities and stakeholders must be maintained throughout the project life cycle, especially in high-risk projects.
- When community health is significantly affected, a health impact assessment must be conducted and mitigation measures included in the project design.
- When there is a significant increase in the use of agrochemicals, a pesticide management or mitigation plan is required.
- For all category A projects and some category B projects, a project-level grievance redress mechanism must be established or existing formal and informal systems strengthened.
- Some category B activities may require specific analysis to be undertaken or an Environmental and Social Management Framework (ESMF) to be developed.
- Relevant environmental and social clauses or covenants must be included in the financing agreements for projects requiring ESIAs, technical studies, FPICs, ESMPs and frameworks during project implementation.
- For some category A projects, an ex post ESIA may be required at the completion stage.

14. In line with good practice, SECAP ensures early consultation with communities and stakeholders that must be maintained throughout the life of the project, especially in high-risk projects.

15. This edition includes additional guidance material to further assist in project design and implementation. These include terms of reference and a set of guidance statements. For RB-COSOP/CSN designs, Country Programme Management Teams may choose to conduct a SECAP preparatory study to provide a better understanding of the environmental, social and climate change risks that might potentially affect the proposed IFAD programme.

16. The procedures are the product of a broad consultation process that has involved staff from IFAD and selected resource persons from multilateral and bilateral development agencies. The implementation of SECAP, since January 2015, and consultations with partners have played an important role in updating these procedures and in order to align them with those of other multilateral financial institutions and country priorities and to ensure their consistency with IFAD's quality enhancement and quality assurance processes. Continuous communication and collaboration with borrower countries, partners and IFAD staff in the Programme Management

[24] When an Indigenous Peoples Plan is necessary, it must include the sociocultural and land tenure assessment, the specific strategy for working with indigenous peoples and the FPIC agreement.

Department, as well as systematic monitoring and assessment of the effectiveness of the procedures, are essential to successful implementation and improvement. It is expected that this approach will continuously result in further updating these procedures to enhance quality-at-entry in IFAD operations.

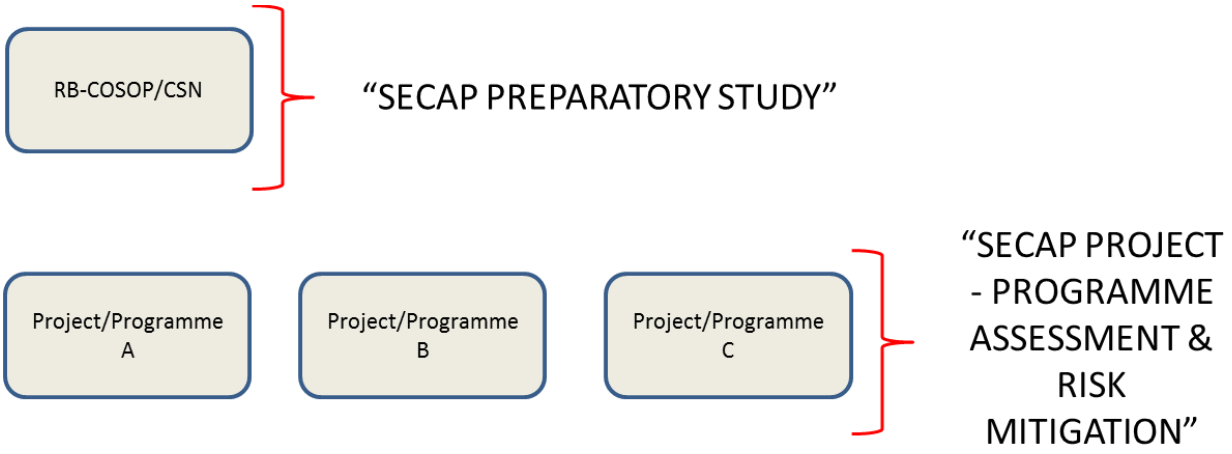
17. This edition is structured as follows: Chapter 1 provides information regarding IFAD's approach to social, environmental and climate assessment in the quality enhancement and programme and project decision-making processes, and a set of supporting materials that will guide IFAD missions in introducing the necessary social, environmental and climate dimensions systematically into all IFAD operations. Chapter 2 describes the steps on how to integrate environment, social and climate issues in RB-COSOPs and CSNs, including the entry points and the supporting tools for the use of SECAP preparatory studies (as deemed necessary) in the design of RB-COSOPs and CSNs. This document provides a glossary, a set of templates for terms of reference and studies, and a set of guidance statements designed to assist in social, environmental and climate screening/scoping of programmes and projects, as well as to provide guidance for strengthening the respective designs.

CHAPTER 1. SOCIAL, ENVIRONMENTAL AND CLIMATE ASSESSMENT IN PROGRAMMES AND PROJECTS

1.1. Introduction

18. This edition sets minimum standards for the assessment of social, environmental and climate change risks in IFAD programmes and projects. This is represented schematically in figure 1.

Figure 1. IFAD entry points for mainstreaming social, environmental and climate considerations in its operations



1.2. Reasons for applying social, environmental and climate risk assessments

19. IFAD's overall objective is for full mainstreaming of environmental, social and climate issues throughout the project cycle. Clear procedures on risk assessment are one important element of this endeavour, to: (i) analyse potential risks and provide information to strengthen the social, environmental and climate dimensions of programmes and projects; (ii) maximize social, environmental and climate change adaptation and mitigation benefits, and avoid or minimize negative impacts; and (iii) increase the consistency, transparency and accountability in decision-making concerning these dimensions of IFAD's results-based country strategic opportunities programmes (RB-COSOPs), country strategy notes (CSNs), and programmes and projects in a timely fashion.

20. There are two main stages for project origination: the RB-COSOP/CSN and the project concept stage. For RB-COSOPs and CSNs, the use of (voluntary) SECAP RB-COSOP/CSN preparatory studies is set out below to ensure that key social, environmental and climate change issues are appropriately addressed at the earliest stages of RB-COSOP and CSN designs and decision-making processes (see chapter 2). This will help create an overall social, environmental and climate change management framework to inform the RB-COSOP and CSN design. For projects, the use of SECAP project assessments (see section 1.4.1: The seven

steps of SECAP for programmes and projects) will identify and address programme and project-specific social and environmental issues, informed by the considerations raised in the SECAP RB-COSOP/CSN preparatory study, and incorporate appropriate preventive actions and/or mitigation measures into the respective programme/project design. The use of project assessments and SECAP RB-COSOP/CSN preparatory studies is explained in table 3.

Table 3. The use of SECAP RB-COSOP/CSN preparatory studies and project assessments

Strategic planning level SECAP RB-COSOP/CSN preparatory studies	Programme/project level SECAP project assessments
Is proactive and informs development proposals, building on lessons learned from the existing country and regional portfolios	Is reactive to a development proposal, informed by findings of the existing country portfolio and relevant project experience
Is used to assess the effect of the existing environmental, climate change and socio-economic conditions on development opportunities and constraints	Is used to assess the effect of a proposed development on the environment and socio-economic conditions and to assess the vulnerability/sensitivity of the proposed development to climate risks
Relates to areas, regions or sectors of development	Relates to a specific programme/project
Enables the development of a framework against which positive and negative impacts can be measured	Enables the identification of programme/project-specific impacts and/or measures to manage environmental, social and climate risks
Is a process for developing a sustainability framework to inform continuous decision-making over a period of time	Has a well-defined implementation period and focuses on informing a specific decision at a particular point in time
Is focused on maintaining a chosen level of environmental quality and adaptation/mitigation to climate change and socio-economic conditions (e.g. through the identification of sustainability objectives and limits of acceptable change)	Is focused on the minimization of negative impacts and the enhancement of positive impacts
Has a wide perspective and includes a low level of detail to provide a vision and overall framework	Has a narrow perspective and includes a high level of detail
Inherently incorporates consideration of cumulative impacts	Has a limited review of cumulative impacts, often limited to phases of a specific programme/project

Source: Adapted from OECD, 2006 (www.oecd.org/dac/environment-development/42025733.pdf).

21. It is expected that the use of SECAP RB-COSOP/CSN preparatory studies and project assessments in IFAD operations will help Country Programme Management Teams (CPMTs) continue to maximize development opportunities and ensure high-quality risk management of social, environmental and climate change risks and impacts as an integral part of their work.

22. IFAD's approach with respect to applying these procedures may be subject to further modifications by the Associate Vice-President/Programme Management Department and supplementary guidelines; further or amended guidance statements to guide the SECAP process may also be issued.

1.3. Process for implementation of SECAP

1.3.1. Responsibility for preparing SECAP RB-COSOP/CSN preparatory studies and project assessments and managing environmental and social risks and impacts

23. Any assessments required during programme and project design are primarily the responsibility of the borrower country, as is the case for programme and project preparation in general and any further assessment deemed necessary during the implementation phase. The assessments will be proportionate to the risks and potential impacts of the programme or project. In addition, the borrower shall ensure adherence to the environmental and social covenants of the financing agreement and is responsible for the implementation and monitoring of the Environmental and Social Management Plan (ESMP) at the implementation stage. For category A projects, the environmental and social assessments will be carried out by independent experts. IFAD will support the process to ensure that both IFAD and borrower requirements are met, and in ways which recognize and enhance borrower capacity.

1.3.2. Financing of SECAP studies and assessments

24. The costs of the preparatory studies for the preparation of RB-COSOPs/CSNs and assessments and studies developed at project design will be from IFAD's regular budget and supplementary funds unless in circumstances where national regulation requires these to be part of the programme development and borrower resources can be provided. For project-level assessments – such as Environmental and Social Impact Assessments (ESIAs), Resettlement Action Framework/Plans, ESMP, Indigenous Peoples Plans – undertaken during programme/project implementation, the associated costs are to be included in the project budget, including any additional cost of ensuring full community participation.

1.3.3. Projects with cofinancing institutions

25. Where IFAD is jointly financing a project with other bilateral or multilateral funding agencies, IFAD may agree to apply the environmental, social and climate requirements/standards of such other agencies,[25] provided that such requirements and standards will enable the project to achieve objectives consistent with SECAP. In cases where IFAD is not the initiating institution: (i) IFAD will seek to collaborate with the initiating institution and will agree on a common approach[26] to project assessment, management and monitoring of environmental, social and climate impacts; and (ii) the institution will support the SECAP process and ensure that borrower requirements are met. The respective terms of reference of the assessments and

[25] For example, multilateral development banks and bilateral that have similar safeguards standards.
[26] The common approach will enable the project to achieve objectives consistent with SECAP mandatory elements and requirements.

draft project-related reports will be shared with IFAD and go through the quality enhancement/quality assurance processes. IFAD will perform additional due diligence[27] only to the extent necessary to complete the social and environmental assessment and climate risk analysis to meet SECAP requirements. Where IFAD support is sought for initiatives/projects that have already received national permits, including the approval of local environmental and social impact assessments and/or resettlement framework/assessments, IFAD will conduct a gap analysis against SECAP to identify whether additional studies, an audit or mitigation measures are required to address significant environmental and social issues that were left out or improperly addressed to meet SECAP requirements. Where SECAP requirements differ from the environmental and social standards/requirements of the borrower and other cofinanciers, IFAD will make efforts to collaborate with the borrower/cofinancier and agree on specific measures to ensure that IFAD SECAP requirements are fully complied with. Specific measures may include screening, ESIA planning process, consultation, disclosure, monitoring, reporting, and implementation support. The applicability of the initiating institutions' and other cofinanciers' guidelines in projects (co-)financed by IFAD is reflected in the respective social, environmental and climate assessments and project documents. For projects involving associated facilities, the environment and social assessment will also identify and assess, to the extent appropriate, the potential environmental and social risks and impacts of the facilities.[28] For projects involving subprojects, which are identified and designed at the implementation stage, when necessary, the project will include measures to strengthen the capacity of the borrower to conduct environmental and social due diligence.

1.3.4. Projects involving financial service providers

26. IFAD outlines the instances in which due diligence should be conducted on a potential partner financial service provider (FSP) and its loan portfolio in guidance statement 12 on rural finance. The due diligence exercise aims to ensure that the FSP and activities being financed through its loans in the framework of the IFAD-financed programme or project meet IFAD's environmental and social policies, apply relevant national laws and regulations, and adhere to the prohibited investment activities list produced by the International Finance Corporation.[29] Focus will be on the capacity and commitment of the FSP to develop and maintain an effective environmental and social management system to assess, manage and monitor the risks and impacts of subprojects on an ongoing basis. The specific requirements pertaining to FSPs will be determined by IFAD on a case-by-case basis taking into account the nature, scale and risks of the FSP's current and likely future loan portfolio, recognizing that the type and operations of FSP partnering in IFAD-financed programmes and projects vary considerably and in some cases may pose minimal environmental and social risks (see guidance statement 12 on rural finance).

[27] Included where partnership with the private sector is involved.
[28] "Associated facilities" means facilities or activities that are not funded as part of the project and are: (i) directly and significantly related to the project; (ii) carried out, or planned to be carried out, contemporaneously with the project; and (iii) necessary for the project to be viable and would not have been constructed or expanded if the project did not exist.
[29] International Finance Corporation Exclusion List: www.ifc.org/exclusionlist.

1.3.5. Consultation and participation in the SECAP process

27. Meaningful consultation by communities (especially targeted groups) and stakeholders that are likely to be affected by IFAD's operations will continue to be sought throughout the programme and project life cycle, commencing as early as possible in the programme and project development process. The objective of such stakeholder consultation is to ensure the communities contribute to the development of management plans[30] and provide feedback on the draft ESIA report and other relevant documents, ensure broad community support to the project (especially a category A project or one that is highly sensitive to climate and social risks), and see that affected people endorse the proposed mitigation/risk reduction and management measures. Consultation using a combination of appropriate tools and approaches, leading to consent, should be initiated as early as possible during design, and the results will be documented and adequately reflected in SECAP assessment (and other relevant documents) reports. Projects with significant risks and impacts involving economic and physical resettlement, indigenous peoples or physical cultural resources will be subject to disclosure and consultation requirements set out in section 1.3.6. IFAD's policies on targeting, gender equality and women's empowerment, improving access to land and tenure security, and engagement with indigenous peoples and how-to-do notes contain further guidance on appropriate consultation mechanisms. The borrower will ensure stakeholder consultation proportionate to the nature and scale of the project, potential risks and impacts, and with the concerns raised by communities and stakeholders.

1.3.6. Disclosure of documentation related to the SECAP process

28. The IFAD policy on the disclosure of documents, approved in 2010, adopted the principle of "presumption of full disclosure".[31] The sharing of draft and final ESIAs and other relevant documents[32] with programme and project stakeholders and interested parties will be subject to the above-mentioned principle. As such, the documents will be disclosed, when available, in a timely manner prior to project appraisal at the quality assurance stage (or other key stages during project implementation)[33] on IFAD's website and in an accessible place in the programme- or project-affected area, in a form and language understandable to project-affected parties and other stakeholders, for the purposes of keeping them informed and obtaining their meaningful feedback. Comments on SECAP-related disclosed documents can be submitted through the SECAP Help Desk email using: ecd_secap@ifad.org.

1.3.7. IFAD's grievance and redress mechanism

29. IFAD has established a complaints procedure to receive and facilitate resolution of concerns and complaints with respect to alleged non-compliance of its environmental and social policies and the mandatory aspects of its Social, Environmental and Climate Assessment Procedures in

[30] Environmental and Social Management Plan, resettlement plans, mitigation and other plans.
[31] www.ifad.org/gbdocs/eb/100/e/EB-2010-100-R-3-Rev-1.pdf.
[32] Draft resettlement plans, draft mitigation plans and frameworks, documentation of the indigenous peoples consultation process.
[33] Where frameworks (Environmental and Social Management Framework/Resettlement Action Framework) were disclosed at quality assurance stage.

the context of IFAD-supported projects. The procedure allows affected complainants to have their concerns resolved in a fair and timely manner through an independent process. IFAD may be contacted by e-mail at SECAPcomplaints@ifad.org or via its website at (click here for page). In addition, IFAD will require the borrower to provide an easily accessible grievance mechanism, process or procedure to facilitate resolution of concerns and grievances of project-affected parties arising in connection with the project (on a case-by-case basis for projects that pose special risks). Grievance redress will use existing formal and informal grievance mechanisms, strengthened or supplemented as needed with project-specific arrangements, and will be proportionate to the risks and impacts of the project. Although IFAD normally addresses risks primarily through its enhanced quality enhancement/quality assurance process and by means of project implementation support, it remains committed to: (i) working proactively with the affected parties to resolve complaints; (ii) ensuring that the complaints procedure and project-level grievance mechanism are easily accessible to affected persons, culturally appropriate, responsive and operates effectively; and (iii) maintaining records of all complaints and their resolutions.

1.4. Incorporation of SECAP assessments into IFAD's project cycle

30. The SECAP process is fully incorporated into the project cycle, including the quality enhancement process for IFAD-financed programmes and projects. CPMTs, and particularly country programme managers (with the support of the Environment and Climate Division), are assigned the central role of overseeing the implementation of SECAP with respect to their RB-COSOPs/CSNs and project proposals. The different methods and tools used by the borrower to carry out the environmental, social and climate assessment and to document the results will depend on the nature and scale of the project and the potential risks and impacts that could result. The assessment will include, as appropriate, a combination of the elements listed in table 4.

31. The integration of SECAP into IFAD's project cycle is represented schematically in table 5.

Table 4. List of tools and methods to conduct SECAP assessments

Tools	Brief explanation of methods and tools
Strategic level	
SECAP preparatory study	The SECAP preparatory study is a tool for systematically integrating strategic environmental, social and climate change considerations into the results-based country strategic opportunities programme (RB-COSOP) and country strategy notes (CSNs). The purpose of this study is therefore to help understand the development context of the strategy being assessed, and to appropriately identify problems and potentials, address key trends, and assess environmental, social and climate sustainable viable options (i.e. that act cautiously or prevent risks and stimulate opportunities) that will achieve the strategic objectives of the proposed RB-COSOP/CSNs.
Strategic Environmental and Social Assessment	The Strategic Environmental and Social Assessment (SESA) is a key means of integrating environmental and social considerations into policies, plans and programmes, particularly in sector decision-making and reform. The purpose of SESA is therefore to help understand the development context of the strategy being assessed, and to appropriately identify problems and potentials, address key trends, and assess environmental and sustainable viable options (i.e. that act cautiously or prevent risks and stimulate opportunities) that will achieve strategic objectives.
Programme and project level	
Climate risk analysis	This is a tool to identify and mitigate risks resulting from climate change to IFAD investment projects and to enhance existing opportunities to improve results. The analysis is conducted in the early stages of project development and incorporates adaptation measures in the design of projects at risk. It assesses climate change risk and vulnerability associated with the project, designs technical and economic evaluations of adaptation options, and develops monitoring and reporting measures of the level of risk and climate-proofing measures.
Environmental and Social Impact Assessment	An Environmental and Social Impact Assessment (ESIA) is a tool/study to identify and assess the potential impact of the proposed project on biophysical, social and other relevant aspects, evaluate alternatives and options, and design the most appropriate mitigation, monitoring and management measures to reduce risks and enhance opportunities. The study is conducted in the early stage to inform the project design. The draft report and accompanying relevant documents are disclosed for stakeholder feedback at the quality assurance stage, or at the relevant stage at project implementation, prior to finalization (see box 2).

Environmental and Social Management Framework	The Environmental and Social Management Framework (ESMF) is a tool to examine the risks and impacts when a project consists of a programme and/or series of subprojects and the affected persons, risks and impacts cannot be determined until the programme or subproject details have been identified. The ESMF sets out the principles, rules, guidelines and procedures to assess the environmental and social risks and impacts for projects and subprojects. It includes adequate information on the area in which projects and subprojects are expected to be sited, including any potential environmental and social vulnerabilities of the area. It contains mitigation measures to reduce[a] and/or offset adverse risks and impacts, and estimates the costs of such measures. Most importantly, it should include adequate institutional mechanisms, including capacity-building, to allow the borrower to manage and monitor environmental and social concerns related to the project or subprojects. Where relevant, the ESMF should specify the environmental and social management requirements (includes health and safety) that will be the responsibility of contractors and primary suppliers hired to implement subprojects. Such requirements should be incorporated in the respective project implementation manual. The draft ESMF and accompanying relevant documents are disclosed for stakeholder feedback at the quality assurance stage for category A projects prior to finalization.
Environmental and Social Management Plan	The Environmental and Social Management Plan (ESMP) is an instrument that details: (i) the measures to be taken during the implementation and operation of a project/subproject to eliminate or offset adverse environmental and social impacts, or to reduce them to acceptable levels; and (ii) the actions needed (monitoring/supervision/reporting requirements), implementation arrangements, institutional responsibilities, time schedule and costs to implement the measures.[b] The ESMP is required for all category A and B projects. The ESMP is typically presented as a section of the ESIA/ESMF, but for category B projects it is part of the SECAP review note in the form of a matrix (see box 2).
Tools for specific features of a project	
Cumulative Impact Assessment	The Cumulative Impact Assessment is an instrument that considers cumulative impacts of the project in combination with impacts from other relevant past, present and reasonably foreseeable developments, as well as unplanned but predictable activities enabled by the project that may occur later or at a different location.[c]
Environmental and social audit	The environmental and social audit is a tool to determine the nature and extent of all environmental and social areas of concern of an existing project. The audit identifies and justifies appropriate measures and actions to mitigate the areas of concern, estimates the cost of the measures and actions, and recommends a schedule for implementing them. For certain projects, it could be a stand-alone activity; in other cases, the audit forms part of the environmental and social impact assessment.[d]
EX-ACT carbon-balance tool	EX-ACT is an appraisal system developed by the Food and Agriculture Organization of the United nations, which provides estimates of the impact of agriculture and forestry development projects, programmes and policies on carbon balance. EX-ACT is a land-based accounting system, estimating carbon stock changes (i.e. emission or sinks of carbon dioxide per hectare and year). The tool helps project designers to estimate and

	prioritize project activities that bring about high benefits in terms of economic and climate change mitigation. The amount of greenhouse gas mitigation can also be used as part of the economic analyses as well as for an easier access to additional project funds. The application of EX-ACT or a similar tool should be used for projects that have the potential to generate significant greenhouse gas emissions.
Health Impact Assessment	The Health Impact Assessment (HIA) is a means of assessing the health impacts of policies, plans and projects in diverse economic sectors using quantitative, qualitative and participatory techniques. HIA helps decision-makers make choices about alternatives and improvements to prevent disease and injury and to actively promote health. IFAD supports tools and initiatives in HIA to dynamically improve health and well-being[e].
Indigenous Peoples Plan	Indigenous Peoples Plan is a tool to ensure that the design and implementation of projects foster full respect for indigenous peoples' identity, dignity, human rights, livelihood systems and cultural uniqueness, as defined by the indigenous peoples themselves. It also ensures that the affected groups receive culturally appropriate social and economic benefits, are not harmed by the projects, and can participate actively in projects that affect them.
Pesticide Management Plan	The Pesticide Management Plan (PMP) is a tool to prevent, evaluate and mitigate the occurrences of pesticides or pesticide breakdown products. The PMP includes components promoting prevention and developing appropriate responses to the detection of pesticides or pesticide breakdown products, and provides responses to reduce or eliminate continued pesticide movement to groundwater and surface water. It encourages the use of a combination of pest management techniques, such as integrated pest management to suppress pest populations in an effective, economical and environmentally sound way, and minimize adverse effects on beneficial organisms, humans and the environment.
Physical Cultural Resources Management Plan	The Physical Cultural Resources (PCR) Management Plan is a tool to avoid, minimize, mitigate and monitor any potential adverse impact on cultural heritage resources (movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes) that have archaeological, paleontological, historical, architectural, religious, aesthetic or other cultural significance at the local, national or international levels. The Physical Cultural Resources Management Plan supports the preservation[f] of PCR (whether these resources are legally protected or not or previously disturbed) and includes provisions for managing "chance finds" of PCR during project implementation.
Resettlement Action Framework	A Resettlement Action Framework (RAF) is developed for projects with subprojects or multiple components that cannot be identified before project approval, but have the potential to result in economic and physical resettlement[f]. The RAF sets out the principles, rules, guidelines and procedures to assess the social and livelihoods risks and impacts. It contains measures and plans to reduce, mitigate and/or offset adverse risks and impacts; provisions for estimating and budgeting the costs of such measures; and appropriate roles, responsibilities and capacity for managing, mitigating and monitoring social and livelihood concerns related to the project. The RAF may also be appropriate where there are valid reasons for delaying the implementation of the resettlement, on condition that the sponsor or party provides an appropriate and concrete

	commitment for its future implementation. The draft RAF and accompanying relevant documents are disclosed for stakeholder feedback at the quality assurance stage prior to finalization.
Resettlement Action Plan	A Resettlement Action Plan (RAP) is a document prepared by the sponsor or other parties responsible for resettlement (such as government agencies), specifying the socio-economic and cultural characteristics of the affected people and the procedures – cut-off date, time frame for compensation, relocation assistance, grievance mechanisms, etc. – it will follow and the actions it will take to properly resettle and fairly compensate affected people/communities and to restore and improve their living standards. It applies to any project that may result in the loss of assets, the impairment of livelihood, or the physical relocation of an individual, household or community. The development of the RAP should entail a meaningful stakeholder consultation (free, prior and informed consent, FPIC) with affected persons and disclosure of information in a culturally appropriate gender inclusive manner. The draft RAP and accompanying relevant documents are disclosed for stakeholder feedback at the quality assurance stage (or relevant stage at project implementation) prior to finalization.
Social Impact Assessment	The Social Impact Assessment (SIA) includes the processes of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programmes, plans, projects) and any social change processes invoked by those interventions. Its primary purpose is to bring about a more sustainable and equitable biophysical and human environment (International Association for Impact Assessment)[h]. The SIA is often carried out as part of, or in addition to, the environmental impact assessment. Although the SIA is usually applied to planned interventions, the same techniques can be used to evaluate the social impact of unplanned events, for example, disasters, demographic change and epidemics.

[a] See page 40: consultations.worldbank.org/Data/hub/files/consultation-template/review-and-update-world-bank-safeguard-policies/en/materials/the_esf_clean_final_for_public_disclosure_post_board_august_4.pdf.

[b] See page 39: consultations.worldbank.org/Data/hub/files/consultation-template/review-and-update-world-bank-safeguard-policies/en/materials/the_esf_clean_final_for_public_disclosure_post_board_august_4.pdf.

[c] See page 39: consultations.worldbank.org/Data/hub/files/consultation-template/review-and-update-world-bank-safeguard-policies/en/materials/the_esf_clean_final_for_public_disclosure_post_board_august_4.pdf.

[d] See page 39: consultations.worldbank.org/Data/hub/files/consultation-template/review-and-update-world-bank-safeguard-policies/en/materials/the_esf_clean_final_for_public_disclosure_post_board_august_4.pdf.See page 12 of the

[e] See www.who.int/hia/en.

[f] See page 68: www.adb.org/sites/default/files/institutional-document/33739/files/environment-safeguards-good-practices-sourcebook-draft.pdf.

[g] International Finance Corporation Handbook for Preparing a Resettlement Plan: www.ifc.org/wps/wcm/connect/22ad720048855b25880cda6a6515bb18/ResettlementHandbook.PDF?MOD=AJPERES

[h] See www.iaia.org/uploads/pdf/SIA_Guidance_sp.pdf.

[i]

Table 5. SECAP process mainstreamed in the project cycle

Project stage	Modality	Reference	Purpose	Main contents	Responsibility
Strategic level					
1. Results-based country strategic opportunities programme (RB-COSOP) and country strategy note (CSN)	SECAP RB-COSOP preparatory study (if necessary).	– RB-COSOPs – CSN – Project Life File	– Integrate environmental, social and climate change considerations into policy and planning. – Evaluate the interlinkages with economic/social considerations. – Guide IFAD's strategic orientation and/or investment priorities in a country.	– Diagnostic evaluation of environment, social and climate change issues. – Strategic priorities to enable the RB-COSOP to effectively respond to natural resource management, climate adaptation and social (including health) risks.	Borrower/country programme manager, supported by the Country Programme Management Team and the Environment and Climate Division
Project level					
2. Project concept (within the RB-COSOP, or concept note for countries without an RB-COSOP)	– SECAP preliminary project review note. – Determine the preliminary environmental/social category and climate risk classification.	– RB-COSOP – Mission report – Concept note – Project Life File – Operational Results Management System (ORMS)	– Collect environmental, social and climate-related information, including disaster risk management (DRM) on proposed activities. – Suggest environmental enhancement for "greening" the project. – Analyse measures to manage environmental, social and climate risks, where possible. – Screening and preliminary environmental and social categorization and climate risk classification.	– Government policies. – Institutions addressing environment, social issues, climate change adaptation/mitigation and DRM. – Country's environmental and adaptation regulatory framework. – Main site characteristics. – Major environmental and climate vulnerability concerns. – Link to poverty, environment and adaptation/mitigation indicators.	Country programme manager, supported by the Country Programme Management Team and the Environment and Climate Division
3. Early project design	– SECAP project review note.[a] – Category A projects and specific features of the project may require specialized methods/tools for assessment, such as the Environmental and Social Impact Assessment (ESIA) and/or Environmental and Social Management	– Project design report – Mission report – Project Life File – Relevant guidance statements – IFAD website (disclosed documents)	– Conduct environmental and social assessment and climate risk analysis. – Confirm environmental and social category and climate risk classification. – Identify magnitude and detail the likely environmental and social impacts, and propose alternatives, preventive actions, mitigation measures and any design changes required.	– Project description, issues in natural resource management, potential social and environmental impacts and risks, climate change and DRM challenges. – For gap analysis, identify actions to address gaps to meet compliance with SECAP. – Recommended features of project design to improve natural resource management, social issues and mitigate	Borrower/country programme manager, supported by the Country Programme Management Team, the Environment and Climate Division and

Project stage	Modality	Reference	Purpose	Main contents	Responsibility
	Framework[b] (ESMF), a Resettlement Action Plan (RAP)/Resettlement Action Framework (RAF), and free, prior and informed consent (FPIC) and other plans; a climate risk analysis is required for "high" classification projects. – Disclose draft ESIA and other relevant documents at the quality assurance stage.[c] When jointly financing a project with other agencies, agree on a common approach for management of environmental and social risks – based on a gap analysis.	– Gap analysis report	– Propose adaptation/mitigation measures. – Develop the Environmental and Social Management Plan[d] (based on environmental and social analysis, the ESIA, in depth or basic climate risk analysis). – Develop the ESMF/RAF and FPIC implementation plan as required. – Conduct gap analysis of SECAP versus cofinancing partner requirements determines any additional information essential to meet IFAD requirements, and also agree on a common approach. – Ensure recommendation and measures in the SECAP review note and relevant studies are adequately addressed in the project design.	environmental/social concerns, build beneficiaries' resilience to climate shocks. – Monitoring aspects, components (if any), including the justification of category assigned.	Communication Division
4. Final project design (includes loan negotiation)	– SECAP project review note completed for all projects. – ESIA/ESMF report and other relevant documents, such as the ESMP, RAP/RAF for category A projects finalized. – Where common approach has been agreed, include measures and actions in the financing agreement.	– Project design report – Project Life File – Financing agreement – IFAD website (disclosed documents) – Operational Results Management System (ORMS)	– Integrate design changes, describe climate change context, and propose environmental and social measures, and climate adaptation/mitigation and DRM plans, if any, into the project design report.	– Description of environmental/natural resource management, adaptation related activities in the project, description of modification to project design, environmental, climate adaptation and DRM plan details, monitoring and evaluation, conditions in financing agreements, outstanding risks.	Borrower/country programme manager, supported by the Country Programme Management Team, the Environment and Climate Division and the Office of the General Counsel
6. Implementation (includes supervision)	– Analysis of social, environmental and climate change issues during supervision and implementation support.	– Project supervision and progress reports – Operational Results	– Monitor and track performance of, or implementation, activities specified in the ESMP, other plans and relevant provisions in the financing agreement.	– Analysis of environmental and social impacts and climate change in the local context, performance of the environmental and social issues, climate adaptation/mitigation and DRM	Country Programme Management Team, the Operational Programming and

Project stage	Modality	Reference	Purpose	Main contents	Responsibility
	– Monitor progress of the implementation of the ESMPs. – Monitor project category and classification through the life of project. – For category A subprojects, conduct ESIA, RAP, FPIC, as required. – Disclose draft ESIA and other relevant documents if not done at quality assurance stage. – Conduct environmental and social audits, as required.	Management System (ORMS) – Project Life File – IFAD website (disclosed documents) – Environmental and social audit reports	– For subprojects, carry out appropriate environmental and social assessment. – For category A subprojects, conduct environmental and social impact assessment or prepare/implement RAP and FPIC, as required. – Identify magnitude and detail likely environmental and social impacts, propose alternatives, preventive actions, mitigation measures and any design changes required. – Develop and implement the RAP, FPIC or the ESMP (based on the ESIA).	monitoring plan according to objectively verifiable indicators.	Effectiveness Unit and cofinanciers
7. Completion	Ex post ESIA for category A projects.	– Completion reports – Project Life File	– Assess effectiveness of environmental, social and climate activities specified in the ESMP, ESIA, RAP, FPIC and climate risk analysis.	– Assess project outcomes and results of the environmental and social measures, climate adaptation/mitigation and DRM monitoring according to objectively verifiable indicators.	Country Programme Management Team and cofinanciers

[a] The SECAP review note is mandatory for all projects irrespective of the category, while Environmental and Social Management Plans (ESMPs) are developed for all category A and B projects – details the environmental, social and climate measures to be taken during implementation and the actions needed to implement these measures.

[b] Develop an Environmental and Social Management Framework (ESMF) when uncertainty remains on the project component or exact location; project consists of a series of subprojects and the risks cannot be determined at the design stage. Resettlement Action Framework is developed when uncertainty remains in the project area and persons to be affected. The framework includes adequate information on the project area, including potential environmental and social vulnerabilities and mitigation measures that might be expected to be used.

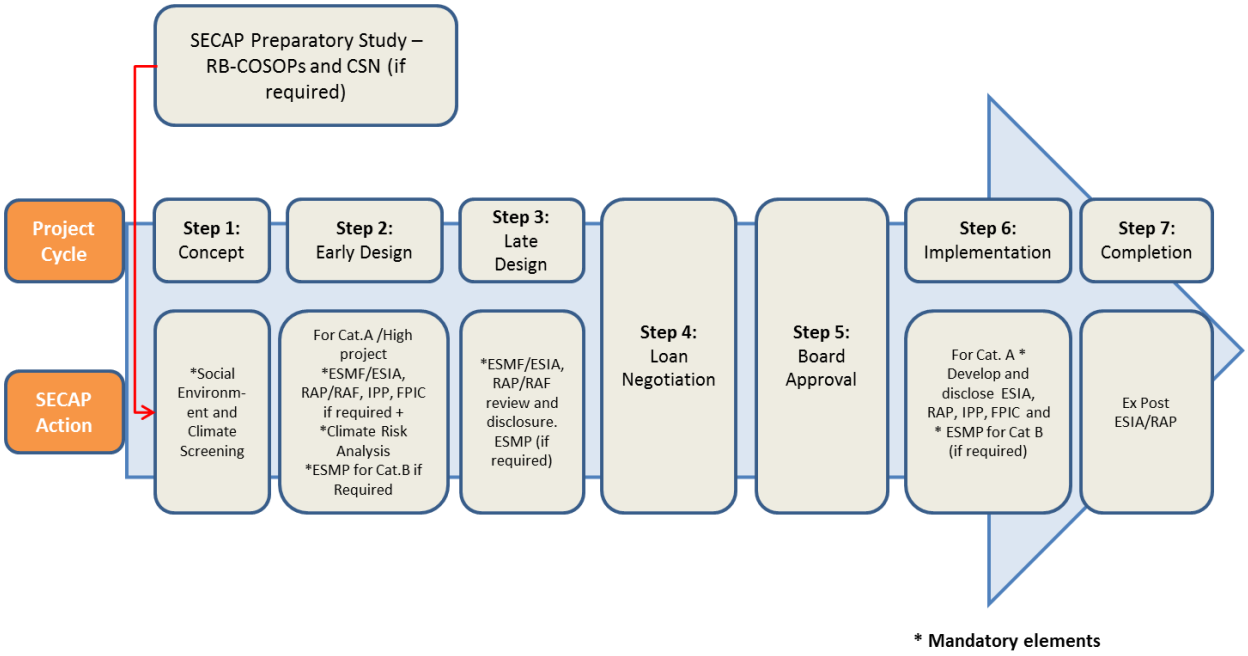
[c] Compliance with the Green Climate Fund policy and the Pelosi agreements requires ESIAs/ESMF, RAP/RAF (category A) and ESMPs (category B) to be disclosed 120 days and 30 days, respectively, prior to Executive Board.

[d] Develop a management framework instead when uncertainty remains on the project component or exact location. The framework establishes a mechanism to determine future social, environmental and climate impacts.

1.4.1 The seven steps of SECAP for programmes and projects

32. The integration of SECAP into IFAD's project cycle is represented schematically in figure 2.

Figure 2. The seven steps of the SECAP assessment in the project cycle



Note: ESIA: Environmental and Social Impact Assessment; ESMF: Environmental and Social Management Framework; ESMP: Environmental and Social Management Plan; FPIC: free, prior and informed consent; IPP: Indigenous Peoples Plan; RAP: RAF: Resettlement Action Framework; Resettlement Action Plan.

†These are mandatory elements of SECAP. In addition, FPIC should be obtained by the borrower/grant recipient for interventions that might affect land access and the use rights of communities.

1.4.2 Step 1: Project concept

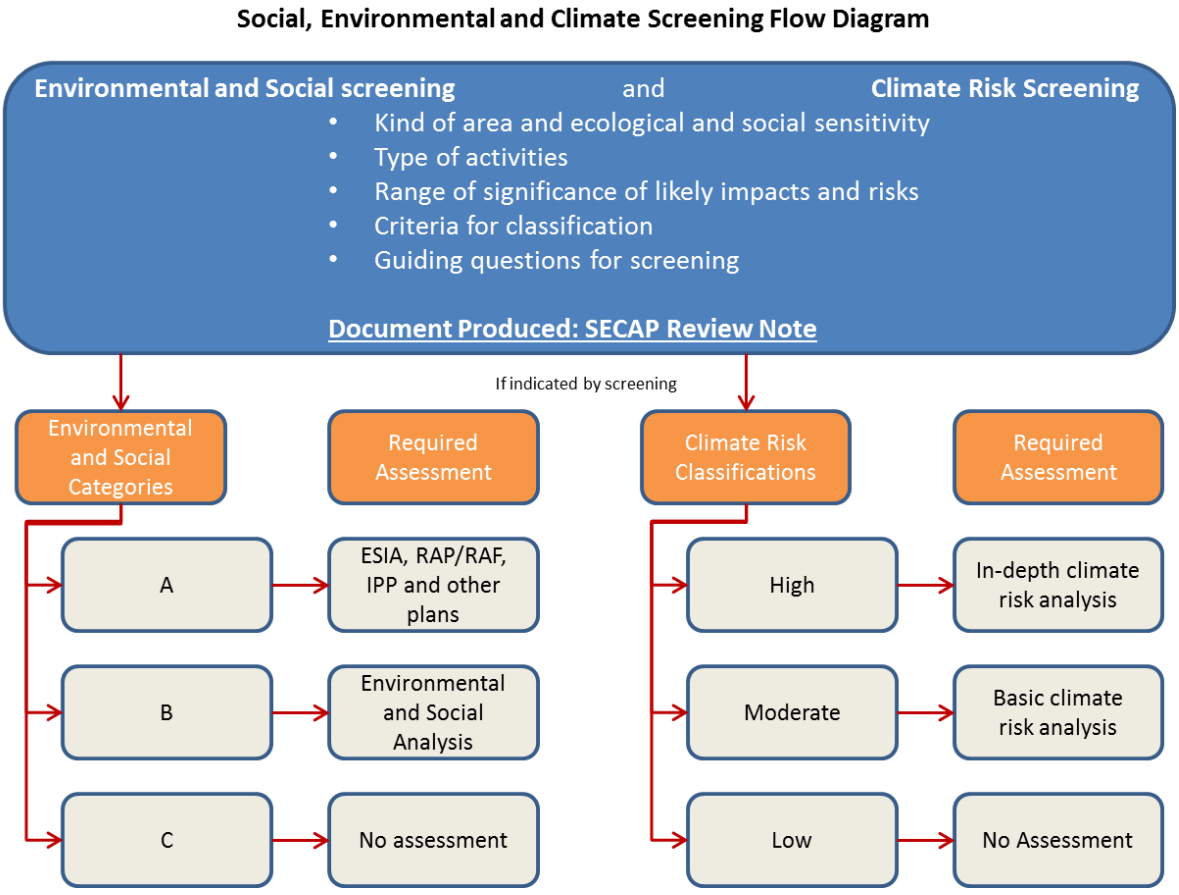
33. The first step in the SECAP assessment process is an initial project screening that outlines the social, environmental and climate issues that are likely to be associated with an IFAD-supported project. The screening will be conducted on a preliminary basis at the project concept stage for consideration at the Operational Strategy and Policy Guidance Committee (OSC) review stage, and then finalized in advance of the quality enhancement review. The purpose of this screening is to identify the main social, environmental and climate risks associated with a potential project and define the necessary steps for further analysis and identify the relevant measures to enhance opportunity and minimize potential risks. For example, this exercise allows IFAD to identify and avoid activities that may cause harmful health impacts, involve any involuntary taking or restriction on the use of land that may result in physical or economic displacement (see "do-no-harm principle'' in the Land Policy), identify programmes and projects that may involve or affect indigenous peoples (see Policy on Engagement with Indigenous Peoples), and identify programmes and projects that may damage or destroy physical resources of historic, religious or cultural significance.

The exercise also screens against the International Finance Corporation Exclusion List.[34] With a view on climate risks, this scoping exercise allows IFAD to highlight investments with a higher significance of greenhouse gas emissions and probability of losses and damages from climate-related events, which can also help IFAD make a case for the allocation of additional climate finance.

34. The SECAP project screening exercise is a twin process incorporating: (i) the environment and social aspects; and (ii) the climate risk aspects. The screening will result in a proposed environmental and social category and climate risk classification for the project.

35. Where feasible, the exercise should draw on and be informed by the issues raised in the SECAP RB-COSOP/CSN preparatory study and other climate-related studies. The exercise culminates in the preparation of the SECAP review note, which is part of the Project Life File. This is set out in figure 3.

Figure 3. SECAP project assessments – screening and categorization



Note: ESIA: Environmental and Social Impact Assessment; IPP: Indigenous Peoples Plan; RAF: Resettlement Action Framework; RAP: Resettlement Action Plan.

[34] www.ifc.org/exclusionlist.

36. Guiding questions for screening and the template for the SECAP review note are provided in annexes 3 and 4, respectively. The note should contain the following (simply cross-referencing the project document where the issues are addressed in there):

    (i) An overview of the main environmental and natural resource management and social issues in the programme and project area and identification of any significant impacts (positive and negative) and social concerns likely to be associated with the programme and project (clearly indicating any community concerns). The overview should be informed by a rapid appraisal of environmental, social and climate issues to determine if an in-depth environmental and social impact assessment and/or climate risk analysis is warranted. The screening is considered a minimum requirement for all projects, including those which do not warrant further analysis (e.g. where the environmental/social and/or climate risk of the programme or project is category C or low, respectively).

    A justification for the environmental category (A, B, C) and climate risk classification (high, moderate, low) assigned to the programme or project proposal on a preliminary basis, with references to country social and environmental policies, legislation and institutions, as well as the social, environmental and climate change screening requirements of any cofinancier. (See sections 1.4.2.1 to 1.4.2.4 for more details.) For programmes and projects initiated by the cofinancier, this includes a description of the social, environmental and climate requirements of the cofinancing agency and the extent to which they satisfy IFAD requirements (see section 1.3.3).

    (ii) An identification of the specific requirements for future project processing, including: (a) preliminary indications of the scope of the ESIA, climate risk analysis and Resettlement Action Plan and corresponding ESMP likely to be required during project formulation for category A and high climate risk project proposals, or the type of additional environmental analysis and corresponding ESMP required for category B and moderate climate risk proposals; (b) any consultation requirements on the environmental and social dimensions of the project proposal, including the views of interested parties on these dimensions of the proposal; and (c) budgetary requirements.

37. To ensure an integrated approach to environmental and social management, the relevant SECAP annexes and guidance statements, IFAD how-to-do notes (such as on free, prior and informed consent, and community-based natural resource management) and case studies should be consulted. The project category and classification and the basis for their selection are reflected in the relevant sections of the respective project documents (concept note, SECAP review note, which is part of appendix 12 of the project design report “Compliance with IFAD Policies”, quality enhancement memo, panel report, and the project design report). IFAD will disclose the project’s category and classification and the basis for that on IFAD’s corporate dashboard (Grants and Investments Projects System, GRIPS) and in project documents. The project category and risk classification are monitored on a regular basis throughout the life of the project and updated based on changes as necessary (Operational Results Management System, ORMS).

1.4.2.1 Environmental and social categorization and criteria

38. The three categories (A, B, C) are defined according to the likely significance of environmental and social concerns in relation to criteria shown below. Guiding questions for environmental and social risk classification can be found in annex 3.

39. **Category A:** The programme and project may have significant adverse environmental and/or social implications that: (i) are sensitive, irreversible or unprecedented; (ii) affect an area broader than the sites or facilities subject to physical interventions; and (iii) are not readily remedied by preventive actions or mitigation measures. For category A programmes and projects one, or a combination of, a formal Environmental and Social Impact Assessment (ESIA) or Environmental and Social Management Framework (ESMF), Resettlement Action Framework (RAF)/ Resettlement Action Plan (RAP), free, prior and informed consent (FPIC)/FPIC implementation plan and Indigenous People Plan is required for the whole programme or project or for one or more components. The ESIA/ESMF should incorporate an ESMP.

40. Projects supporting or inducing the following activities would normally be considered category A (although this will depend on the location and magnitude of impacts):

    - Geographic location and sensitive areas:
        - wetland development;
        - conversion of significant areas of natural forests or other wild lands;
        - loss of natural habitat and loss of biodiversity or environmental services provided by a natural ecosystem in sensitive areas – protected areas and their buffer zones, ecologically sensitive areas, coral reefs, mangroves swamps, small island ecosystems, areas of global/national significance for biodiversity conservation and/or biodiversity-rich areas, and habitats dependent on by endangered species; and
        - high risk of major destruction as a result of geophysical hazards (tsunamis, landslides, earthquakes, volcanic eruptions).
    - Natural resources:
        - unsustainable natural resource management practices (fisheries, forestry, livestock) and/or result in exceeding carrying capacity. For example, their development in areas and situations where little information exists on sustainable yield and carrying capacities;
        - large-scale[35] aquaculture or mariculture projects, or where their development involves significant alteration of ecologically sensitive area, etc.;

[35] Generally an aquaculture (including mariculture) project will be subjected to an ESIA if it is likely to have a significant impact through physical, biochemical or other alterations on the existing aquatic and terrestrial environment. Where there are national regulations specifying the conditions that will trigger ESIA for aquaculture projects, these will be adopted for the particular countries. However, where there are no regulations, the decision to conduct an ESIA, after the initial screening process, will be subject to the severity and likely impact based on criteria of: (i) size and scale of project (large-scale/industrial aquaculture projects of at least 50 hectares on one site); (ii) the sensitivity of project area (close to coral reef, mangrove swamps or

- significant increased use of agrochemicals which may lead to life-threatening illness and long-term public health and safety concerns;
- water-based (ground and/or surface) development where there is reason to believe that significant depletion and/or reduced flow may/has occurred from the effects of climate change or from overutilization (above recharge capacity);
- introduction of potentially invasive species or genetically modified organisms which might alter genetic traits of native species or have an adverse effect on local biodiversity; and
- risk of project-induced pollution and other adverse health effects on sensitive ecosystems and vulnerable communities, or the risk of pollution from an existing source which might affect a new project.

- Infrastructure development:
  - large-scale dam/reservoir construction (more than 15 metre high wall, more than 500 metre long crest, and/or with a reservoir exceeding 3 million m^3) or incoming flood of more than 2,000 m^3/s;
  - construction of large-scale irrigation schemes rehabilitation/development (above 100 hectares per scheme);
  - construction/rehabilitation or upgrade of rural roads that entail the total area being cleared above 10 km long, or any farmer with more than 10 per cent of his/her private land taken;
  - drainage or correction of natural waterbodies (e.g. river training); and
  - significant extraction or diversion/containment of surface water leaving the river flow below 20 per cent environmental flow plus downstream user requirements.

- Social:
  - economic or physical displacement[36] (i.e. land, potable water and water for other uses), or physical resettlement of more than 20 people, or impacting more than 10 per cent of any one community's or individual farmer's or household's assets;
  - conversion and loss of physical cultural resources; and
  - significant social adverse impacts to local communities (including disadvantaged and vulnerable groups and indigenous peoples) or other project-affected parties.

- In addition, although not currently financed by IFAD, projects supporting or inducing the following would be considered category A:
  - manufacture and transportation of hazardous and toxic materials and storage;
  - construction of large- or medium-scale industrial plants (other than small-scale artisanal production); and

wetlands); and (iii) production technology and water use (e.g. extensive and significant use of ground water, river diversion, irrigation and multiple-use waterbodies, e.g. for fish cage culture).

[36] Economic displacement implies the loss of land, assets, access or user rights to resources and assets, income sources or means of livelihoods (guidance statement 13). This includes community (including indigenous peoples) land, assets and other resources. Even though the project affects fewer than 20 people and less than 10 per cent of any community's, individual farmer's or household's assets, in this case, the project would still have to do a simple agreed Resettlement Action Plan for the households affected.

- development of large-scale production forestry.

- Rural finance:
  - projects involving lines of credit to financial service providers to support any of the activities above.

41. **Category B:** The programme and project may have some adverse environmental and/or social impacts on human populations or environmentally significant areas, but the impacts: (i) are less adverse than those for category A; (ii) are site specific and few are irreversible in nature; and (iii) can be readily remedied by appropriate preventive actions and/or mitigation measures. While no formal ESIA is required for category B programmes and projects, in many cases further environmental analysis could be undertaken, or in some cases an ESMF is developed during project preparation or implementation. Category B projects require an ESMP, which is incorporated in the SECAP review note in the form of a matrix, showing the output from the environmental and social analysis.[37]

42. Projects supporting or inducing the following activities would normally be considered category B,[38] depending on the location and magnitude of impact.

    - Geographic location and sensitive areas:
      - agricultural intensification and/or expansion of cropping area in "non-sensitive areas"; and
      - projects with a risk of minor destruction by natural geophysical hazards.

    - Natural resources:
      - rangeland and livestock development;
      - artisanal fisheries where there is information on fish stocks, fishing effort and sustainable yield;
      - small-scale aquaculture and mariculture[39] which do not involve significant alteration of wetlands, ecologically sensitive areas and changes in hydrology;
      - natural resources-based value chain development;
      - small and microenterprise development subprojects, including artisanal production;
      - watershed management or rehabilitation; and
      - large-scale soil and water conservation measures.

    - Infrastructure development:
      - small-scale irrigation and drainage projects and small and medium (capacity < 3 million m^3) dam subprojects;
      - projects involving the development of an agroprocessing facility; and

[37] Where it is unlikely that resettlement or economic displacement may occur, the ESMP and project design document will indicate what will be the consultation processes leading to free, prior and informed consent for reaching agreement with those potentially affected, and mitigation and monitoring measures required to ensure that those affected will not be negatively impacted – see guidance statement 13.
[38] Check country legislation for screening categories, as some of the projects listed below may trigger a full ESIA in some countries.
[39] If these are located in a sensitive environment, e.g. the project involves the clearing of mangroves, then they should be considered category A projects.

- construction or operation causing increase in traffic in rural roads.

- Social:
  - project activities that may have minor adverse impact on physical cultural resources;
  - economic and physical displacement – affecting fewer than 20 people or impacting less than 20 per cent of any one community's or individual farmer's or household's assets;
  - projects resulting in short-term public health and safety concerns; and
  - projects requiring a migrant workforce for construction or seasonal workers for construction, planting and harvesting.

- Rural finance:
  - projects supporting any of the above through provision of a line of credit to financial service providers.

43. **Category C:** The programme and project will have negligible or no environmental or social implications[40] – no further environmental and social analysis is required. Projects in category C generally do not require additional environmental analysis because the activities have positive environmental impacts, or negligible or minimally adverse environmental impacts:

    - technical assistance grants for agricultural research and training;
    - research;
    - extension;
    - health;
    - nutrition;
    - education; and
    - capacity- and institution-building.

1.4.2.2 Climate risk classification

44. The screening exercise is also used to determine the exposure and sensitivity of the project objectives to climate-related risks (high, moderate or low) based on available information about historic climate hazard occurrences, current climate trends, and future climate change scenarios. The screening will also assess the likelihood of the programme or project increasing the vulnerability of the expected target populations to climate hazards. In addition, the screening should examine the potential opportunities that arise from a better integration of climate issues. Guiding questions for climate risk classification can be found in annex 3. The classifications for climate risk are defined as follows.

45. **High risk:** The programme or project can be expected to be highly vulnerable to climate-related hazards and thus would benefit from an in-depth climate risk analysis as part of the design or initial implementation stage. This analysis should present

[40] Note that gender inequalities tend to be perpetuated unless active measures are taken to engage and empower women, so even though an intervention is considered category C, gender analysis and related actions will still be necessary.

recommendations for risk management – for example, practical climate risk management measures that can be integrated into the project design and implementation phases and could be used to mobilize climate finance for the cofinancing of targeted risk reduction and adaptation/mitigation measures. Some examples of high-risk projects include:

- projects that promote agricultural activity on areas subject to extreme climatic events, such as flooding, drought, tropical storms or heat waves;
- projects where climate scenarios for the area foresee changes in temperature, rainfall or extreme weather that will adversely affect project impact, sustainability or cost over its lifetime;
- projects that make investments in low-lying coastal areas/zones exposed to tropical storms;
- projects that makes investments in glacial areas and mountain zones;
- projects that promote agricultural activity in marginal and/or highly degraded areas that have increased sensitivity to climatic events (such as on hillsides, deforested slopes or floodplains);
- projects in areas in which rural development projects have experienced weather-related losses and damages in the past (resulting from prolonged droughts or floods); and
- projects that establish infrastructure in areas with a track record of extreme weather events (e.g. cassava processing in areas exposed to flooding or storms, a dairy plant in a floodplain, a grain storage silo in a zone that is prone to tropical storms, rural roads in flood-prone areas, and water points in drought-prone areas).

46. **Moderate risk:** The programme or project can be expected to be moderately sensitive to climate risks and thus requires a basic integration of climate issues to be undertaken during the project design phase. This process should result in practical adjustments under the project to reduce losses and damages from climate hazards to IFAD's client group and capitalize on opportunities to strengthen local risk-management capacities. Examples of a moderate risk project are:

    - projects that target groups entirely dependent on natural resources (such as seasonal crops, rainfed agricultural plots, migratory fish stocks) that have been affected by in the last decade by climate trends or specific climatic events;
    - projects where climate variability is likely to affect agricultural productivity (crops, livestock and fisheries) access to markets and/or the associated incidence of pests and diseases for the project target groups;
    - projects investing in climate-sensitive livelihoods that are diversified;
    - projects investing in infrastructure that is exposed to infrequent extreme weather events;

- projects investing in institutional development and capacity-building for rural institutions (such as farmer groups, cooperatives) in climatically heterogeneous areas;
- projects that have the potential to become more resilient through the adoption of green technologies at a reasonable cost;
- projects with opportunities to strengthen indigenous climate risk management capabilities;
- projects with opportunities to integrate climate resilience aspects through policy dialogue to improve agricultural sector strategies and policies;
- projects with potential to integrate climate resilience measures without extensive additional costs (e.g. improved building codes, capacity-building, or including climate risk issues in policy processes); and
- projects that would benefit from a more thorough climate risk and vulnerability analysis to identify the most vulnerable rural populations, improve targeting, and identify additional complementary investment actions to manage climate risks.

47. **Low risk:** The programme or project is not likely to be vulnerable to climate risks and thus voluntary measures could be incorporated into the detailed design and implementation phases based on the SECAP project assessment recommendations. These projects generally focus on investments which do not have a direct physical or geographical interface with climate hazards, such as the development of a microfinance institution.

48. In practice, both the environmental and social category and climate risk classification of each project will depend on the nature and extent of the: (i) sensitivity of the project location; and (ii) magnitude of impacts as mentioned below. Where impacts are uncertain or unclear, precautionary principles should be applied. This includes specific environmental and social assessments during project implementation when necessary.

1.4.2.3 Nature and sensitivity of project location

49. The selection of an environmental and social category will depend substantially on the project setting, as the "significance" of potential impacts is partly a function of the natural and sociocultural surroundings. This is particularly true for IFAD, which tends to finance a large number of projects in marginal and ecologically fragile areas. "Sensitive areas" include protected areas (national parks, wildlife and nature reserves, biosphere reserves); areas of global significance for biodiversity conservation; natural and critical habitats also dependent on endangered species; natural forests; wetlands; coastal ecosystems, including coral reefs and mangrove swamps; small island ecosystems; areas most vulnerable to climate change and variability; lands highly susceptible to landslides, erosion and other forms of land degradation;[41] rural communities that may be vulnerable to social change and exposure to health risks; and areas that include physical cultural resources (of historical, religious, archaeological or other cultural significance). When the proposed location of a project is in

[41] May include arid and semi-arid areas.

an area where tangible cultural heritage is likely to be found, chance-finds procedures are included in the ESMP. Projects located in such "sensitive areas" may be considered for category A classification and should involve extensive community consultations because of their potentially serious negative impacts on ecosystems and the health and livelihoods of their poorer constituents.

1.4.2.4 Significance of impacts

50. Significance is a composite measure of the nature (type, intensity), magnitude (size/extent), timing and duration of an impact, as well as the attribution of importance or value to these findings, e.g. societal values.[42] There are a number of ways in which the magnitude of impacts can be measured, such as the absolute amount of a resource or ecosystem affected, the amount affected relative to the existing stock of the resource or the viability of the ecosystem, and the intensity of the impact. In addition, the probability of occurrence for a specific impact and the cumulative impact of the proposed action and other planned or ongoing actions should be considered. For example, conversion of 50 hectares of wetlands differs markedly in significance depending on its size relative to the total area of wetlands in the country or region. In addition, significance can also be measured in social terms – by the number of rural communities or villages (including livelihoods) affected positively and negatively by a proposed project (in areas that support multiple livelihoods, an intervention that might benefit a large number of crop producers might lead to a smaller number of livestock herders, fishers, hunters, etc., losing their livelihoods). Impacts should be disaggregated by sex, as well as by age and wealth, where appropriate.

1.4.2.5 Cumulative and induced impacts

51. Other current and proposed development activities within the project area, spontaneous activities spurred by a project (e.g. migration of people into or increased charcoal production in an area opened by a road project), and externalities beyond the project boundary must be taken into account. Such cumulative or induced impacts may sometimes be the primary determinant of the appropriate level of environmental analysis.

52. For community, demand-driven projects, it may be difficult to predetermine the potential adverse impacts until project implementation. Although the magnitude of impacts would depend on the scale of such activities, a cautious approach to the concern of cumulative impacts is considered essential. In such cases, the necessary environmental and social analysis and associated budget should be incorporated into project design. Such projects may be considered for category B.

[42] Sadler, B. 1996. Cited in A. Ehrlich and W. Ross, 2015. The Significance Spectrum and EIA Significance Determinations. *IAPA*, 33, No. 2: 87-97.

1.4.3 Step 2: Early design

1.4.3.1 Environment and social assessment

53. The second step in the process involves the preparation of either, or a combination of, an Environmental and Social Impact Assessment (ESIA) or Environmental and Social Management Framework (ESMF) and/or Resettlement Action Plan (RAP)/Resettlement Action Framework (RAF), an Indigenous Peoples Plan, and an FPIC/FPIC Implementation Plan for all programmes and projects classified as category A. It also involves an environmental and social analysis, including the development of the draft ESMP for all programmes and projects classified as category B. In some cases, a specific study, or ESMF, may be required for some components of category B projects, as identified in the SECAP review note. The characteristics of a good ESIA and ESMP are presented in box 2.

54. The model terms of reference for the ESIA are given in annex 5. However, the precise nature of the assessment to be undertaken will depend primarily on the nature, scale and complexity of the issues to be addressed. Ultimately, it is important that the assessment focuses on the issues identified as significant in the SECAP project assessment (consult the relevant guidance statements and relevant IFAD guidelines and how-to-do notes). The different methods and tools to carry out the environmental and social assessment and to document the results, including mitigation measures, will reflect the nature and scale of the project (see table 4).

55. The ESIA (and relevant studies) is undertaken in synchronization with the project life cycle so that the results from the ESIA and/or climate risk analysis and/or RAP can inform the project design and implementation and vice versa, thereby adding value. It is the responsibility of the Country Programme Management Team (CPMT) to ensure that the ESIA is undertaken in a manner that complies with the country's environmental laws and guidelines, fulfils the terms of reference, and meets the expectations of both IFAD and the borrower. ESIA reports are approved by the government and subsequently cleared by the relevant regional director after technical judgement has been provided by the Environment and Climate Division and the Policy and Technical Advisory Division. In cases where ESIA studies and/or resettlement have already been conducted prior to IFAD's involvement in the project, IFAD will review the existing studies and consultation process and propose additional studies to address significant environmental and social issues and/or gaps that were left out or not adequately addressed in order to meet SECAP requirements.

Box 2. Characteristics of a good ESIA and ESMP

A good Environmental and Social Impact Assessment (ESIA)

- Starts early in project development and adds value to infrastructure design and contributes to the goals of green growth and project sustainability.
- Identifies data requirements based on a defined scope that focuses on likely impacts and excludes those that are irrelevant.
- Integrates environmental, climate change, economic and social analyses.
- Involves key stakeholders and affected people from the outset of the process in a meaningful way.
- Provides information for decision-making in a clear and usable manner, taking into account the views and concerns of affected parties, local communities and relevant agencies.
- Recommends, in coordination with the programme/project design team, feasible changes in design and implementation which are both sustainable and cost-effective, while enhancing the resilience of (rural) livelihoods to weather-related events and other shocks and stresses through the sustainable use/management of natural assets along with social protection measures.
- Includes an Environmental and Social Management Plan, with mitigation and monitoring actions, budgetary requirements and the institutional responsibilities for implementing them clearly presented for each significant risk and impact.

A good Environmental and Social Management Plan (ESMP)

- Starts early in project design and implementation or subproject development and ensures the integration of project specific mitigating, enhancing and monitoring requirements. The scope and level of details is proportionate to the number and complexity of the measures required to ensure environmental and social sustainability.
- Is required for all category A and category B projects.
- For category B project, it is included in the SECAP review note in the form of a matrix. The matrix is finalized at design. In some cases, the matrix is updated during implementation or a new one developed (mostly for subprojects).
- Sets out actions to implement mitigation measures and monitoring and reporting measures on performance, institutional and organizational arrangements, capacity development and training tailored to scope and extent of mitigation measures, implementation schedule and cost estimates presented for each risk and impact.
- Should address measures for information disclosure, grievance redress mechanism, and the process for continued consultation and participation of affected people during project implementation.
- Is incorporated into bidding document and construction contracts as necessary.
- Is flexible, as its actions may be subject to change based on feedback received during project implementation and/or in response to unexpected impacts not earlier predicted.

1.4.3.2 Climate risk analysis

56. Depending on the climate risk categorization (see section 1.4.2.2), it may be necessary to conduct an in-depth analysis (for projects with high climate risk) or a basic climate risk analysis (for projects with moderate climate sensitivity). The approach taken is determined by the CPMT (with support from regional climate and environmental specialists) based on the results of the screening exercise. The climate risk analysis should be undertaken in

parallel with the full design of a programme or project in order to inform the design and decision-making processes.

57. For projects classified as “high” climate risk, an in-depth climate risk analysis (see model terms of reference in annex 8) can help to examine the nature of climate and disaster hazards in the geographical location of the programme or project, and examine the exposure and sensitivity of project-affected communities, ecosystems and critical infrastructure to these hazards. This climate risk analysis will be informed by any existing broader agricultural risk management analysis (e.g. by the World Bank or by the Platform for Agricultural Risk Management) or project-level risk analysis to ensure the right prioritization and consistency with other sources of risk. Based on this analysis, potentially highly regrettable decisions should be avoided, and practical risk management and adaptation measures can be defined that can be integrated into the project design. These can include technical innovations, such as climate information or early warning systems, or the expansion of landscape-level approaches to create natural buffer zones. When appropriate, they can also include diversification strategies (on- and off-farm) and risk transfer solutions such as insurance. Emissions from projects with significant mitigation potential will be quantified using existing tools (such as the EX-ACT tool developed by the Food and Agriculture Organization of the United Nations – FAO) and methodologies, as appropriate. Based on the high climate sensitivity of the project design, additional financing may be required from dedicated funds (such as the Adaptation Fund, Global Environment Facility, Least Developed Countries Fund, Special Climate Change Fund, Green Climate Fund) to finance these complementary actions.

58. For projects classified as “Moderate” climate risk, a basic climate risk analysis can be carried out early in the design stage to identify the general types and trends of climate hazards in the project area and delineate adjustments in project design to help avoid losses and damages from these hazards to IFAD’s target beneficiaries. An important approach with this type of project is to capitalize on possible opportunities to strengthen climate-resilient development by “doing things differently” within the available financing envelope, e.g. by improving land-use planning, adjusting the content of capacity-building actions, or adopting more robust building codes.

1.4.4 Step 3: Late design

59. The third step in the SECAP assessment process is a critical review of the draft ESIA/ESMF and climate risk analysis reports (and other relevant draft documents such as RAPs or RAFs) and incorporation of their recommendations into the project design documentation (see figure 2). Prior to appraisal, ESIA/ESMF reports and other relevant documents should be made available at a public place, accessible to interested and affected groups and local non-governmental organizations for review and feedback in a timely manner and in accordance with the country’s regulations (see sections 1.3.5 and 1.3.6). The final design mission should critically review all the comments and recommendations of the draft ESIA and climate risk analysis reports (and other relevant documents or frameworks), including any outstanding issues identified by the quality enhancement and quality assurance panels (see annex 7 for questions to be answered in the technical review of the ESIA), and discuss

these with the government and all interested and affected parties, especially affected rural communities.

60. The country programme manager, in conjunction with the CPMT, will ensure that the SECAP review note and/or ESIA are finalized, taking into account the feedback received and the recommendations have been adequately addressed in the final project design and respective project design report. This may include alterations to the project design, incorporation of additional preventive actions and/or mitigation measures, suggested loan covenants, supervision requirements, necessary institutional capacity-building for environmental and social management, and any specific monitoring and evaluation requirements. The applicability of international standards, such as those of the World Commission on Dams and the FAO guidelines on pesticides, dams and other relevant safeguard issues, is typically an integrated part of the issues addressed by the respective CPMT and project quality enhancement. The ESIA/ESMF, RAP/RAF and climate risk analysis reports (and other relevant documents) are part of the Project Life File.

1.4.5 Step 4: Loan negotiations

61. The fourth step in the process involves negotiation of the financing agreement for the project, which takes place between IFAD and the government (see figure 2). To enhance environmental and social sustainability, the financing agreement may include clauses, covenants and provisions specifying appropriate or any outstanding environmental and social actions that the government commits to taking – such as compliance with international standards, implementation of the project ESMP, and any other management instruments such as RAPs, environmental and social approvals, local permits, resettlement compensations – in the context of the implementation phase, as necessary. The financing agreement forms the basis for monitoring the environment and social performance of the project.

1.4.6 Step 5: Board approval

62. The fifth step in the SECAP project assessment process involves review and approval of project documentation by IFAD's Executive Board. The Executive Board reviews the President's report and recommendations on the project proposal. For category A projects, the final ESIA/ESMP report (and relevant documents) is made available as per the IFAD Policy on the Disclosure of Documents. In cases where the Executive Board raises specific environment and/or social-related concerns that have not been addressed adequately, both the President's report and the project design report must be revised to take these issues into account.

1.4.7 Step 6: Project implementation

63. The sixth step in the process is implementation of the project by the borrower/recipient, with supervision and implementation support by IFAD. This helps to ensure that recommended social, environmental and climate adaptation/mitigation actions/measures contained in the ESMP, RAP, IPP and other relevant loan covenants are effectively implemented. This includes monitoring and reporting compliance (screening, disclosure,

consultation, etc.) with IFAD's environmental and social policies, as appropriate. SECAP, as an integral part of every project, will be assessed during supervision through corporate systems (Operational Results Management System, ORMS) independently from the risk categorization. Where there are many subprojects, monitoring becomes a challenge. Where appropriate, the borrower will be required to engage stakeholders, including third parties, to complement project monitoring information. If deemed necessary by IFAD/borrower, an environmental and social audit will be undertaken (see model terms of reference in annex 11). Careful attention beyond normal supervision over the life of a project should be given to category A and climate risk "high" projects and those category B projects deemed to require a high level of focus on SECAP requirements.

64. In the event of non-compliance with IFAD requirements or the emergence of serious environmental and social issues or risks during project implementation, the CPMT, in collaboration with relevant national authorities and project staff, must ensure that appropriate ameliorative action is undertaken to implement preventive and corrective measures, and follow up on these actions to ensure their effectiveness. This includes focus on strengthening the capacity of national regulatory agencies and structures to monitor environmental and social considerations and enhance decision-making. For example, in many countries, the national environmental protection agency can monitor the compliance with the environmental legislation, but only if the mandate is clear and adequate resources are allocated to do so.

1.4.8 Step 7: Project completion and ex post ESIA

65. The seventh and final step in the process is project completion reporting and ex post evaluation of the project environmental and social impacts (see figure 2). Completion reports of all projects should provide a specific analysis of the impact of social, environmental and climate issues (may include risk management and disaster preparedness) arising from project implementation and provide insight into any problems and resolutions that have occurred over the life of the project. The analysis should take special note of views expressed by rural beneficiaries. For category A projects, an ex post ESIA may be undertaken as part of project completion, as appropriate. Such an exercise will address the effectiveness of the environmental, social and climate measures associated with the project. In addition, the adequacy of the ESIA and climate risk analysis and the application of the RAP (including FPIC) will be assessed. The exercise should include extensive community consultations leading to consent.

1.4.9 Additional financing

66. The steps outlined above also apply to additional financing of projects. If the project was approved prior to 2015, a key action is to update the former environmental and social review note into a SECAP review note taking into account SECAP requirements, particularly issues such as FPIC, economic and physical resettlements, safety of dams, physical and cultural resources and community health. The SECAP review note should also include the climate risk classification and take into account the new activities and components, geographical expansion, assessments of performance in relation to environmental and

social risk management activities, as well as whether scaling up of activities and potential cumulative impacts are envisaged. If the project was approved after 2015, an update of the SECAP review note is required in cognizance of the issues outlined above. An adequate budget should be allocated accordingly to manage environmental, social and climate risks effectively. This provides an opportunity to access environment and climate funds.

CHAPTER 2. INTEGRATING SOCIAL, ENVIRONMENTAL AND CLIMATE ISSUES INTO RESULTS-BASED COUNTRY STRATEGIC OPPORTUNITIES PROGRAMMES AND COUNTRY STRATEGY NOTES

2.1. Introduction

67. IFAD's country programmes serve as an operational platform for the Fund to help partner countries in identifying what works – be it an international or local innovation or a known good practice – and how together to bring it to the desired scale. Both the results-based country strategic opportunities programme (RB-COSOP) and the country strategy note (CSN) are the key documents that IFAD and partner countries use to describe the way they plan to collaborate in the medium term and how they will deploy their resources to achieve agreed objectives and results. In addition to defining strategic objectives and targets, RB-COSOPs/CSNs specify the thematic focus of the country programme and the way in which cross-cutting issues will be addressed. The RB-COSOP and CSN are the first entry point for the mainstreaming process. For this reason, RB-COSOPs and CSNs are considered critical instruments for mainstreaming environmental, social, health and climate change considerations in a country's investment opportunities.

68. The RB-COSOPs and CSNs therefore represent a unique opportunity to conduct, if necessary, the SECAP preparatory study and integrate the findings into an overall strategy aiming at contributing to rural transformation and sustainable economic growth.

69. The Operational Procedures on Country Strategies were revised in 2016,[43] and therein recognize that the integration of social, health, environmental and climate change considerations in a country's growth and poverty reduction strategy (including its agriculture sector strategy) would improve the quality of IFAD's response. SECAP requires that the concept notes attached to the respective RB-COSOP assign the project a preliminary environmental/social category and climate risk classification.

2.2. Supporting the design of RB-COSOPs and CSNs

70. IFAD's approach for integrating social, health, environmental and climate issues in these documents has been refined on the basis of practical experience and established "good practice" emerging from SECAP preparatory studies[44] conducted in the period 2015-2016. A compendium of the SECAP preparatory studies is found on IFAD's website.[45] Lessons learned from developing them show that the study needs to be closely linked with the respective RB-COSOP/CSN planning and budgeting process and, where feasible, executed (if required) in conjunction with or in parallel to other preparatory studies that influence

[43] www.ifad.org/documents/10180/7559802d-6a3a-4b05-8fae-bd067c256847.

[44] Burundi, Colombia, Ethiopia, Guatemala, India, Indonesia, Lao People's Democratic Republic, Malawi, Pakistan, Philippines, United Republic of Tanzania, Turkey and Uzbekistan.

[45] xdesk.ifad.org/sites/gef/knowledgemanagement/studiesandreviews/ECCA/Forms/AllItems.aspx.

the design of RB-COSOPs/CSNs. Some benefits of SECAP preparatory studies are: (i) providing broader, upstream and more long-term strategic environmental, social and climate change perspective to inform the RB-COSOP design; (ii) identifying new opportunities, including environmental and climate funds; (iii) identifying capacity-building needs and ensuring stakeholder engagement in decision-making; and (iv) facilitating transboundary collaboration on specific areas.

71. The SECAP preparatory study does not substitute for a project-specific social, environmental and climate change assessment; however, it can reduce the need and limit the scope of the latter, particularly when conducted at the RB-COSOP/CSN preparation stage when the project pipeline is planned. The preparatory study should be tailored to country circumstances and the scope and depth of the exercise be proportionate to the nature of IFAD's planned interventions in the proposed RB-COSOP/CSN cycle. The SECAP preparatory study is informed by existing institutional and context analysis, country programme evaluations/country strategy programme evaluations, lessons learned by other development partners, and existing environmental, social and climate change studies (such as the strategic environmental and social assessment, institutional and context analysis) in the same country, as and where available.

2.3. The four steps for the SECAP preparatory study

72. **First step: Assess the need for the preparatory study.** In some cases, the Country Programme Management Team (CPMT) in charge of the RB-COSOP/CSN preparation may decide[46] that extra research and work are needed to ensure that the environment, social and climate dimensions affecting the development of a country are fully understood to inform RB-COSOP/CSN design. Where a RB-COSOP/CSN is planned or sufficient country information already exists – for example, where a country environmental analysis, climate change impact study and/or a Strategic Environmental and Social Assessment for the country have been prepared – the CPMT may consider conducting a light desk study.

73. **Second step: Plan the preparatory study.** Lessons learned from past SECAP preparatory studies show that their planning and budgeting process needs to be closely linked with that revised for the preparation of the RB-COSOP/CSN and, in particular and where feasible, with that of other preparatory studies expected to feed the design of an RB-COSOP/CSN. The Environment and Climate Division will endeavour to provide technical support as necessary. Further, given the relatively limited resources IFAD has at its disposal for SECAP preparatory studies and RB-COSOP/CSN designs, it is important to highlight that the scope and depth of such studies must be tailored to country circumstances and be proportionate to the nature of IFAD's planned interventions in the proposed country. Where feasible, the previous SECAP preparatory study (or previous Environmental and Climate Change Assessment) can be validated and amended as necessary. A new detailed SECAP preparatory study may be required only if dramatic changes have occurred, or the

[46] Check whether country legislation requires a strategic environmental assessment (SEA) for new agricultural policies, plans and programmes, and/or check whether an SEA has already been conducted for the proposed project development area so that the findings can be used to inform the SECAP preparatory study.

environmental and social laws/regulations have changed making the study mandatory. annex 12 provides the model terms of reference for a SECAP preparatory study. Tables 5 and 6 provide the basic principles and key features, respectively, of the SECAP preparatory study.

74. **Third step: Assess the scope of the preparatory study.** A key lesson from existing SECAP preparatory studies is the diversity of country programme "needs". A flexible approach is recommended; some RB-COSOPs/CSNs require a full background study, others require only a specialist to join the RB-COSOP/CSN design process without the need for a separate study, while others may not need additional expertise at all[47] and require only the IFAD review process. The CPMT should decide on how such needs can be best met. Supporting materials for the preparatory studies can be found in annexes 13 to 15. Screening is carried out to decide whether it is appropriate to conduct a SECAP preparatory study. An important part of this exercise is the identification of clear objectives and what would be the role of the study. During screening, it is encouraged to identify and engage with key stakeholders, including the relevant government authorities and proposed target groups, as necessary.

75. **Fourth step: Prepare the preparatory study report.** A key lesson is to provide an in-depth understanding of the social, environmental and climate change risks that might potentially affect the proposed IFAD programme. The study should propose measures to mitigate adverse impacts and optimize positive effects, and include monitoring and evaluation indicators of desired outcomes. The study should benefit from evaluation findings of the respective country programme. The results of the study should be presented as an appendix to the COSOP report. Box 3 provides the basic principles of an SECAP COSOP preparatory study.

[47] Existing reports and studies may already provide much of the information needed for integrating social, environmental and climate issues in the RB-COSOP/CSN design. This could include reports from ongoing IFAD and other projects and studies carried out by other donors and research organizations.

2.4. SECAP RB-COSOP/CSN preparatory study

Box 3. Basic principles for the conduct of a SECAP preparatory study for an RB-COSOP/CSN

To ensure a good contribution to the quality of a RB-COSOP/CSN, the study should:

- have a clear definition of its scope and objectives;
- assess the socio-economic and cultural profile, including key issues relating to disadvantaged or vulnerable groups, conflict, migration, employment and livelihoods;
- analyse current trends in the natural resource base, including the country's dependence on it;
- assess current vulnerability to climate change and priority adaptation needs;
- assess the effectiveness of all relevant country frameworks and capacities (policy, institutional, legal and regulatory) for agriculture, environmental, social and climate policy, planning, and for management;
- make reference to the country's international commitments to environmental, social, health, climate change and pollution control;
- identify the development opportunities that the environment, social situation and climate change present in the specific country context, including strategic issues/risks of concern (from the global and national level to the local level) to financing priorities;
- address the linkages and trade-offs between social, health, environmental and economic considerations and identify alternative options RB-COSOP/CSN proposes, for example, different methods of irrigation and crop types;
- engage a wide range of stakeholders, including relevant government authorities, to ensure that they contribute to the process and commit to the required actions and mitigation measures identified. Special efforts should be made to involve the rural communities themselves, if possible, and, in particular, rural women, youth, elderly, ethnic minorities, marginalized groups and indigenous peoples;
- be transparent throughout its preparation process, while its funding should be well communicated;
- be cost-effective by combining missions and pooling expert resources;
- include indicators to monitor the influence and effectiveness of its findings and make recommendations for the country's programme development; and
- build staff and stakeholder capacities to make the best use of the study findings to inform RB-COSOP/CSN design.

Source: Adapted from OECD, 2006.

76. SECAP preparatory studies for the RB-COSOP/CSN can help strengthen country programme performance through the following:

(i) strengthen institutional capacity and promote ownership for environment and natural resource management (ENRM), health, gender and climate change at the country level;

(ii) influence the shift towards clean, green and resilient development;

(iii) influence the shift towards socially equitable and beneficial developments;

(iv) enhance policy dialogue, e.g. on transboundary issues, early warning, disaster risk management;

(v) facilitate scaling up of proven ENRM and adaptation/mitigation practices solutions;

(vi) highlight guidance to both the critical environmental/social assessments and climate risk analysis required at the project level; and

(vii) identify opportunities for investment that could be financed by environment and climate funds for enhanced results and impact.

77. Table 6 illustrates key features of SECAP preparatory studies that can be tailored to specific circumstances and IFAD's needs. The earlier the identification of the need of a preparatory study, the more effective it will be in orienting the RB-COSOP/CSN design.

Table 6. Key features of a SECAP preparatory study and contributions to the RB-COSOP/CSN

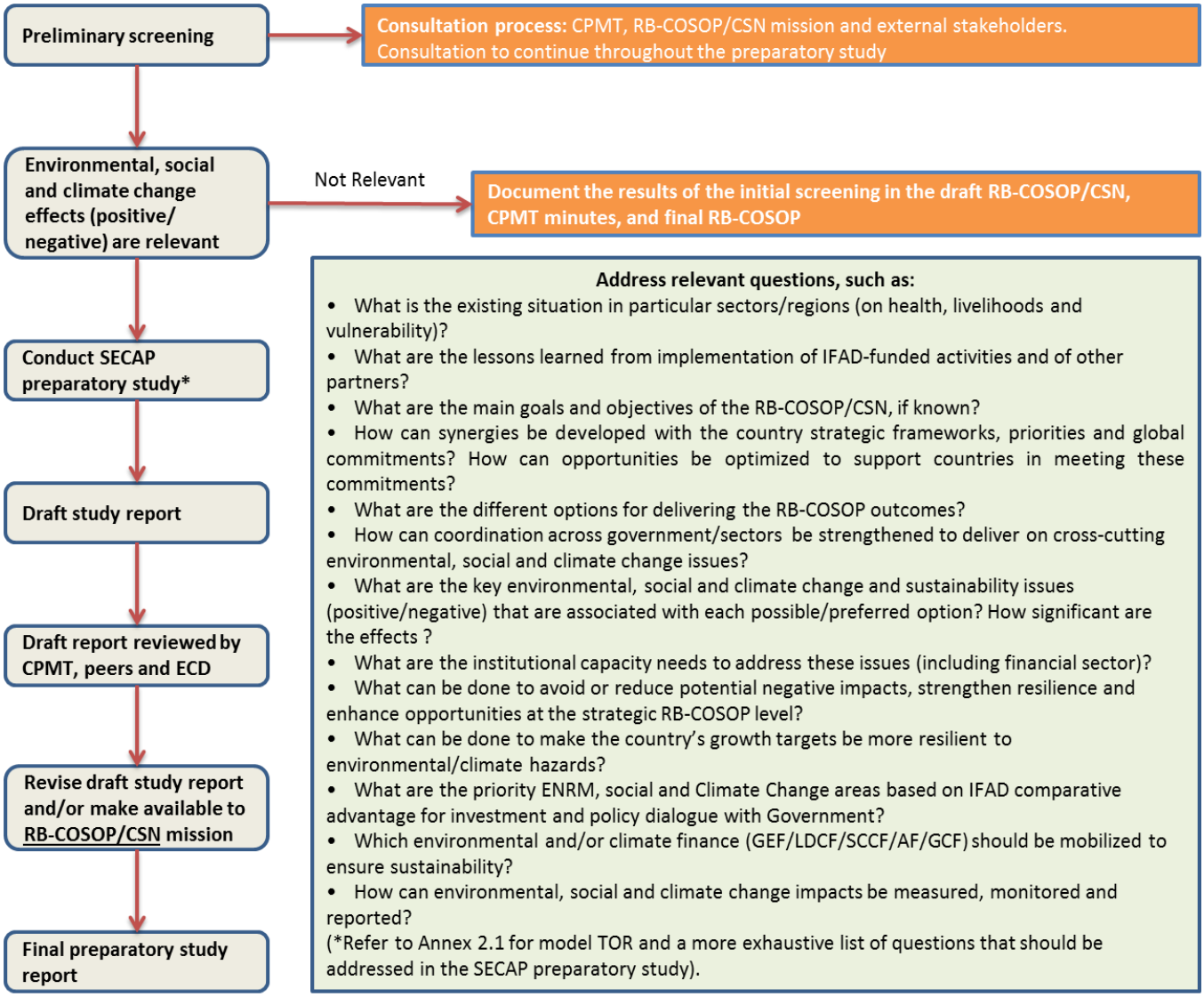
SECAP preparatory study	
Who does it?	Country Programme Management Teams with the support of the regional climate and environmental specialists and consultants, as necessary.
Objectives	To ensure that strategic social, health, environmental and climate change considerations, including opportunities, are integrated in RB-COSOP/CSN designs. To comply with borrower country's laws and policies regarding strategic environmental and social assessments for policies, plans and programmes.
Measures of success	Social, health, environmental and climate change considerations are systematically addressed in the RB-COSOP/CSN strategic objectives throughout the RB-COSOP/CSN document and attached concept notes. Lessons learned regarding environmental, social and climate issues from IFAD (and partner) funded activities are scaled up in future investments.
Level of effort and costs	Varies on the basis of available information and assessments, in-country initiatives and the characteristics of interventions that the new RB-COSOP/CSN proposes. IFAD may cover the costs.
Process/steps/inputs	
Measures	Determine institutional strengths and weaknesses. Identify limits of acceptable change or environmental and social quality objectives for the project. Identify key environmental, climate change, health and social dimensions, including benefit enhancement opportunities, risks of potential negative impacts, and institutional arrangements for risk management for each scenario. Analyse the cumulative impacts against the identified limits of acceptable change or quality objectives. Recommendations/suggestions on these aspects would be included in RB-COSOPs/CSNs, and also flag the gaps in information that project-level assessments need to fill in.

	Identify investment opportunities to be financed through environment and climate funds.
Stakeholder engagement	Put in place mechanisms to ensure that stakeholders (especially IFAD target groups and all relevant government authorities) are fully engaged in consultation processes and their inputs and concerns are addressed.
Institutionalizing SECAP requirements through the preparatory study	Assess related SECAP knowledge and institutional capacity within the country and raise awareness at all levels. Seek information and/or feedback from government and key partners at the country level (United Nations Development Group, United Nations Development Assistance Framework, etc.), and undertake studies relevant to scale or scope of investment proposals in question. Obtain commitment from all relevant government ministries, departments and agencies to implement the required enhancement and mitigation measures.
Disclosure	Make the results available, including investment options early enough to influence RB-COSOP/CSN decision-making and inspire future planning.
Identify key performance indicators	Identify indicators for measuring progress and identify accountabilities as part of the RB-COSOP/CSN results framework and the Results and Impact Management System (RIMS).
Budget	Allocate and include in the RB-COSOP/CSN design the cost of proposed activities (environment, social, health and climate-related activities). Identify need to access environmental and climate funds.
Review	Review the draft RB-COSOP/CSN and attached concept notes to determine the level of integration of environmental, social, health and climate change considerations from the environment, and social and climate issues from the SECAP preparatory study. Ensure the concept notes mention the preliminary environmental/social category and climate risk classification and provide the requisite justification.
Monitoring	Monitor environmental, social, health and climate change related activities over the longer term to improve future IFAD support.

***Source*: Adapted from OECD, 2006.**

78. Figure 4 provides the process that is typically taken in identifying the need for a SECAP preparatory study.

Figure 4. Steps in the development of a full SECAP preparatory study for RB-COSOPs/CSNs†



Notes: AF: Adaptation Fund; CPMT: Country Programme Management Team; CSN: country strategy note; ECD: Environment and Climate Division; ENRM: environment and natural resource management; GCF: Green Climate fund, GEF: Global Environment Facility; LDCF: Least Developed Countries Fund; RB-COSOP: results-based country strategic opportunities programme; SCCF: Special Climate Change Fund; SECAP: Social, Environmental and Climate Assessment Procedures; TOR: terms of reference.†The United Nations Development Assistance Framework process could provide a starting point for understanding donor priorities of the various sectors, as well as offer opportunities for synergies with ongoing initiatives in the respective country. Important basic sources of information are the Country Environmental Analysis, National Adaptation Programmes of Action (on climate change), national Poverty and Vulnerability Assessments, and the National Communication to the United Nations Framework Convention on Climate Change. Active cooperation with other development partners during the development of the RB-COSOP/CSN is encouraged.

Annex 1. Glossary

Alternatives assessment: The consideration of potential alternatives in an Environmental and Social Impact Assessment (ESIA) is one of the most critical elements when determining the scope of the ESIA. Consideration of alternatives provides an opportunity for an objective, scientific evaluation of all the environmental, social, technical and economic consequences of different project options. There are many different categories of alternatives that can be considered:

- site (e.g. position of agroprocessing plant, fields);
- route (e.g. powerlines, roads, pipelines);
- crops (e.g. types, variety);
- input (e.g. power source, agrochemicals);
- scale (e.g. small-scale growers, large commercial farms); and
- design (e.g. building height, screens, colour).

Baseline data: Data that describe issues and conditions at the inception of the Environmental and Climate Change Assessment. Serves as the starting point for measuring impacts, performance, etc., and is an important reference for evaluation (OECD, 2006).[48]

Biodiversity: The variability among living organisms from all sources, including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems (Convention on Biological Diversity, 1992)[49].

Chance find: The discovery of previously unknown cultural heritage resources, particularly archaeological resources, which are encountered during project construction or implementation.

Critical habitat: A subset of both natural and modified habitat that deserves particular attention. Critical habitat includes areas with high biodiversity value, including habitat required for the survival of critically endangered or endangered species; areas having special significance for endemic or restricted-range species; sites that are critical for the survival of migratory species; areas supporting globally significant concentrations or numbers of individuals of congregated species; areas with unique assemblages of species or that are associated with key evolutionary processes or provide key ecosystem services; and areas having biodiversity of significant social, economic or cultural importance to local communities (Asian Development Bank, 2009).[50]

Cumulative effects/impacts: Incremental impact of an action when added to other past, present or reasonably foreseeable actions regardless of what agency or person undertakes such actions. Cumulative impact can result from individually minor but collectively significant actions taking place over a period of time (OECD, 2006). There are a number of different types of cumulative effects:

[48] www.oecd.org/gov/ethics/37390076.pdf.
[49] https://www.cbd.int/convention/articles/default.shtml?a=cbd-02
[50] www.adb.org/sites/default/files/institutional-document/32056/safeguard-policy-statement-june2009.pdf.

Type	Characteristic	Example
Time crowding	Frequent and repetitive effects	Forest harvesting exceeds rate of regrowth
Time lags	Delayed effects	Bioaccumulation of persistent organic pollutants from pesticides
Space crowding	High spatial density of effects	Numerous small dams on a river
Cross-boundary	Effects occur away from the source	Atmospheric pollution and acid rain
Fragmentation	Change in landscape pattern	Fragmentation of habitat by agriculture
Compounding effects	Effects arising from multiple sources or pathways	Synergistic effect of different types of pollutants on stressed ecosystems or human populations
Indirect effects	Secondary effects	Forest areas opened up as a result of a new highway
Triggers and thresholds	Fundamental changes in system functioning	Climate change

Economic displacement: Loss of land, assets, access to assets, income sources, or means of livelihoods (Asian Development Bank, 2009).

Ecosystem approach: The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. It is based on the application of appropriate scientific methodologies focused on levels of biological organization which encompass the essential processes, functions and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of ecosystems (Convention on Biological Diversity). Ecosystem services include all outputs from agricultural activities, including outputs as diverse as provision of water, food production and climate regulation.

Environment: Environment is considered to include biophysical resources and conditions on which rural communities and their activities depend, and which in turn they influence.

Health: Health is a multidimensional concept which encompasses a complete state of physical, mental and social well-being and not merely the absence of disease or infirmity (adapted from the World Health Organization, 1946).[51] In the context of IFAD projects, health issues can be categorized according to the cause of driver, including problems derived from nutrition and food security, exposure to pesticides and hazardous substances and other.

[51] apps.who.int/gb/bd/PDF/bd47/EN/constitution-en.pdf?ua=1.

Innovation: The development of improved and cost-effective ways to address problems and opportunities. These encompass institutional and technological approaches as well as pro-poor policies and partnership.

Involuntary resettlement: Considered when affected persons or communities do not have the right to refuse land acquisition or restrictions on land use that result in involuntary displacement (adapted from World Bank, 2016).[52]

Mainstreaming: For the purposes of these procedures, mainstreaming is "the process of systematically integrating IFAD's environment and social values and principles into all domains of the Fund's operations to promote both specific and general development outcomes of rural poverty reduction". It implies the integration of climate, environmental and social risk management approaches and tools in the programme and project cycle in order to better harmonize economic, environmental, climate change and social concerns.

Multiple-benefit approach: Multiple-benefit approaches to sustainable agriculture seek to reduce risk and build climate resilience through more diversified landscapes, while at the same time reducing poverty, enhancing ecosystems and biodiversity, increasing yields and reducing greenhouse gas emissions.

Physical cultural resources: Also known as "cultural heritage", "cultural patrimony", "cultural property", physical cultural resources are defined as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. These may be located in urban or rural settings, and may be above or below ground, or under water. Physical cultural resources are important as sources of valuable scientific and historical information, as assets for economic and social development, and as integral parts of a people's cultural identity and practices (World Bank, 2006).[53]

Physical displacement: Refers to relocation, loss of residential land, or loss of shelter (Asian Development Bank, 2009).[54]

Resilience: Amount of change a system can undergo without changing state (IPCC, 2001).[55] It can apply to both natural and social systems.

Risk: The combination of the probability of an event occurring and the severity of its consequences or expected losses.

Screening: A process to determine whether or not a development proposal requires an ESIA and/or a climate risk analysis, and if so, what type and level of assessment(s) is appropriate.

[52] _ewebapps.worldbank.org/apps/IP/IPPublications/Final_Version_Involuntary%20Resettlement_05_17_2016.pdf.
[53] http://siteresources.worldbank.org/JAPANINJAPANESEEXT/Resources/515497-1196389582361/4451844-1216950323362/080901_lintner_op411.pdf.
[54] https://www.adb.org/sites/default/files/institutional-document/32056/safeguard-policy-statement-june2009.pdf.
[55] www.ipcc.ch/ipccreports/tar/wg2/index.php?idp=689.

Scoping: The process of determining the spatial and temporal boundaries, project alternatives and key issues to be addressed in the ESIA (DEAT, 2004). The key issues are identified through public consultation and stakeholder engagement, desktop studies and field visits.

Social: Encompasses the following: demographic structure (age, gender, population growth), settlement and migration patterns, education and skills, local economy, employment (formal and informal sectors), livelihoods and livelihood options, use of ecosystem services, land use and land tenure (property rights), community health and well-being (including health status and drivers of disease), gender roles and equality, culture (shared beliefs, customs, values, language and religion), cultural heritage (physical and spiritual), local governance structures and decision-making, community services (schools, tertiary institutions, health care, water and sanitation, power supply, communications), indigenous knowledge.[56] Specifically covers gender equality and women's empowerment, youth and indigenous peoples as well as other socio-economic determinants of poverty, vulnerabilities and capacities within the framework of IFAD's policies on Gender Equality and Women's Empowerment (2012), Targeting (2006), Engagement with Indigenous Peoples (2009) and Youth Policy Brief (2013).

Sensitivity: The degree to which a system is vulnerable to change, either adversely or beneficially, as a result of the impacts of the project or from climate-related stimuli. The effect of the latter may be direct (e.g. a change in crop yield in response to a change in the mean, range or variability of temperature) or indirect (e.g. damages caused by an increase in the frequency of coastal flooding due to sea level rise).

Stakeholders: Those who may be interested in, potentially affected by, or influence the implementation of a programme or project. In the context of environmental, social and climate assessments applied to development cooperation, stakeholders may include: (i) internal staff (environment and non-environment) in donor agency and other departments in the donor country; (ii) the partner country government; (iii) other donor agencies; (iv) non-governmental organizations; and (v) civil society (OECD, 2006).

Sustainable land management: Can be defined as conservation and utilization of land resources such as soils, water, animals and plants to meet the material, aesthetic and spiritual needs of humankind today, while ensuring the future productive potential of these resources, as well as the maintenance of their environmental functions (Bouma et Al., 2002).[57]

Targeted groups: To be identified for each project through a gender-sensitive poverty and livelihood analysis using available data, filling information gaps as needed, and always incorporating the views of poor women and men expressed directly or through their organizations. As guiding principles, in all operational situations IFAD will: focus on rural people who live in poverty and food insecurity and are able to take advantage of the opportunities to be offered; expand outreach to proactively include those who have fewer assets and opportunities (in particular, marginalized groups such as minorities and indigenous peoples); have a special focus on women within all identified target groups, reasons of equity, effectiveness and impact; recognize that relative wealth or poverty can

[56] Adapted from Vanclay, 2003. https://www.iaia.org/uploads/pdf/IAIA-SIA-International-Principles.pdf
[57] Land quality indicators of sustainable land management across scales J. Bouma available at : ftp://131.252.97.79/Transfer/ES_Pubs/ESVal/spatial_scale/bouma_02_LULC_and_Scale.pdf.

change rapidly; identify and work with like-minded partners at all levels; pilot and share learning on effective approaches to targeting hard-to-reach groups; and build innovative and complementary partnerships with actors that can reach target groups that IFAD cannot reach with the instruments at its disposal (Targeting Policy).

Vulnerability: The characteristics and circumstances of a system (e.g. gender and social exclusion, household, community, ecosystem, value chain) that make it susceptible to the damaging effects of a hazard (adapted from UNISDR, 2007).[58]

[58] www.unisdr.org/files/8020_03Birkmann1.pdf.

Annex 2. Lessons learned from Social, Environmental and Climate Assessment Procedures (SECAP) implementation between January 2015 and March 2017

The lessons below were drawn from analysing the: (i) results of two 2015/2016 staff surveys on SECAP; (ii) Country Programme Management Team process; (iii) eight SECAP learning events; and (iv) challenges and opportunities to address SECAP compliance in the design and implementation of the result-based country strategic opportunities programmes (RB-COSOP) and projects. The lessons have been grouped into clusters that mirror the IFAD project cycle and may involve some overlap.

1. The application of SECAP has contributed to a more comprehensive and systematic approach to identifying and managing environmental, social and climate risks, and their impacts. Alignment with SECAP requirements emphasizes the value of adhering to IFAD's policies, strategies and priorities.[59]
2. A comprehensive SECAP preparatory study is useful for mainstreaming environmental and climate concerns into RB-COSOPs. It orients the entire country programme to address the underlying environmental and climate issues that affect the agriculture and rural development sector.
3. An abridged SECAP preparatory study provides useful information to enhance the mainstreaming of environmental, social and climate issues in the design of country strategy notes (CSNs). The findings of the study help define the strategic objectives and specify the thematic focus of the country programme.
4. A robust SECAP process requires attention to social dimensions such as land tenure, community health, safety, labour, vulnerable and disadvantaged groups and historical factors, particularly in relation to natural resource management. It not only looks at compliance (e.g. managing potential negative impacts), but expected positive impacts and ways to maximize opportunities. The new guidance screening questions for categorization and classification should be an integral part of concept note development and should be revisited during each stage of the design cycle.
5. Preparation of SECAP review notes in advance of project design missions provides design teams with an assessment of the risks and opportunities presented by changing ecological and climatic conditions. This allows design teams to anchor project design within site-specific biophysical and climate conditions and – with the support of environment and climate experts – enables these teams to articulate a targeted set of project interventions.
6. Early inclusion of technical expertise (with an appropriate balance between social, environmental and climate risk) in Country Programme Management Teams (CPMTs) and supervision missions can provide valuable insights that improve the quality of project design, supervision and implementation support (see table 5, section 1.4). It is important to identify, manage and address all risks irrespective of the project's environmental or social category and climate risk classification based on the risk mitigation hierarchy.
7. Each project design report needs to incorporate the main findings of the SECAP review note in the main text. Rather than providing recommendations, a SECAP review note should list

[59] Applicable IFAD policies, strategies and procedures include the land policy, indigenous peoples policy, Environment and Natural Resource Management policy, disclosure policy, climate change strategy, and complaints procedures.

agreed-upon mitigation measures and monitoring approaches, which need to be fully integrated into the component description and financing details. Linkages between the SECAP review note and other appendices in the project design report, such as those on targeting and social inclusion, need to be strengthened in order to highlight all social considerations.

8. The Environmental and Social Management Plans (ESMPs), prepared prior to project implementation, should include detailed information on mitigation measures, responsibilities, institutional capacity, monitoring and timelines, along with adequate budgets. This information allows ESMPs to be "living documents" that can adapt to new circumstances. Monitoring the implementation of ESMPs as part of the supervision missions ensures the achievement of intended results and outcomes through coding and tracking of recommended and budgeted activities and actions, and incorporating them into the annual budgeting process.

9. In-depth studies (e.g. Environmental and Social Impact Assessment, Environmental and Social Management Framework, Resettlement Action Framework and climate risk assessments) for category A projects and high projects and specific category B projects require time and sufficient budgets.[60] Selection of consultants with safeguard expertise and knowledge of the country or region can contribute to generating knowledge. More efforts are required to identify specialists with expertise on specific dimensions of social issues such as community health, safety, resettlement and cultural resources.

10. Meaningful consultations with stakeholders improve the quality of impact assessments and strengthen community buy-in to ensure sustainability. Such engagement also reduces the risk of reputational damage. However, special attention should be given to avoiding raising expectations and providing an enabling environment for unbiased feedback. Facilitated feedback sessions and the development of adapted materials with key findings presented in local languages may be necessary.

11. Design teams may be inclined to avoid an "A" categorization, which could exclude certain development opportunities. To ensure that project design teams have the required tools to manage potential risks, additional resources must be made available.

12. Experience with ensuring that rural financial services have the capacity to develop effective ESMPs (appropriate to the nature and scale of the portfolio) is still limited. Further guidance is needed for rural financial services to apply environmental and social risk management to subprojects in order to meet SECAP requirements.

[60] The average cost for a SECAP preparatory study ranges from US$20,000 to US$25,000, for category A projects from US$20,000 to US$30,000, and for a high classification project from US$30,000 to US$50,000.

Annex 3. Guiding questions for environment, social and climate risk screening

IFAD classifies all projects into one of three environmental and social categories (A, B or C) and one of three climate risk classifications (high, moderate and low). Where IFAD is jointly financing a project with other agencies, IFAD will cooperate with the partner agency and agree on a common approach for the assessment and the categorization of the project.

Determination of the category and classification will also depend on the national requirements and the existing national capacity to promote and implement environmental and social mitigation measures. The determination is informed by existing assessments of national frameworks and capacities.

A positive response to any question between 1 and 22 (see questions below) will categorize the project as A. Similarly, a positive response to question 23 to 38 will categorize the project as B. In case all answers are negative, the project will be categorized as C.

This list of questions can be used at different stages of the project design and should be used in conjunction with the respective guidance statements.

The checklists for environmental and social and climate risks will:

1. initially be filled in during concept development to help guide in the identification of opportunities and possible risks and activities that will need to be considered in the project design;
2. be attached to the Social, Environmental and Climate Assessment Procedures (SECAP) review note; and
3. be reviewed during project design phases and updated as required.

Project title:			
IFAD project no.:		**Version of checklist:**	
Country:		**Date of this version:**	
Checklist prepared by (name, title and institution)			

In completing the checklist, both short- and long-term impacts should be considered. This list of questions can be used at different stages of the project cycle and should be used in conjunction with the respective guidance statements. Capitalize on information based on reports and field visits during design. The details of the elaboration on issues that arise as a result of screening should be clearly articulated in the SECAP review note.

Guiding questions for environment and social screening	Yes/no	Comments/explanation
Category A – the following may have significant and often irreversible or not readily remedied adverse environmental and/or social implications.		
Project location		
1. Would the project develop any wetlands? (Guidance statement 1)		
2. Would the project cause significant adverse impacts to habitats and/or ecosystems and their services (e.g. conversion of more than 50 hectares of natural forest, loss of habitat, erosion/other form of land degradation, fragmentation and hydrological changes)? (Guidance statements 1, 2 and 5)		
3. Does the proposed project target area include ecologically sensitive areas,[61] areas of global/national significance for biodiversity conservation, and/or biodiversity-rich areas and habitats depended on by endangered species? (Guidance statement 1)		
4. Is the project location subjected to major destruction as a result of geophysical hazards (tsunamis, landslides, earthquakes, volcanic eruptions)?		
Natural resources		
5. Would the project lead to unsustainable natural resource management practices (fisheries, forestry, livestock) and/or result in exceeding carrying capacity. For example, is the development happening in areas where little up-to-date information exists on sustainable yield/carrying capacity? (Guidance statements 4, 5 and 6)		

[61] "Sensitive areas" include: protected areas (national parks, wildlife/nature reserves, biosphere reserves) and their buffer zones; areas of global significance for biodiversity conservation; habitats depended on by endangered species; natural forests; wetlands; coastal ecosystems, including coral reefs and mangrove swamps; small island ecosystems; areas most vulnerable to climate change and variability; lands highly susceptible to landslides, erosion and other forms of land degradation, areas that include physical cultural resources (of historical, religious, archaeological or other cultural significance), and areas with high social vulnerability.

6. Would the project develop large-scale[62] aquaculture or mariculture projects, or where their development involves significant alteration of ecologically sensitive areas?		
7. Would the project result in significant use of agrochemicals which may lead to life-threatening illness and long-term public health and safety concerns? (Guidance statement 14)		
8. Does the project rely on water-based (groundwater and/or surface water) development where there is reason to believe that significant depletion and/or reduced flow has occurred from the effects of climate change or from overutilization? (Guidance statement 7)		
9. Does the project pose a risk of introducing potentially invasive species or genetically modified organisms which might alter genetic traits of indigenous species or have an adverse effect on local biodiversity? (Guidance statement 1)		
10. Does the project make use of wastewater (e.g. industrial, mining, sewage effluent)? (Guidance statement 7)		
Infrastructure development		
11. Does the project include the construction/ rehabilitation/upgrade of dam(s) and/or reservoir(s) meeting at least one of the following criteria? - more than 15 metre high wall; - more than 500 metre long crest; - more than 3 million m^3 reservoir capacity; or - incoming flood of more than 2,000 m^3/s (Guidance statement 8)		
12. Does the project involve large-scale irrigation schemes rehabilitation and/or development (more than 100 hectares per scheme)?[63] (Guidance statement 7)		

[62] The size threshold to trigger an Environmental and Social Impact Assessment (ESIA) may vary based on the country context and fragility of specific locations. Some countries have regulations on minimum size (usually ranging from a unit area of 10 to 50 hectares) and these will be adopted where they exist. However, where there are no standards, it is proposed to use 25 hectares as an aquaculture unit size to trigger an ESIA.

[63] The size threshold to trigger an Environmental and Social Impact Assessment (ESIA) may vary based on the country context and fragility of specific locations. Some countries have regulations determining size of irrigation development requiring a full ESIA and these will be adopted where they exist. However, where there are no standards, it is proposed to use 100 hectares as an irrigation development unit size to trigger an ESIA.

13. Does the project include construction/ rehabilitation/upgrade of roads that entail a total area being cleared above 10 km long, or any farmer with more than 10 per cent of his or her private land taken? (Guidance statement 10)		
14. Does the project include drainage or correction of natural waterbodies (e.g. river training)? (Guidance statement 7)		
15. Does the project involve significant extraction/diversion/containment of surface water, leaving the river flow below 20 per cent environmental flow plus downstream user requirements? (Guidance statement 7)		
Social		
16. Would the project result in economic displacement[64] or physical resettlement of more than 20 people, or impacting more than 10 per cent of an individual household's assets? (Guidance statement 13)		
17. Would the project result in conversion and/or loss of physical cultural resources? (Guidance statement 9)		
18. Would the project generate significant social adverse impacts to local communities (including disadvantaged and vulnerable groups and indigenous people) or other project-affected parties? (Guidance statement 13)		
Other		
19. Does the project include the manufacture and transportation of hazardous and toxic materials which may affect the environment? (Guidance statement 2)		
20. Does the project include the construction of a large or medium-scale industrial plant?		
21. Does the project include the development of large-scale production forestry? (Guidance statement 5)		
Rural finance		
22. Does the project support any of the above (Question 1 to Question 21) through the provision of a line of credit to financial service providers? (Guidance statement 12)		

[64] Economic displacement implies the loss of land, assets, access to assets, income sources, or means of livelihoods (guidance statement 13).

Category B – the following may have some adverse environmental and/or social implications which can be readily remedied.		
Location		
23. Does the project involve agricultural intensification and/or expansion of cropping area in non-sensitive areas that may have adverse impacts on habitats, ecosystems and/or livelihoods? (Guidance statements 1, 2 and 12)		
Natural resource management		
24. Do the project activities include rangeland and livestock development? (Guidance statement 6)		
25. Does the project involve fisheries where there is information on stocks, fishing effort and sustainable yield? Is there any risk of overfishing, habitat damage and knowledge of fishing zones and seasons? (Guidance statement 4)		
26. Would the project activities include aquaculture and/or agriculture in newly introduced or intensively practiced areas? Do project activities include conversion of wetlands and clearing of coastal vegetation, change in hydrology or introduction of exotic species? (Guidance statement 4)		
27. Do the project activities include natural resource-based value chain development? (Guidance statements 1, 6 and 12)		
28. Do the project activities include watershed management or rehabilitation?		
29. Does the project include large-scale soil and water conservation measures? (Guidance statements 1 and 5)		
Infrastructure		
30. Does the project include small-scale irrigation and drainage, and small and medium dam subprojects (capacity < 3 million m^3)? (Guidance statements 7 and 8)		
31. Does the project include small and microenterprise development subprojects? (Guidance statements 12 and 13)		
32. Does the project include the development of agroprocessing facilities? (Guidance statements 2, 6 and 12)		

33. Would the construction or operation of the project cause an increase in traffic on rural roads? (Guidance statement 10)		
Social		
34. Would any of the project activities have minor adverse impacts on physical cultural resources? (Guidance statement 9)		
35. Would the project result in physical resettlement of 20 people or less, or impacting less than 10 per cent of an individual household's assets (Guidance statement 13)?		
36. Would the project result in short-term public health and safety concerns? (Guidance statement 14)		
37. Would the project require a migrant workforce or seasonal workers (for construction, planting and/or harvesting)? (Guidance statement 13)		
Rural finance		
38. Does the project support any of the above (Question 23 to Question 37) through the provision of a line of credit to financial service providers? (Guidance statement 12)		

Guidance for categorization

"Yes" response to any questions between 1 and 22	Environmental and social category is A	Environmental and Social Impact Assessment or an Environmental and Social Management Framework (full or specific) is required depending on availability of information. Also, some specific questions would require the below specific actions: • Yes to question 16 – A Resettlement Action Plan or a Resettlement Action Framework is required depending on availability of information. • Yes to question 17 – A Physical Cultural Resources Management Plan is required that includes provisions for managing chance finds at implementation. • Yes to question 18 – Free, prior and informed consent should be obtained/Free, Prior and Informed Consent Implementation Plan is required depending on whether the affected communities are identifiable. In instances where indigenous peoples are affected an Indigenous Peoples Plan is required. A Social Impact Assessment is required.

		• Yes to question 8 and/or question 15 – A water resources management plan for the project is required. • Yes to question 7, question 9 and/or question 19 – A pest management plan is required.
"No" response to all questions between 1 and 22 and "Yes" response to any questions between 23 and 38	Environmental and social category is B	An environmental and social analysis to develop an Environmental and Social Management Plan (ESMP) is required.
"No" response to all questions between 1 and 38	Environmental and social category is C	No further analysis is required.

In case projects fall under both category A and B, the highest category will be taken as reference. The determination of the project category and classification will depend on the magnitude of impacts and would depend on the scale of such activities; a cautious approach to the concern of cumulative impacts is considered essential. In such cases, the necessary environmental and social analysis and associated budget should be incorporated into project design. Such projects may be considered for category B.

Determining the environmental and social category A, including the extent of assessments and studies to be conducted, will also take into account available information, i.e. recent studies and assessments, including other initiatives in the country, to the extent these are relevant to the proposed project.

Declassification (from A to B or from B to C) may also be possible in case negative externalities are being addressed by other projects or activities implemented by third parties.

Guiding questions for climate risk screening

	Yes	No	Additional explanation of "yes" response*
1. Is the project area subject to extreme climatic events, such as flooding, drought, tropical storms or heat waves?			
2. Do climate scenarios for the project area foresee changes in temperature, rainfall or extreme weather that will adversely affect the project impact, sustainability or cost over its lifetime?			
3. Would the project make investments in low-lying coastal areas/zones exposed to tropical storms?			

4. Would the project make investments in glacial areas and mountains zones?			
5. Would the project promote agricultural activity in marginal and/or highly degraded areas that have increased sensitivity to climatic events (such as on hillsides, deforested slopes or floodplains)?			
6. Is the project located in areas where rural development projects have experienced significant weather-related losses and damages in the past?			
7. Would the project develop/install infrastructure in areas with a track record of extreme weather events?			
8. Is the project target group entirely dependent on natural resources (such as seasonal crops, rainfed agricultural plots, migratory fish stocks) that have been affected by in the last decade by climate trends or specific climatic events?			
9. Would climate variability likely affect agricultural productivity (crops/livestock/fisheries), access to markets and/or the associated incidence of pests and diseases for the project target groups?			
10. Would weather-related risks or climatic extremes likely adversely impact upon key stages of identified value chains in the project (from production to markets)?			
11. Is the project investing in climate-sensitive livelihoods that are diversified?			
12. Is the project investing in infrastructure that is exposed to infrequent extreme weather events?			
13. Is the project investing in institutional development and capacity-building for rural institutions (such as farmer groups, cooperatives) in climatically heterogeneous areas?			
14. Does the project have the potential to become more resilient through the adoption of green technologies at a reasonable cost?			
15. Does the project intervention have opportunities to strengthen indigenous climate risk management capabilities?			

16. Does the project have opportunities to integrate climate resilience aspects through policy dialogue to improve agricultural sector strategies and policies?			
17. Does the project have potential to integrate climate resilience measures without extensive additional costs (e.g. improved building codes, capacity-building, or including climate risk issues in policy processes)?			
18. Based on the information available would the project benefit from a more thorough climate risk and vulnerability analysis to identify the most vulnerable rural population, improve targeting and identify additional complementary investment actions to manage climate risks?			

*The additional explanation, where possible, will provide the justification for classification. Consideration should be given particularly to provide additional explanations for questions 13 to 17.

Guidance for classification

"Yes" response to any of the questions 1 to 7	The climate risk classification is high	A detailed analysis is required
"Yes" response to any of the questions 8 to 17	The climate risk classification is moderate	A basic analysis is required
"Yes" response to question 18	GHG assessment	For example, EX-ACT tool
"No" response to almost all questions	The climate risk classification is low	No further analysis is required, but voluntary measures can be incorporated

Annex 4. SECAP review note (outline)

The preliminary screening exercise[65] of each project is conducted by the design team at the project concept stage. The screening[66] is based on a literature review (and in some cases field visits) and the analysis resulting from such screening exercise should be reflected in the relevant section of the concept note and the preliminary SECAP review note. The justification for the preliminary environmental/social category and climate risk classification is articulated in sections G and H, respectively, of the concept note.

The earlier the analysis of the issues (environmental, social and climate change), alternatives and recommended measures are made available and integrated closely with the economic, financial, institutional, social and technical analyses of a proposed project, the more effective they will be in informing the SECAP review note and the project design. The analysis: (i) should be undertaken by relevant experts in the design team while in-country in order to allow for stakeholder engagement and data collection to inform the findings and the resultant recommendations for the design in an integrated way; and (ii) is embedded in the project design report, prior to the quality enhancement panel discussions. **In regard to the latter, the review note simply needs to cross-reference the relevant paragraphs and tables/checklists in the accompanying documents.**

The SECAP review note is subject to modification based on the design considerations recommended by the quality enhancement and quality assurance panels, and the finalization of relevant studies, such as the Environmental and Social Impact Assessment, Environmental and Social Management Plan (ESMP), Resettlement Action Plan/Resettlement Action Framework, climate risk analysis, and feasibility studies, prepared for category “A” and “high” risk projects and ESMP for all category “B” projects. The recommendation proposed by relevant studies must be embedded in the project design. The SECAP review note is an integral part of appendix 12 (Compliance with IFAD Policies) of the project design report and should follow the outline contained in the box below.

[65] Starts at the project concept stage and is finalized during early design.
[66] See annex 3 – Guiding questions for environment, social and climate risk screening.

Topics to be considered: It is advisable that in each of the descriptive sections below it is indicated: (i) whether any of the characteristics represent environmental, climate change and social constraints and/or opportunities; or (ii) whether any might be a determinant in the design and delivery of results/impacts of the intervention. Overall length – up to five pages (recommended).

1. Major landscape characteristics and issues (social, health, environmental and climate change)	1.1 Sociocultural context	Livelihoods, indigenous peoples, physical cultural resources, migration patterns, health, pollution, resettlement, land tenure, conflicts over the use of resources, transboundary issues, and institutional capacity for natural resource management.
	1.2 Natural resources and their management	Status of land and water resources, vulnerability of natural resources that livelihoods depend on. The potential for exploitation, and analysis of ecosystem carrying capacity (land degradation, unsustainable agricultural practices).
	1.3 Climate	Explicit reference to current climate, observed trends, projections and expected climate risks in the target zones (frequency and intensity of extreme weather events and increasing climate variability).
2. Potential project's impacts and risks	2.1 Key potential impacts of the project on social and environmental	Assess potential social, health and environmental impacts with attention to socially and ecologically sensitive areas, along with existing opportunities and related risk management measures. The assessment applies the mitigation hierarchy: if avoidance is not possible, reduce and minimize potential adverse impacts; if reduction or minimization is not sufficient, mitigate and/or restore, and as a last resort compensate for residual impacts.
	2.2 Climate change and adaptation	Analyse the potential impact of climate change on achieving the project objectives. Different perspectives should be highlighted (women, men, indigenous, etc.).
3. Environmental and social category	Make reference to the country's relevant environmental and social standards and regulations and assess their adequacy in addressing risks. Identify the category for the project and provide the justification for categorizing it into one of the three categories (A, B or C), while taking into account the type, location, risk and scale of the project and the nature and magnitude of the potential risks.	
4. Climate risk category	Identify the climate risk classification for the proposed project and provide the justification for recommending one of three classifications (high, moderate, low). Indicate where information is not available and any assumptions that have been made.	
5. Recommended features of project design and implementation	5.1 Environment and social mitigation measures	Changes and/or measures to the design to eliminate or reduce potential adverse environmental, health and social impacts, or make better use of opportunities and synergies/complementarities between relevant national frameworks/environmental conventions/key actors.
	5.2 climate change adaptation and mitigation	Elaborate on potential adaptation measures building on existing opportunities, identify any mitigation measures, and describe how the interventions will integrate them.

	5.3 Multi-benefit approaches	Opportunities to promote green growth and multiple-benefit approaches for production, poverty reduction and the environment, including maintaining ecosystem services and biodiversity, reducing emissions, improving health, and building climate resilience.
	5.4 Incentives for good practices	Incentives as tangible benefits for relinquishing unsustainable practices (farming, processing, etc.), reducing risk, and helping smallholders adopt adaptation and mitigation measures, including funding.
	5.5 Participatory processes	Suitable participatory approaches/tools to enhance stakeholder engagement and draw on local understanding of problems and potential solutions.
6. Analysis of alternatives	Alternatives, including environmental objectives and reasons for choosing the best option. Provide where relevant a comparison of alternatives based on environmental and social impacts, climate change vulnerability, technical feasibility and cost.	
7. Institutional analysis	7.1 Institutional framework	Analyse the environmental policies and decision-making chain of command to also include other sectors (e.g. health, gender ministries) that are key actors in environmental and social management, and identify needs for a gap analysis in case of SECAP requirements against cofinanciers, as necessary. These include climate change policies, ratification of relevant conventions, multilateral environmental agreements (Intended Nationally Determined Contributions, multilateral environmental agreements as United Nations Framework Convention on Climate Change, United Nations Convention on Biological Diversity, United Nations Convention to Combat Desertification, RAMSAR), relevant ministries and agencies, country environmental legislation, relevant national strategic frameworks, and any specific social, health, environmental, and climate priorities/guidance of cofinanciers).
	7.2 Capacity-building	Identify community and other stakeholder capacity-building needs, supported by effective information, education and communication activities. Include specific training (natural resource management and/or climate-related issues), supervision and reporting needs, including measures (i.e. environmental approvals, local permits, compliance with specific international guidelines and standards, compensation, grievance mechanisms, etc.) to be considered in the financing agreements.
	7.3 Additional funding	Elements for linking the loan with multilateral or bilateral environmental and climate financing sources (i.e. Global Environment Facility, Least Developed Countries Fund and Special Climate Change Fund funding, Green Climate Fund, Adaptation for Smallholder Agriculture Programme) for enhanced results and
8. Monitoring and evaluation (M&E)	M&E recommendations, including how participatory environmental, social and adaptation monitoring will be ensured and provide specific indicators with special emphasis on the linkage between poverty, environment and climate change. Aligned with the project M&E system.	

9. Further information	Highlight additional information (if needed) or studies (includes land assessment, social assessment and climate risk) needed to take better advantage of the opportunities offered by the environmental and social context.
10. Budgetary resources and schedule	Identify and provide the estimated time frame and budget for the Environmental and Social Impact Assessment/Environmental and Social Management Framework, as well as for additional activities, such as a Resettlement Action Plan/Resettlement Action Framework, Indigenous Peoples Plan, free, prior and informed consent, and climate risk analysis.
11. Stakeholder consultations	Specify details of stakeholder engagement, including consultations with marginalized poor sections of the communities and including women's groups, identifying the key comments provided and how the responses to those comments have been incorporated into project design for effective implementation.

Annex 5. Model terms of reference for the Environmental and Social Impact Assessment for (name of project/country)

The model terms of reference provided in the box below is intended for an Environmental and Social Impact Assessment (ESIA) to be prepared in the framework of the formulation of a programme or project which has an environmental classification of category A. The terms of reference can also be adapted to be used as guidance during ex post facto ESIA for category A projects. Explanations and sections to be completed according to country conditions are highlighted in italics.

Model terms of reference for the Environmental and Social Impact Assessment

A. Background information

Include a brief summary of the poverty-environment nexus and its impact on rural livelihoods. Also include details of the project area, including target groups, and highlight how that special focus will be on indigenous peoples, women, the elderly and youth, and other vulnerable groups within the above categories.

Objectives of the Environmental and Social Impact Assessment (ESIA) study

The objectives of the ESIA study are to: (i) identify key linkages between rural poverty and environmental management and assess the potential impacts of the proposed project on the environment, including the natural resource base, and on the health and livelihoods of communities in the target areas; (ii) explore and identify key options for advancing environmental and social sustainability; and (iii) recommend key opportunities to influence IFAD support towards environmental sustainability and climate smart development. This study is intended to provide options that would inform and thus improve decision-making of the (title of project) design.

The key environmental, climate change and social[67] issues to be addressed include: (i) challenges faced to meet its rural development and food security goals; (ii) the major environmental, climate change and social issues that have a bearing on IFAD operations in the country; (iii) the direct impact and multiplier effect the mentioned issues have on the resilience of ecosystems and productivity of land and crops, natural resource management and rural livelihoods; (iv) the scale of volatility and risks resulting from climate variability and change; and (v) regulatory frameworks that are related to rural development and environmental issues.

The expected results of the ESIA are: (i) an assessment of the environmental (and social/economic/institutional) issues, particularly in the agricultural and rural development sector; (ii) the identification of links with relevant ongoing initiatives; and (iii) the provision of

[67] The term "social" encompasses the following: demographic structure (age, gender, population growth), settlement and migration patterns, education and skills, local economy, employment (formal and informal sectors), livelihoods and livelihood options, use of ecosystem services, land use and land tenure (property rights), community health and well-being (including health status and drivers of disease), gender roles and equality, culture (shared beliefs, customs, values, language and religion), cultural heritage (physical and spiritual), local governance structures and decision-making, community services (schools, tertiary institutions, health care, water and sanitation, power supply, communications), indigenous knowledge. (Adapted from Vanclay, 2003, https://www.iaia.org/uploads/pdf/IAIA-SIA-International-Principles.pdf)

specific measures and recommendations, including opportunities to optimize adaptation/mitigation, environmental management and resource use in the project area. These results will shed light on the important opportunities available to build resilience and adaptive capacity in the programme and/or project under development.

The IFAD Climate Change Strategy (2010) calls for the Fund to more systematically respond to increasing demands from clients for technical support and innovation to better respond to climate change. This means analysing and addressing climate change challenges during the early stages of programme and project design to build resilience and adaptive capacity.

The IFAD Environment and Natural Resource Management Policy (2011) stresses that project designs present new opportunities to improve systematic integration and scaling up of environment and natural resources of the portfolio. Such integration can help IFAD to engage in new and strengthened partnerships with specialized entities for enhanced and effective responses to issues associated with natural resources and climate variability and change. The policy provides ten core principles and eleven best practice statements to guide IFAD interventions.

Key principles to guide the ESIA

(i) Look beyond the traditional "do no harm" safeguard approach to mitigating environmental, climate change and social risks towards "doing good" through greater focus on sustainability and management of environmental (rehabilitating degraded lands, seizing adaptation/mitigation opportunities, and transforming the underlying inequalities that undermine inclusive development, etc.) and social impacts and risks.
(ii) Begin the ESIA with a scoping exercise with the objectives of identifying the relevant social, environmental and climate change issues, so that baseline data collection and impact assessment can focus on them and not expend unnecessary resources on issues that are irrelevant.
(iii) Place strong emphasis on identifying opportunities and develop an appropriate management plan to enhance results and impact.
(iv) Identify and compare alternative scenarios to recommend realistic proposals for design mission consideration.
(v) Identify capacity needs required to effectively implement the environmental and social management plan.
(vi) Produce a realistic monitoring plan, including appropriate change management processes.
(vii) Engage affected communities and other interested stakeholders throughout the ESIA process, from scoping to review, and comment on the final draft report prior to decision-making.

B. Scope of work

The ESIA study will consider economic, natural, and social aspects in an integrated way. The study will take into account obligations of the country pertaining to project activities under relevant (country) laws and international agreements and standards, best practices, and realities of the institutional capabilities related to environment, climate change and social aspects. Specifically, this will involve: (i) engaging a broad range of stakeholders at the national, regional and communal levels, involving as much as possible vulnerable groups wherever possible; (ii) identifying and addressing cross-border issues, as necessary; (iii) identifying environmental, climate change and social opportunities and constraints; (iv) ensuring integration with

international, regional (where relevant), and national policy and planning structures; and (v) including an effective system for monitoring of climate, environmental and social issues. Mainly secondary information and qualitative methods will be used for conducting the ESIA study.

On the basis of data drawn from: (i) IFAD reports, government studies and documentation from other development partners; (ii) field visits and meetings with relevant stakeholders in the country; and (iii) making use of the suggested questions and best practice statement on environment and natural resource management (see annexes 1 and 2), the consultants will perform the following key tasks:

Task 1: Determining the scope of the ESIA

Based on the Environmental Review Note, preliminary investigation of the project area, consultation with affected communities and concerned, knowledgeable groups or agencies, identify the project- affected area, determine the scope of the ESIA, and prepare a scoping report. Following a review by the implementing agency(ies) and IFAD, the scoping report will be disclosed in accessible locations for comment by interested and affected parties.

The scoping report shall include the terms of reference for the detailed ESIA and for any specialist studies that may need to be conducted, for example, on social impact assessment (see model terms of reference in annex 9) and health (see model terms of reference in annex 10), water resources and hydrology, soil chemistry, and biodiversity.

Task 2: Description of the environmental conditions of the project area

Guided by the scoping report, assemble, evaluate and present all relevant baseline data on the relevant environmental, climate change and social characteristics of the project area. This should include rates of forest and other natural resources degradation, physical cultural resources, river flow and sedimentation rates, pollution sources and levels, social structure and health. Data should be relevant to decisions about project location, design, operation or mitigation measures.

Physical environment: topography, climate, soils, rainfall, infrastructure, etc.

Biological environment: flora, fauna, endangered species, sensitive sites and significant natural sites.

Sociocultural environment: population dynamics, land use, poverty trends, community structure and capacities, community health (current status and drivers of disease), sources of livelihoods, distribution of income, cultural heritage, goods and services, level of community environmental awareness on issues such as poverty and environment, biodiversity loss and climate change, extent of community dependence on natural resources for livelihoods and access to basic services, such as water and sanitation, health-care facilities, schools, agricultural extension, electricity, transport, and markets.

Task 3: Legislative and regulatory considerations

Review current national policies, legislation and legislative instruments governing environmental management, health, gender and social welfare, climate change (mitigation and adaptation) and governance with their implementation structures; identify challenges; and recommend

appropriate changes for effective implementation. Review and summarize all relevant international treaties and conventions on the environment, climate change, health, gender, labour and human rights to which the country is a signatory. Identify needs for a gap analysis in case of SECAP requirements against co-financing as necessary.

Task 4: Determination of the potential environmental, climate and social impacts and risks of the proposed project

Identify and analyse (quantitatively, where possible) opportunities, potential positive and negative impacts (e.g. associated with the development of small dams, use of pesticides), direct and indirect impacts and immediate and long-term impacts of the proposed project on the natural resource base, livelihoods and community structure and health. Include an assessment of the potential cumulative impacts of the proposed programme or project and other activities that are ongoing, planned or can reasonably be foreseen to occur in the affected area. Assess environmental, climate adaptation and social costs of these impacts. The assessment applies the mitigation hierarchy: if avoidance is not possible, reduce and minimize potential adverse impacts; if reduction or minimization is not sufficient, mitigate and/or restore, and as a last resort compensate for residual impacts.

Task 5: Analyse alternatives and recommend modifications to the project design

Conduct an analysis of possible project alternatives which may be considered relating to the site, route, process, inputs, design, crops, irrigation systems, etc. Identify and agree on a set of evaluation criteria to use in the alternatives assessment, including social, biophysical, technical and financial indicators, and determine a scoring system or use one of the multicriteria analysis tools available. Recommend feasible and cost-effective measures to prevent or reduce negative impacts.

Task 6: Development of an environmental and social management plan

Formulate an integrated plan to avoid, minimize, mitigate or compensate for the significant potential environmental, health and social impacts and to avoid or mitigate climate change risks. Prepare a detailed plan to monitor environmental, health and social impacts and implementation of mitigation plans developed. The plans should specify the actions to be taken for each impact, and identify the entity responsible for taking the action, the timing according to the stages of the project, and the estimated cost.

Review capacities of institutions at the national, provincial, county and sub-county levels to implement recommended activities and propose ways to strengthen them in order to effectively manage and implement mitigation and monitoring plans proposed. This should include responsibilities, staffing, equipment and training guidance.

Identify and recommend preventive measures to mitigate climate change risks and adverse environmental, health and social impacts of the project as well as who will implement them and the mitigation costs.

Task 7. Assist in inter-agency coordination and public and/or non-governmental organization (NGO) participation

Assist in coordinating the environmental and social assessment with other government agencies, in disclosure of documents in accessible locations in appropriate form and language, in obtaining

the views of local NGOs and affected groups (especially the marginalized poor), and in keeping records of meetings and other activities, communications, and comments and their disposition.

Personnel. The assignment will be undertaken by a team (add the resource persons) of international experts, with wide experience in conducting Environmental and Social Impact Assessments; and local counterparts (preferably) with good knowledge of environmental and natural resources issues, as well as social, health and gender targeting issues, in the project area. It is advisable for the team to convene a workshop or meeting to agree on the approach to ESIA work and ensure that the findings are properly integrated and coordinated into the project design.

Schedule. The assignment is planned to be undertaken over (to be determined depending on scope of work) X days between (provide timeline).

Report. The ESIA report should be concise and limited to environmental and social issues, including emerging issues. The main body of the report should be limited to findings, conclusions and recommendations supported by data collected and literature cited. Other documents used should be presented in annexes or appendices.

For the purpose of public consultation, the ESIA documentation should be translated into material that is accessible, in form and language, to the local population.

The ESIA report will be disclosed in accordance with IFAD's disclosure policy. List of data sources:

- IFAD Climate Change Strategy (2010)
- IFAD Environment and Natural Resource Management Policy (2011)
- IFAD Social, Environmental and Climate Assessment Procedures (chapter 1)
- Disaster Risk Management Guidelines
- Country evaluation report

Annex 6. Recommended format for the Environmental and Social Impact Assessment (ESIA)

The Environmental and Social Impact Assessment (ESIA) is a management tool used for better programme/project planning and design and can be considered an overall process within which an actual ESIA study itself is carried out. As such, the term ESIA can be used in several ways, as follows:

- a process which enables environmental, climate change, health and social issues to be taken into account during all stages of programme/project design and implementation;
- a formal procedure for providing environmental, climate, economic, health and social information for decision-makers who authorize the programme/project; and
- a study that identifies, predicts and evaluates the potential environmental, climate, health and social impacts and risks of programmes/projects in a systematic and objective way, recommends appropriate actions and mitigating measures, and maximizes environmental opportunities. The results of the ESIA study are presented in the form of a report (which includes the Environmental and Social Management Plan) as an appendix to the project design report.

While Environmental Impact Assessment/ESIA legislation differs among countries, the general process involves a standard sequence of steps.

The steps in IFAD's ESIA process can be presented in generalized form, as follows:

A. Pre-ESIA
   (i) Screening[68] and scoping.[69]
   (ii) Organization of study.[70]
   (iii) Approval of terms of reference for the ESIA and specialist studies.

B. ESIA study[71]
   (i) Describe the proposed project actions and their goals.

[68] The environmental, social and climate screening and scoping exercise determines whether the programme and/or project requires an ESIA or some subsidiary form of investigation. This form of screening generally relies on the use of criteria and guidance statements (see criteria in 1.5.1.1 to 1.5.1.6 in chapter 1 and the attached guidance statements). Only category A projects go through the next stage of the ESIA process.
[69] Scoping. This stage comprises the identification of issues that should be considered in the study and in what depth, by whom, how and by when. Initial scoping is carried out on the basis of the preliminary assessment and other information available on the project proposal. In some countries, procedural guidelines for scoping exist, as do requirements for the format and content of ESIAs.
[70] Organization of study. If after the review of the preliminary assessment, the competent authority determines that a full ESIA study is required, the organizational modalities (logistics, stakeholders' engagement, etc.) for the study are worked out.
[71] The ESIA study is the centrepiece of the ESIA process. The ESIA study culminates in the preparation of an Environmental and Social Impact Assessment report which also addresses climate change issues. The report, which includes the Environmental and Social Management Plan, will highlight the major impacts and possible mitigation measures, as well as alternatives to the proposal. It also forms the basis for the review and decision-making steps outlined below.

(ii) Describe the initial state of the environment, including the social, economic, cultural and health situation, in order to establish a baseline for future reference.
(iii) Identify potential impacts (environmental, social, health).
(iv) Include the main findings of the climate risk analysis.
(v) Describe alternatives considered.[72]
(vi) Predict likely impacts, including direct, indirect, reversible, irreversible and cumulative effects.
(vii) Evaluate significance and likelihood of impacts (positive and negative), and compare and evaluate alternatives.
(viii) Identify opportunities to maximize benefits and appropriate preventive actions to eliminate, reduce or mitigate negative impacts.
(ix) Prepare an environmental, social and climate management plan.
(x) Design an environmental, social and climate monitoring and evaluation programme.
(xi) Design a capacity-building programme for strengthening resilience to the environmental, social and climate change threats posed by the proposed programme/project.

C. Post-ESIA study
(i) Review of the ESIA report, including public participation consultation.[73]
(ii) Decision-making: Should the project proceed or not? [74]
(iii) Implementation of the environmental, social and climate management plan.
(iv) Compliance audit,[75] as necessary (see annex 6).

[72] Alternatives considered should include several project options and the "no action" alternative. Among the possible alternatives, the report should clearly show which alternatives were considered in detail and the rationale for that choice. Possible project alternatives can include the site, route, process, inputs, design, crops, irrigation systems, etc. Identify and agree on a set of evaluation criteria to use in the alternatives assessment, including social, biophysical, technical and financial indicators, and determine a scoring system or use one of the multicriteria analysis tools available. Unfortunately, many ESIA reports are deficient in the consideration of true alternatives to the proposed action. Identification of potential impacts should be done for all alternatives considered in detail.
[73] Review of the draft ESIA report. The report is reviewed to ensure that it provides the necessary information for decision-making. Depending on the legislative or procedural context, review may entail scrutiny by an independent body or the environmental authority in charge of the ESIA process. The draft report is also reviewed by the Country Programme Management Team. There will be provisions for public review and comment prior to appraisal. The review stage may result in revisions being made to the ESIA before it is submitted to the decision-making authority for final approval. The draft ESIA report is cleared by the relevant national authority for disclosure on the IFAD website and at the country level.
[74] Decision-making. In most countries, the ESIA report must be approved by the environmental authorities before an environmental authorization/permit/licence can be issued allowing the project to proceed. Most countries also stipulate the validity period of the environmental authorization (usually two to three years). Projects must commence within the stated time; otherwise, the proponent has to reapply for an environmental authorization. The environmental authorization usually contains a set of conditions based upon the recommendations made in the ESIA and the Environmental and Social Management Plan (ESMP). The ESIA report and ESMP must also be cleared by the respective IFAD regional division after technical inputs from the Policy and Technical Advisory Division and the Environment and Climate Division.
[75] Compliance audit. This independent study is carried out to ascertain whether the provisions contained in the ESIA study and related project financing agreement were adhered to. The audit also assesses whether the predictions contained in the ESIA study were accurate.

Depending on the ESIA procedures adopted in a particular country, the process generally involves an independent authority that has the responsibility for ensuring that the ESIA process is conducted in accordance with the legal requirements of the country. These tasks generally include: ensuring that ESIA studies are carried out for relevant projects according to pre-established screening mechanisms and the approved terms of reference; ensuring that the ESIA report contains sufficient, quality information to allow informed decision-making; and making decisions concerning whether a project may proceed and, if so, what mitigation measures are required. Monitoring compliance with the legal requirements and the commitments made in the Environmental and Social Management Plan is generally the responsibility of the implementing agency in collaboration with the environmental authority.

The ESIA should focus on the significant environmental, social, health and climate issues identified by the environmental, social and climate screening and scoping exercise. The ESIA report should be concise – the level of detail and sophistication being commensurate with the potential impacts identified in the review note. The target audience is the project design team, implementing agencies, borrowers, affected populations and relevant IFAD staff in the respective regional division and Environment and Climate Change Division. The statement/report submitted to IFAD should be prepared in any of the United Nations official languages. The final ESIA statement/report, which is attached as an appendix to the project design report, should include the following items (see the box below):

Outline of the ESIA report

Executive summary. Concise discussion of significant findings and recommended actions.

Introduction. Provide the rationale for the Environmental and Social Impact Assessment (ESIA) based on the screening exercise. Concise discussion of significant findings and recommended actions. Mention the approach and methodology taken, which may include a climate vulnerability assessment, social impact assessment and/or a health impact assessment.

Policy, legal, and administrative framework. Discussion of the policy, legal and administrative framework within which the ESIA is prepared. The legal and policy requirements of the country related to environmental, health, social and climate change issues, and the operational standards of any co-financiers should be explained, and emphasis should be given to the relevance of the project to these frameworks. The obligations of the country in terms of relevant environmental, health, social, climate change, and labour international treaties and conventions should be summarized.

Project description. Concise description of the project and its geographical, climate, ecological, social and temporal context, with particular emphasis on specific project components which are the subject of the ESIA – e.g. likely to cause positive or negative impacts – in line with the environment, social and climate screening and scoping exercise. Take into account lessons learned from previous relevant ESIAs. Describe possible future project phases.

Baseline data. Determination of the dimensions of the study area (zone of influence) and description of the relevant physical observed changes and prediction of climate change, biological and socio-economic conditions (including level of community environmental awareness),

including any changes anticipated before the programme/project commences and over the lifetime of the project. Current and proposed development activities within the project area (but not directly connected to the project) should also be taken into account. Where data are lacking or unreliable, specific reference must be made on this point. The baseline should describe the environmental, social, health, cultural and climate context in a quantitative style to allow measurement of project results.

Anticipated socio-economic impacts/risks and mitigation measures. Assessment of positive and negative social, health and economic impacts likely to result from the proposed project or project component. Specific attention should be given to maximizing opportunities, avoiding involuntary resettlement,[76] enhancing gender equality and women's empowerment, and reducing vulnerability to risks/effects of climate change and variability and other project impacts. In any case, emphasis should also be on involving key stakeholders, especially vulnerable groups and marginalized poor communities, in project design and implementation and addressing public health concerns (e.g. HIV/AIDS).[77]

Anticipated environmental impacts/risks and mitigation measures (includes climate change). Identification and assessment of the positive and negative impacts likely to result from the proposed project and associated project components and vice versa (preventive actions and/or mitigation measures, and any residual negative impacts that cannot be mitigated should be identified. Opportunities for building resilience to climatic shocks and enhancing environmental issues,[78] including promotion of global environmental benefits, should be explored. The analysis and elaboration of risks associated with climate change in the project area should be undertaken to ensure that appropriate adaptation and mitigation measures are included among the interventions, and in the project risk analysis for long-term sustainability of results. The short- and long-term positive and negative health impacts of the project on workers and affected local communities should also be identified, assessed, and appropriate mitigation measures provided in the Environmental and Social Management Plan (ESMP). The extent and quality of available data, key data gaps, and uncertainties associated with predictions should be identified/estimated. Topics that do not require further attention should be specified.

Assessment of cumulative impacts. The potential positive and negative environmental and social impacts of the programme or project, together with those of other ongoing or planned activities or activities in the same area that may reasonably be foreseen, should be identified. Effects of those other activities on the project's vulnerability to climate change, and susceptibility to pollution and other direct and indirect health impacts, should be considered. The ESIA should explain the extent to which the project's implementing agency and other relevant government authorities and non-governmental organizations (NGOs) can maximize opportunities and avoid, minimize, mitigate or compensate for cumulative impacts, and, for significant impacts beyond the

[76] Identifies, assesses and addresses the potential economic and social impacts of the project that are caused by involuntary taking of land (e.g. relocation or loss of shelter, loss of assets or access to assets, loss of income sources or means of livelihood, whether or not the affected person must move to another location) or involuntary restriction of access to legally designated parks and protected areas. Special attention should be paid to: (i) establishing a deadline for property claims; (ii) evaluating pre-resettlement living standards and assets; (iii) appropriately compensating individuals and villages that are physically or economically displaced by the said project; and (iv) conducting a fair and equitable resettlement operation.

[77] For IFAD's approach to indigenous peoples and land, see the IFAD Policy on Engagement with Indigenous Peoples and the land policy, respectively.

[78] Global environmental issues include climate change, ozone-depleting substances, international waters, land degradation and adverse impacts on biodiversity.

control of the implementing agency, the ESIA should identify the actions necessary to be taken by others.

Analysis of alternatives. Conduct a systematic comparison of the proposed investment, as well as design, site, technology and operational alternatives in terms of their potential environmental, resilience and social impacts and capital and recurrent costs and suitability under local conditions. For each of the alternatives considered, the environmental, climate adaptation, health and social costs and benefits should be quantified to the extent possible, and economic values should be attached where feasible, with attention being given to cost-effectiveness. The basis for the selection of the preferred alternative for the project design must be stated. Where possible, expand the programme's approach to address issues associated with climate change adaptation, mitigation and disaster risk management.

Recommendations for changes to programme/project design. Identification of feasible and cost-effective measures that may reduce climate vulnerability, reduce potentially significant adverse environmental, health and social impacts to acceptable levels, and estimate the residual environmental impacts; capital and recurrent costs of mitigation; and institutional, training and monitoring guidance required to implement the ESMP. Consider providing details on proposed work programmes and schedules. Such details help ensure that the proposed changes in project design can be executed in phases with previously planned activities throughout implementation. Compensatory measures should be considered if mitigation measures are not feasible or cost-effective.

Institutional aspects. Assessment of the existence, role, capacity and capability of formal and informal institutions for climate change, natural resource management, including environmental officers (at the agency and ministry level), and informal and community-level organizations. Agencies responsible for the management of health and social impacts should be included in this assessment; examples are public health departments, museum or antiquities commissions, and ministries of social welfare, women's affairs, cultural affairs, and agencies dealing with land issues. Explore opportunities for policy dialogue/reform and green growth. Based on these findings, recommendations should be made concerning the strengthening, establishment and/or expansion of such units, and the training tailored to the identified target groups, to the point that ESIA recommendations can be implemented.

Grievance procedure. This section describes the complaints procedure (both informal and formal channels), indicating the time frame and country-appropriate processes for resolving complaints about the project's environmental and social performance.

Environmental and Social Management Plan (ESMP) **(includes implementation arrangements).** Identification of the preventive actions and/or mitigation measures recommended to eliminate, reduce or mitigate climate risks and the potential adverse environmental and social impacts of the programme/project – as well as the responsible parties for implementing such actions/measures, the timing of activities in relation to stages of the programme/project, estimated costs involved, poverty-environment indicators, etc. Consider the use of climate proofing of investments.

Monitoring plan (includes performance indicators). Specification of the type of monitoring (e.g. early warning systems, participatory, environmental quality, implementation of environmental measures), who would do it, how much it would cost, and what other inputs (e.g.

personnel, training, GIS, field and/or laboratory equipment, supervision arrangements) are necessary.

General conclusions and recommendations

Appendices

(i) Composition of the ESIA study team – individual(s) and organizations. Specify professional registration and certification status (in those countries where this is required for environmental and social assessment practitioners).
(ii) References – written materials used in study preparation. This list is especially important given the large amount of unpublished documentation often used.
(iii) Record of consultations – the record of consultations for obtaining the informed views of the affected people and local NGOs should be included. The record should document the public consultation process and its influence on project design and/or implementation. The record should specify any means other than consultations that were used to obtain the views of affected groups and local NGOs. (List community individuals and organizations consulted.)
(iv) Specialist studies – include all specialist studies that were undertaken to inform the ESIA, such as ecological flows, hydrological studies, soil surveys, health impact assessment, gender assessment and climate risk analysis.
(v) Terms of reference – include the approved terms for the ESIA and specialist studies.
(vi) Authority approval – include correspondence from the environmental authorities regarding the approval of scoping reports, terms of reference, ESIA reports.

Annex 7. Technical review of an Environmental and Social Impact Assessment (ESIA)

The Environment and Climate Division and the Policy and Technical Advisory Division will review the adequacy of the ESIA report, checking especially the questions shown in the box below.

Questions for the technical review of an ESIA

- Is the executive summary adequate, with recommendations clearly stated? Including significant impacts (unavoidable or irreversible); cumulative effects of impacts; probability of predicted and evaluated impacts; appropriate mitigation measures and monitoring activities.
- Does the ESIA comply with the approved terms of reference for the study?
- Did the consultants follow the required legal process for an ESIA?
- Does the ESIA indicate how the project is compatible with other relevant policies in the country relating to environment, social, health, gender, labour, climate change, etc.?
- Are cost-effective alternatives to project interventions (location, design, technology, etc.) described and have their impacts and costs been evaluated appropriately?
- Is the poverty-environment nexus adequately addressed and linked to an integrated analysis of the environmental, social, health and climate change impacts of the project?
- Does the baseline section give an overall picture of present conditions and trends (including climate change and social predictions), and include ongoing and proposed development activities in the study area? Does it provide comments on the quality of the data and the completeness of the database? Is the baseline study adequate for decision-making?
- Does the report take into account existing risks, the degree of exposure and vulnerabilities of the target groups and their livelihoods, current climate variability and/or the potential future impacts of climate change? Is there inclusion of appropriate adaptation and disaster risk reduction measures to address potential climate change impacts?
- Is there adequate consideration for building on existing capacities, such as endogenous, community-based coping strategies and adaptive responses? Does the report explore the potential for the project to capitalize on ongoing adaptation and mitigation efforts by other development actors through partnerships?
- Do mitigating measures appear adequate to both control all significant adverse impacts and enhance project benefits? Are the institutional arrangements for implementing and monitoring the measures defined? Are the costs of implementing and monitoring all recommendations adequately budgeted in the cost tables?
- In case of direct project impacts on land and property, have the affected people or communities been properly identified, their needs evaluated, free, prior and informed consent processes conducted, and proper compensation mechanisms been set and settled?
- Have the public consultation processes (especially with the rural poor, indigenous peoples, women and other disadvantaged and vulnerable groups) been conducted in terms of the country's national ESIA laws and guidelines?

- Is there adequate documentation of community involvement (especially of the marginalized poor, women, youth, indigenous peoples and other disadvantaged and vulnerable groups), including an overview of the issues raised and their disposition? Are proposed solutions socially acceptable to target groups? Do the arrangements comply with the IFAD Policy for Engagement with Indigenous Peoples?
- Did the ESIA process comply with IFAD's Social, Environmental, and Climate Assessment Procedures and relevant policies?
- Where existing databases, planning studies, other ESIAs, scientific papers, etc., are used as information sources, are the references for these sources given and are technical terms defined where they occur?
- Has the ESIA been reviewed and accepted/approved by the competent national environmental authority?

Annex 8. Model terms of reference for a detailed climate risk analysis

The model terms of reference provided in the box below is intended for detailed climate risk analysis to be prepared in the framework of the formulation of a programme or project which has a "high" climate classification.

A. Background

The International Fund for Agricultural Development (IFAD) is an international financial institution and a specialized United Nations agency dedicated to eradicating poverty and hunger in the rural areas of developing countries. Working with poor rural people, governments, donors, non-governmental organizations and other partners, IFAD is one of the largest sources of development financing for agriculture and rural development in many developing countries.

IFAD acknowledges climate-related risks as one of the factors affecting rural poverty and as one of the challenges it needs to address. While climate change is a global phenomenon, its negative impacts are more severely felt by poor people in developing countries who rely heavily on the natural resource base for their livelihoods. As the most vulnerable and marginalized people in rural societies, smallholder farmers and herders are especially exposed to climate change. They inhabit some of the most vulnerable and marginal landscapes, such as hillsides, deserts and floodplains. They often lack secure tenure and resource rights, relying directly on climate-affected natural resources for their livelihoods.

Responding to this prioritization, the IFAD Strategic Framework 2016-2025 proposes an overarching goal to enable poor rural people to improve their food security, raise their incomes and strengthen their resilience. Consistent with this approach, IFAD's Environment and Natural Resource Management Policy also recommends greater attention to climate-related risks and resilience in order to manage environment and natural resource related shocks.

For investment projects with a projected high sensitivity to climate hazards, IFAD requires a climate vulnerability analysis, which can help to improve the targeting of investment actions to include the most vulnerable and least resilient target groups.

The analysis can help:

- improve the robustness of development investments from climate-related hazards;
- increase the resilience of development outcomes; and
- avoid investment actions which inadvertently increase vulnerability to climate hazards over the longer term.

B. Description of services provided

The objective of the consultancy is to analyse:

- the occurrence of climate-related hazards in the prospective target area of the project (including a historical analysis of hazard types, intensities, frequencies and associated losses and damages);

- the physical exposure of livelihoods, ecosystems and critical infrastructure in different locations to the most prevalent climate hazards ("hot spots" mapping);
- the key properties that determine the susceptibility of livelihoods, ecosystems and critical infrastructure in the target area to the most prevalent climate hazards (sensitivity analysis); and
- impact of climate change along the value chain, as required.

In addition to this basic vulnerability analysis, the consultancy is expected to summarize:

- projected climate change impacts in the target area, based on representative ensembles of climate models and scenarios;
- the impacts of climate change on health in project-affected communities, indicating those communities or groups who may become more vulnerable to health risks as a result of the project; and
- preliminary recommendations on how climate risks in the target area can be addressed in a larger investment programme.

C. Supervision

The consultants will work under the joint responsibility of IFAD's regional climate and environment specialist and the country programme manager.

D. Tasks, results and deliverables

The consultants will undertake the following tasks:[79]

- collection and synthesis of available biophysical and socio-economic maps and data at the targeted level (national, provincial or district);
- surface topography;
- surface hydrology (drainage patterns, catchment areas, wetness index, water availability and quality);
- flood risk areas;
- groundwater (levels, yield, water quality);
- vegetation cover (including woody and herbaceous layers) and, if available, vegetation cover trends (minimum 250 m resolution);
- rainfall variables (number of days with precipitation, rainfall intensity, mean annual precipitation, frequency of extreme events such as floods, droughts);
- temperature variables (annual temperature ranges, minimum/maximum temperatures);
- infrastructure (road networks, irrigation systems, rural roads at flood and/or erosion risk);

[79] Where possible, use the same information as that presented in the Environmental and Social Impact Assessment (ESIA) and/or ensure consistency in the data between the ESIA and the climate risk analysis.

- at-risk local communities and small producers;
- collection and analysis of historical meteorological data to delineate hazard trends and occurrences;
- collection and analysis of loss and damage data in relation to climate-related hazards;
- as necessary, discuss the findings with local stakeholders in climate-risk hot spots; and
- integration of findings with other specialist studies and the ESIA team through meetings and workshops.

The consultancy is expected to achieve the following results:

- A set of georeferenced and GIS-compatible baseline maps outlining the exposure and sensitivity of vulnerable livelihood systems and people in the target area to prevalent climate shocks and stresses;
- An analysis of available future climate scenarios for the project area. As necessary, this can be based on the development of regional climate models at a scale of less than 50 km, based on statistical or dynamic downscaling. The analysis of climate change impacts should be based on a representative ensemble of climate models and focus on implications for the programming context (e.g. climate change impacts and implications on production, harvesting, post-harvesting, access to markets and wider landscape characteristics);
- Recommendations to reduce risks to extreme events and adapt to climate variability and change. These recommendations are expected to include specific practices and technologies to increase climate resilience of the targeted farming or value chain systems, and should be verified by consultations with key stakeholders in situ to solicit bottom-up recommendations and validate the findings from the analysis.

Based on the above work and analysis, the consultants will provide IFAD with the following deliverables:

- A **vulnerability map** with a preliminary assessment of the locations and populations within the project areas that are particularly vulnerable under present climate variability and projected climate change. This map should enable prioritization of geographic areas for IFAD interventions. The set of baseline maps used for the production of this vulnerability map needs to be annexed to the analysis.
- A **technical report** explaining how the maps were produced, including key data sources, modelling assumptions, consultations undertaken and limitations of the methodology.
- A short (maximum 10 pages) **analytical report** with a set of preliminary recommendations on the measures that are proposed to reduce climate risks and vulnerabilities in the proposed project context. The findings of this report can be assimilated into the ESIA report, as necessary.

E. Timing

The activities will be carried out in a time period of eight weeks between [insert dates], including documentation, a field mission [insert dates], consultations and validation activities, writing and editing. The final version of the report must be submitted no later than [insert dates].

F. Responsiveness

Timely responses to inquiries from IFAD are a part of the contractor's standard client service. IFAD will be kept informed on an ongoing basis of any significant developments that occur at the contractor, which may affect the provision of services.

The contractor's staff will respond to all enquiries within 24 hours through the use of the most appropriate communication channel as agreed between the contractor and IFAD. If further investigation is required, the contractor will promptly notify IFAD that further action is required with periodic updates on the status of the enquiry.

G. Profile of the service provider

- Proven experience in disaster risk reduction, climate risk management, climate change adaptation or environmental and natural resource management.
- Relevant university degree or higher education.
- In-depth understanding of climate and disaster risks in country X, including existing risk management policies, frameworks and strategies.
- Previous experience in conducting risk and vulnerability assessments.
- Previous experience with participatory, community-based consultation methods.
- Experience with GIS-based mapping and the management of georeferenced data.
- Familiarity with climate change concepts, models and scenarios.
- Proven track record in related consultancy work.
- Excellent writing and editing skills (in the relevant language).
- Good analytical and strategic thinking.
- Ability to work under pressure and meet deadlines.

Annex 9. Model terms of reference for a Social Impact Assessment[80]

This section should state the purpose of the terms of reference, identify the development project to be assessed, its location, and explain the implementing arrangements for the social assessment.

The degree of detail and scope of a Social Impact Assessment (SIA) will depend on the type of agricultural project, its location and the vulnerability of targeted groups to change processes. As such, the terms of reference needs to be tailored to account for these variables. Typically, all category A projects and/or those where there is a high social risk and/or where involuntary resettlement is required would require an SIA. Broadly speaking, however, the terms of reference for the SIA needs to cover at least the following information in the box below.

Model terms of reference for a Social Impact Assessment (SIA)

A. Background information

Include a brief statement of the rationale for the project, its intended objectives and beneficiaries, a description of its major components, the implementing agency(ies), its current status and timetable, and whether there are any associated projects. Identify the Social Impact Assessment (SIA) team members and provide a list of other specialist studies being conducted. Clarify whether a separate health impact assessment is being carried out or whether health issues should be included in the SIA.[81]

B. Purpose and objectives

Summarize the general objectives and scope of the SIA, briefly set out the main design and methodological issues related to completing the social assessment, and discuss its timing in relation to the project preparation, design and implementation.

Task 1: Data collection and research methods

Describe the design and research methodology for the social analysis. In this regard:

- Clarify the research objective by stating the research hypotheses and identifying the social processes and relationships to be examined by the social assessment.
- Build on existing data.
- Clarify the units of analysis for the social assessment: intrahousehold, household level, as well as communities/settlements and other relevant social aggregations on which data are available or will be collected for analysis.

[80] Adapted from the United Nations Centre for Good Governance. 2006. *A Comprehensive Guide for SIA*; Vanclay, F. et al. 2015. *Social Impact Assessment: Guidance for Assessing and Managing the Social Impacts of Projects*; IAIA and UNDP. 2013. *Guidelines for Integrating Health and Gender-related Issues into EA Processes in East and Southern Africa*.
[81] Sample terms of reference for a Health Impact Assessment are provided in annex 10. If a separate health impact assessment is **not** carried out, the SIA must include all relevant health issues (see annex 9).

- Determine the geographical and temporal scope of the assessment. The geographic scope should include all those who may be directly affected by water, air and soil pollution, disease vectors, communicable diseases and road traffic (i.e. along transportation corridors) i.e. the social zone of influence. Temporal scales need to take into account the maximum lead times for project implementation and project lifespan.
- Choose appropriate data collection and analytical tools and methods.
- Provide the rationale for sampling employed, including criteria for research sites and selection of respondents.
- Establish baselines and/or benchmarks with indicators for use in future monitoring.
- Indicate all assumptions and limitations.

Note that social research surveys are not the same as the public participation process undertaken as part of the overall ESIA consultation process and are usually carried out by the lead ESIA consultant.

Task 2: Legislative and regulatory considerations

Review all international and national legislation and regulations pertinent to the project, as well as the broader policy and reform context within which the project takes place. Pay particular attention to laws and regulations governing the project's implementation and the access of poor and excluded groups to goods, services and opportunities provided by the project. In addition, review the enabling environment for public participation and development planning. Social analysis should build on strong aspects of the legal and regulatory systems to facilitate programme implementation and identify weak aspects while recommending alternative arrangements. (The terms of reference should specify those that are known and require the consultant to investigate other arrangements.)

Task 3: Description of the proposed project

Provide a full description of the project to the extent known when the social assessment is undertaken. Include the following information: location, size, schedule and planned sequence of activities, workforce requirements, resources available, expected implementation arrangements and lifespan. Identify main transportation routes. If the proposed project has more than one component, describe each one as it relates to social analysis.

Task 4: Description of the sociocultural, institutional, historical and political context

Conduct a rapid review of available sources of information to describe the sociocultural, institutional, historical and political context in which the project operates and within its social zone of influence. The review should include qualitative descriptions and quantitative indicators of development trends relevant to the project at the present time and over its lifespan, such as:

- demographic structure (age, gender, population growth);
- settlement and migration patterns;
- education and skills;
- local economy and employment (formal and informal sectors);

- livelihoods and livelihood options and use of ecosystem services;
- land use and land tenure (property rights);
- community health and well-being (including health status and drivers of disease) (if not being addressed in a separate health impact assessment);
- gender roles and equality;
- culture (shared beliefs, customs, values, language and religion);
- cultural heritage (physical and spiritual);
- sense of place;
- local governance structures and decision-making;
- community services (schools, tertiary institutions, health care, water and sanitation, power supply, communications); and
- indigenous knowledge.

The purpose of this exercise is to describe what constraints and opportunities the context poses to the project.

Task 5: Key social issues

The social analysis provides the baseline information for designing the social development strategy. The analysis should determine what the key social and institutional issues are in relation to project objectives; identify the key stakeholder groups in this context, and determine how relationships between stakeholder groups will affect or be affected by the project; it should also identify expected social development outcomes and actions proposed to achieve those outcomes.

The key elements and entry points for the social analysis relevant to the project encompass:

- **Social diversity and gender.** Examine how people are organized into different social groups, based on the status ascribed to them, ways in which such diversity interacts with social and power relations and the implications this has for questions of access, capabilities and opportunities.
- **Institutions, rules and behaviour.** Examine social groups' characteristics, intragroup and intergroup relationships, and the relationships of those groups with public and private (e.g. market) institutions (including the norms, values and behaviour that have been institutionalized through those relationships). Possible institutional constraints and barriers to project success, as well as methods to overcome them, should be described.
- **Stakeholders.** Identify the various groups who have an interest or a stake in the project. Stakeholders are those who are likely to be resettled or otherwise affected by a project (i.e. within the social zone of influence), as well as those that may influence the project's outcomes.
- **Participation.** Examine opportunities and conditions for participation by stakeholders – particularly the targeted groups and beneficiaries – in the development process. Describe how community members will be kept informed

about the project, how they can become involved in the ESIA process, their procedural rights and their grievance redress mechanisms.

- **Social risk.** Social risk analysis examines the social groups vulnerable to stress and shocks and the underlying factors that contribute to this vulnerability. Drawing on this, risk management plans should be prepared with an eye to addressing these concerns during project design, implementation, and monitoring and evaluation.
- **Integration.** Describe the linkages between biophysical and socio-economic impacts of the project in order to identify cumulative impacts, synergies and antagonistic effects, especially the unintended consequences of the development.

Task 6: Predict, analyse and assess the likely social impacts

- Through analysis, quantitative where possible, determine the social changes and impacts that will likely result from the project and the various alternatives, both positive and negative, reversible and irreversible.
- Disaggregate impacts in cases where different groups (e.g. based on gender, wealth) will experience project impacts in a significantly different way.
- Carefully consider the indirect (or secondary, tertiary and higher order) impacts.
- Consider how the project will contribute to the cumulative effects being experienced by the host communities and other affected parties.
- Determine how the affected groups will likely respond.
- Establish the significance of the predicted changes and prioritize them (use the significance rating scales established by the ESIA team leader).
- Actively contribute to and design the evaluation criteria for assessing project alternatives, including the no-go and other viable options.

Task 7: Strategy to achieve social development outcomes

Identify the likely social development outcomes of the project and propose a social development strategy, including recommendations for institutional arrangements to achieve them, based on the findings of the social assessment.

The social development strategy could include measures:

- that strengthen social inclusion by ensuring that both poor and excluded groups and intended beneficiaries are included in the benefit stream and in access to opportunities created by the project (i.e. a social inclusion framework);
- that empower stakeholders through their participation in the design and implementation of the project, their access to information, and their increased voice and accountability (i.e. a participation framework); and
- that enhance security by minimizing and managing likely social risks and increasing the resilience of intended beneficiaries and affected persons to socio-economic shocks (i.e. a risk management framework).

Task 8: Recommendations for project design and implementation arrangements

Provide guidance to project management and other stakeholders on how to integrate social development issues into project design and implementation arrangements. As much as possible, suggest specific action plans or social impact management plans to address relevant social issues and potential impacts. These can be developed as integrated or separate action plans, for example, as resettlement action plans, indigenous peoples development plans, community development plans, etc. For each social issue (positive and negative), identify appropriate mitigation (or enhancement) measures, the person or organization responsible for implementing the action, the time frame, and an estimate of costs for each measure identified.

Task 9: Developing a monitoring plan

Through the social assessment process, a framework for monitoring and evaluation should be developed. To the extent possible, this should be done in consultation with key stakeholders, especially beneficiaries, affected people, NGOs and/or government authorities who may be responsible for undertaking the monitoring. The framework shall identify expected social development indicators, establish benchmarks, and identify organizational responsibilities in terms of monitoring, supervision and evaluation procedures. Additionally, identify institutional strengthening and capacity-building requirements, if any.

C. Consultant team

Social assessment usually requires a multidisciplinary team to meet the different demands of the assignment. The terms of reference should specify key positions on the team. Individual time requirements should be specified for each assignment. One team member should be appointed team leader and be responsible for the team's performance. The SIA team will be required to attend regular project meetings, including two integration workshops with other specialists to ensure that all the specialist studies are coordinated and consistent in their approach, use of data and project information.

D. Expected outputs, schedule and reporting

Prepare a detailed schedule of the social assessment activities described in the terms of reference. Explain what kinds of outputs the social assessment plans to produce. Include a note on the social assessment process itself, stating any difficulties faced by the team in conducting the social assessment, and recommend the most appropriate dissemination strategy for the findings.

The SIA consultants shall provide a stand-alone report addressing, as a minimum, all the headings listed in the sample table of contents below.

E. Sample table of contents for an SIA report

- Cover including the authors' names and affiliations, date
- Executive summary (no more than five pages)
- Table of contents, lists of figures and tables
- List of acronyms and abbreviations
- Glossary (if required)
- Acknowledgements

- 1. Introduction
- 2. Aims and objectives of the SIA
- 3. Assumptions and limitations
- 4. Approach and methodology
- 5. Legal, policy and institutional framework
- 6. Project description
- 7. Description of the social, cultural, historical and political context
- 7.1 Project location, history of area and political context, including governance structures
- 7.2 Settlement pattern (villages, towns) and infrastructure in the project area (roads, power, water supply and sanitation, health-care facilities, schools, etc.)
- 7.3 Demographic structure of affected communities (age, gender, population growth)
- 7.4 Education and skills levels (by age and gender)
- 7.5 Local economy and economic drivers, including employment in formal and informal sectors, poverty status
- 7.6 Livelihoods and livelihood options (reliance on ecosystem services, vulnerability to change, including climate change, etc.)
- 7.7 Land use and land tenure
- 7.8 Community health and well-being (if not addressed in a separate health impact assessment) setting out main diseases in the project area and their main causative factors
- 7.9 Culture, gender roles and social equity
- 7.10 Cultural heritage including physical and spiritual (if not addressed in a separate cultural heritage assessment)
- 7.11 Any other social issues arising from the study.
- 8. Social Impact Assessment (of the project on all the above)
- 9. Social Management Plan
- 10. Social Monitoring Plan
- 11. Conclusions (a concise, integrated summary of the social implications of the project)

Appendices

- Terms of reference for the SIA
- List of stakeholders consulted
- Minutes of meetings and submissions
- Public notices
- Detailed questionnaires and other sampling tools

Annex 10. Model terms of reference for a Health Impact Assessment

A separate Health[82] Impact Assessment study (i.e. separate from the Social Impact Assessment) is indicated for category A projects, especially in the following circumstances:

- Where the project will require significant inputs of agrochemicals, such as fertilizers, pesticides and antibiotics.
- Where intensive livestock projects are being proposed.
- Where water is to be used for irrigation or aquaculture, which could be polluted.
- Where large numbers of construction workers and/or migrant workers will be required.
- Where there is an existing high burden of disease and/or malnutrition in the project area.

The degree of detail and scope of a Health Impact Assessment (HIA) for an agricultural development project will depend on the type of agricultural project, its location and the vulnerability of targeted groups to health risks.[83] As such, the terms of reference need to be tailored to account for these variables, but should broadly cover the following items in the box below:

Model terms of reference for a Health Impact Assessment (HIA)

A. Introduction and project background

Introduce the project, its rationale and justification, country ownership, location, main inputs and outputs, overall time frame, etc.

B. Scope of work

Specify the spatial and temporal boundaries for the HIA. Explicitly state what should be included and excluded.

The scope of work should be divided into four phases or activities:

1. A rapid appraisal or scoping.
2. Baseline health description.
3. Health impact assessment based on the baseline evidence.
4. Development of a community health management plan based on priority impacts.

[82] Health, as defined by the World Health Organization is a multidimensional concept which encompasses a complete state of physical, mental and social well-being and not merely the absence of disease or infirmity.
[83] Health risks in the context of agricultural development projects, and for the purposes of this model terms of reference, include: occupational diseases and disorders, e.g. farm-worker injuries, zoonotic diseases, agrochemical-induced diseases and disorders, dermatoses, musculoskeletal disorders, hearing loss, etc., waterborne diseases, vector-borne diseases, non-communicable diseases, nutritional disorders, and communicable diseases (see also guidance statement 14).

The consultants are requested to provide a detailed description of the methodology they propose to use to undertake the following activities:

C. Rapid appraisal (scoping)

- Project definition from a health perspective. This will be carried out by reviewing all existing project documents and other available literature. This will include evaluating projects in similar settings in the country or region. Analyse any initial environment and social assessments, and review any meeting minutes or reports from stakeholder consultation.
- Review country-specific legal and policy frameworks for relevant health issues which may affect the planned project, particularly the health targets which the country has committed to.
- Country and community health profiling:
  - Describe the baseline health status at a national, regional and district level with a focus to detect project-attributable or general potential health hazards using existing data sourced from the country's ministry of health, National AIDS Council, other government agencies, as well as international agencies working in the health arena such as the United Nations Programme on HIV/AIDS (UNAIDS), World Food Programme, World Health Organization (WHO) and United Nations Children's Fund (UNICEF). This is desktop work.
  - Define and profile the communities that may be affected by the project development. This will be in relation to both directly and indirectly affected communities. This process must be aligned to the social and specialist studies and have a focus on communities that will be directly and indirectly impacted. This is field work.
- Produce a scoping report to feed into the overall project scoping report. The scoping report must include a detailed terms of reference for the specialist HIA to be conducted as part of the Environmental and Social Impact Assessment (ESIA). The terms of reference for the HIA should include, but not be limited to, the following tasks:

D. Baseline health description

- Describe the baseline health status of communities in relation to the project. This will be based on the availability of data from the rapid appraisal and be supported by data collected in the social baseline (see annex 9) and other specialist studies, e.g. those relating to pesticides and pollution. To properly analyse the effects of the project on health, the baseline data on health and social indicators need to be:
  - as up to date as possible;
  - in quantitative form, if possible; and
  - collected in both aggregated and disaggregated forms – for example, local health data, socio-economic statistics and health facility

information should be provided at the country, regional and local level and by gender, where relevant.

- Conduct a gender assessment to determine the key drivers with regard to health issues:
  - women's ability to express issues and concerns around their health;
  - different responses to project impacts;
  - employment on the project and what that means in terms of communicable diseases and other health issues;
  - sexual behaviours (traditional and sex work); and
  - trafficking of women and children.
- Conduct a cultural assessment (or coordinate with the specialists undertaking such a study) to understand certain behaviours and customary practices which may increase the risks of communicable diseases (e.g. societal attitudes towards women, concurrent partners, condoms, HIV and intergenerational sex).
- Perform key informant interviews with local stakeholders in the project area to support the definition of the baseline health status. These could potentially include:
  - local medical officer – a key representative that can provide information and highlight relevant health challenges in the area;
  - district medical office;
  - regional, district and local authorities, particularly those involved with water, livestock extension services, sanitation and health;
  - local, district, regional HIV and AIDS programme managers;
  - community health and social workers;
  - health-care workers and peer educators;
  - IFAD Country Programme Management Team;
  - managers of non-governmental organizations (NGOs) or aid agencies working in the area;
  - UNAIDS country representative or National AIDS Council representative;
  - WHO/UNICEF country representatives; and
  - rural development agencies.
- Conduct surveys on knowledge levels and attitudes about health issues, especially towards HIV and sexually transmitted infections and vector-borne and zoonotic diseases, before project construction starts, midway through construction, and at the end of construction to determine whether the mitigation measures have had the required positive effect.
- Time the surveys, key informant interviews and behaviour change communications programme to avoid peak agricultural periods such as

sowing and harvesting because farmers and their families may not be available at those times.

- The social and specialist teams are likely to meet a similar range of key informants; therefore, the consultants need to hold a planning workshop to define their areas of study and to coordinate their meetings.

E. Impact assessment

- Consider the potential impacts of the proposed project on the health of the affected communities and relate them to the different life-cycle stages of the project. Specific issues to be assessed include:
  - Increased prevalence of diseases and disorders as a result of the project.
  - Existing aggravating factors that may increase the risk of disease transmission in the project area, such as overcrowding, poor sanitation and waste management practices; existing disease burden, such as HIV and malaria; existing high levels of air, water or soil pollution; poverty; and inadequate health-care facilities and post-conflict situations.
  - The impact of climate change on health, nutrition, disease and disease vectors.
  - The number of orphans in the project area.
  - Effects of poor health on the project due to training and replacement costs of staff that may leave because of sick leave and compassionate leave.

- Consider alternative options and recommendations for mitigation/management of priority impacts. Recommend measures to avoid/mitigate negative health impacts and enhance benefits that may result from the project at each project stage.

- Determine the health needs of the community based on health strategies, infrastructure, programmes, service priorities, delivery plans and challenges.

F. Community health management plan

- Seek to identify partners that may assist with any health support opportunities. These should include the local authorities, agricultural extension officers, NGOs and even donor agencies.

- Develop a community health management plan based on the findings of the HIA and SIA. The team will evaluate the sustainability of all recommended actions and strategies to assist the long term-planning.

- Recommend methods for monitoring and evaluating the potential impacts, if this is possible, from gathered data. Key indicators will be listed as part of the plan, together with a surveillance strategy.

- Collect additional baseline data to inform specific mitigation and management elements and support health impact surveillance.
- Develop a monitoring information system/database.
- Integrate the health management plan into the project Environmental and Social Management Plan (ESMP).
- The HIA consultants must prepare a final report for inclusion in the overall ESIA report. The ESIA consultants will provide the HIA consultants with the impact assessment methodology to be followed.

G. Additional elements

Workshops

A number of workshops to be attended by all the specialists will be conducted to support the project, including:

- planning workshop;
- workshop to support baseline data collection;
- impact assessment workshop; and
- community health and community development workshop.

The impact assessment consultants shall organize workshops with the Country Programme Management Team/design team early on, so that comparisons can be made well before the final site is selected and the final costs and benefits are calculated.

H. Peer review

As the health impacts are considered to be extremely sensitive, the HIA and its deliverables may need to be peer reviewed by an external independent expert.

Annex 11. Guidelines for the environmental and social audit

The degree of detail and scope of an environmental and social audit will depend on the type of project, its location and the vulnerability of targeted groups to change processes. As such, the terms of reference need to be tailored to account for these variables. Broadly speaking, however, the terms of reference for the environmental and social audit need to cover at least the following items in the box below.

Environmental and social audit

The aim of the audit is to identify significant environmental and social issues in the existing project or activities, and assess their current status, specifically in terms of meeting the requirements of the Social, Environmental and Climate Assessment Procedures (SECAP).

A. Executive summary

Concisely discusses significant findings and sets out recommended measures and actions and time frames.

B. Legal and institutional framework

Analyses the legal and institutional framework for the existing project or activities, including the issues set out in the Environmental and Social Impact Assessment (ESIA) or SECAP preparatory study, and the related Environmental and Social Management Plan (ESMP) or Environmental and Social Management Framework (ESMF), and (where relevant) any applicable environmental and social requirements of existing financiers.

C. Project description

- Concisely describes the existing project or activities, and the geographic, environmental, social and temporal context and any associated facilities.
- Identifies the existence of any plans already developed to address specific environmental and social risks and impacts (e.g. land acquisition or resettlement plan, cultural heritage plan, biodiversity plan).
- Includes a map of sufficient detail, showing the site of the existing project or activities and the proposed site for the proposed project.

D. Environmental and social Issues associated with the existing project or activities

The review will consider the key risks and impacts relating to the existing project or activities. This will cover the risks and impacts identified in the ESIA, as relevant to the existing project or activities. The audit will also review issues not covered by the ESIA, to the extent that they represent key risks and impacts in the circumstances of the project.

E. Environmental and social analysis

The audit will also assess: (i) the potential impacts of the proposed project, taking into account the findings of the audit with regard to the existing project or activities; and (ii) the ability of the proposed project to meet the requirements of the SECAP.

F. Proposed environmental and social measures

Based on the findings of the audit, this section will set out the suggested measures to address such findings. These measures will be included in the Environmental and Social Commitment Plan for the proposed project.

Measures typically covered under this section include the following:

- specific actions required to meet the requirements of the ESMP and ESMF;
- corrective measures and actions to mitigate potentially significant environmental and/or social risks and impacts associated with the existing project or activities; and
- measures to avoid or mitigate any potential adverse environmental and social risks or impacts associated with the proposed project.

The team composition will be two persons having requisite experience in environment and social assessment of agriculture projects.

The environmental audit expert should possess:

- A master's degree in environmental science, engineering or planning.
- It is desirable for the expert to have proficiency in the local language, both in written and oral form.
- The expert will have at least ten years of experience: (i) in auditing of the environmental management system for agricultural projects; (ii) experience of carrying out environmental impact assessments and initial environmental examination reports; and (iii) experience of working in agricultural projects financed by bilateral/multilateral funding agencies for environmental safeguards.
- The person will have a good mix of experience of both auditing and subject knowledge and experience on environment safeguards.

The social audit expert should possess:

- A master's degree in social science or social development.
- It is desirable for the expert to have proficiency in the local language, both in written and oral form.
- The expert will have at least ten years of experience in: (i) auditing of resettlement and rehabilitation plans for infrastructure projects; (ii) preparing Resettlement Action Plans and Indigenous Peoples Development Plans; and (iii) experience in working in infrastructure projects financed by bilateral/multilateral funding agencies for social safeguards.
- The person will have a good mix of experience of both auditing and subject knowledge and experience of social safeguards.

G. Outputs and deliverables. The following outputs and deliverables are envisaged.

Prepare a detailed schedule of the environmental and social audit activities. Include the social assessment process itself, stating any difficulties faced by the team in conducting the social assessment and recommend the most appropriate dissemination strategy for the findings.

Source: Adapted from World Bank, 2016.

Annex 12. Model terms of reference for SECAP preparatory studies for RB-COSOPs and CSNs

Note: This model terms of reference is intended for a social, environmental and climate preparatory study (hereafter referred to as SECAP study) undertaken in the framework for the formulation of the country strategic opportunities programme and country strategic notes. They can also be adapted to be used as guidance to enhancing the results-based country strategic opportunities programme (RB-COSOP) and country strategic note (CSN) design missions and midterm evaluations. Explanations and sections to be completed according to country conditions are in italics.

Terms of reference for the SECAP preparatory study for RB-COSOPs/CSNs (name of country)

A. Background

The aim of the social, environmental and climate preparatory study is to provide analytical underpinning for environmental sustainability through the provision of strategic options that would be a vital input into RB-COSOP/CSN development and the decision-making process. The SECAP study does not substitute for a project-specific environment, social and climate assessment, but it can reduce the need and limit the scope of the latter and provide a framework for sustainable and coordinated development. The timing of the SECAP preparatory study needs
to be closely linked with the respective country RB-COSOP/CSN planning and budgeting process.

A priority of RB-COSOPs/CSNs will be to support outcome-driven national development strategies and systems on environment and natural resource management (ENRM), such as ecosystem-based approaches, as reflected in poverty reduction strategy programmes and relevant national strategic frameworks (e.g. national climate adaptation programmes of action, and national action plans and programmes). The latter include sustainable national development strategies, climate change strategies, national health policies, goals and targets, gender policies and civil society activities.
It is thus important to encourage policy dialogue among all stakeholders.

The objectives of the SECAP study are to: (i) identify key linkages between rural poverty and the environment; (ii) provide key environmental and social opportunities and actions to influence IFAD support to [*name country*] rural development efforts towards environmental and social sustainability and climate smart development; (iii) identify priority ENRM, social and climate change issues based on IFAD's comparative advantage for policy dialogue with the government; and (iv) identify an opportunity for an Adaptation for Smallholder Agriculture Programme (ASAP) and/or Global Environment Facility intervention.

The expected results are: (i) an assessment of the environmental (and social, economic and institutional) issues with a focus on agriculture and food security; (ii) the identification of links with the other sector policies, strategies and plans; and (iii) the provision of specific measures to optimize climate adaptation, environmental management, and resource use in the new RB-COSOP/CSN period for [*name of country*]. The above will shed light on important opportunities available to build resilience and adaptive capacity of the agricultural and rural development sectors in the country.

Provide a summary of [*country's*] agriculture, climate, social, health and ENRM conditions. This should include: (i) challenges faced to meet its rural development and food security goals; (ii) the major environmental and social trends and issues that have a bearing on IFAD operations in the country; (iii) the direct impact and multiplier effect the mentioned issues have on the resilience of ecosystems and productivity of land and crops, natural resource management, and rural livelihoods; (iv) the scale of volatility and risk resulting from climate change; and (v) institutional and regulatory frameworks related to rural development, social, health and environmental issues.

The IFAD Climate Change Strategy (2010) and ASAP priorities call for the Fund to respond more systematically to increasing demands from our clients for help and innovation on responding to climate change. This means analysing and addressing climate change considerations during the early stages of country programme and project design, rather than as an overly compliance-driven approach in the final approval stages for RB-COSOPs/CSNs in programmes and projects.

The IFAD Environment and Natural Resource Management Policy (2011) further stresses that RB-COSOPs and CSNs are a key entry point for upstream analysis and assessment of how IFAD can help partners manage natural resources sustainably and respond to climate change. The policy provides ten core principles and eleven best practice statements to guide IFAD interventions.

B. Principles to guide the SECAP study

(i) Early integration of ENRM, social and climate change issues in the conceptual and design stages of the RB-COSOP/CSN for [*the country*].

(ii) Focus on national or subregional environmental, social and climate opportunities and constraints rather than on-site specific impacts in order to resolve strategic issues that cannot be addressed at the project level.

(iii) Identify and compare strategic alternative scenarios to exploit scale-up opportunities.

(iv) Coordination with national and local donor development partners and stakeholders is particularly important from the perspective of harmonization.

(v) Ensure that the programme or project is compatible with the country's policies and international obligations.

C. Approach and methodology

The preparatory study is composed of two phases: a screening exercise and the actual study, as described below.

The screening exercise, which will typically be undertaken early in RB-COSOP/CSN design, will identify and analyse the issues to be addressed in the SECAP preparatory study, considering: (i) the specific context (including sector and wider institutional and legislative framework and its alternatives) in which the country programme is likely to be implemented; and (ii) the likely implications for IFAD's work. This should be based on a review of the key pertinent documents and consultation with relevant stakeholders. The screening should result in impact identification and evaluation methodologies to be used in the SECAP study. These methodologies may include the use of tools such as checklists, problem analysis trees and matrices, depending on those found appropriate to the specific context. The preliminary key issues are to be discussed and validated in a workshop with stakeholders.

The SECAP preparatory study must provide a detailed assessment of all key issues identified during the screening stage, and present options and actions to address them. The study must address cumulative impacts, especially in the case of natural resources, sensitive ecosystems and vulnerable communities. The assessment will consider international prescriptions and standards, national laws and best practices and will take cognizance of the realities of the institutional set-up in the country. More specifically, the assessment will: (i) engage with a broad range of stakeholders (e.g. relevant government institutions, civil society and indigenous people's organizations, and bilateral and multilateral donors and institutions) *at the national, regional and communal levels, involving as much as possible vulnerable groups*; (ii) identify and address cross-border issues (e.g. forest and water resources), as necessary; (iii) identify and assess win-win solutions and innovations to support scaling up; (iv) ensure integration with national development strategies and systems; and (v) include an effective system for monitoring of climate, environmental, health and social issues.

Mainly secondary information and qualitative methods will be used for the SECAP preparatory study. The use of a range of qualitative tools and methods, such as "SWOT" analysis, climate modelling, focused stakeholder consultations and overlay mapping, should be considered in developing strategic objectives, alternatives and options to maximize the value added to the decision-making process for the RB-COSOP/CSN design and to ensure adequate monitoring. Selected field visits will be made in close coordination with local governments or the IFAD country project coordinator in order to verify issues at a local level, capture lessons learned, and engage in local level stakeholder consultations. An important means of enhancing country ownership of the SECAP study and its recommendations is to involve government officials, local experts and institutions as an integral part of the assessment exercise. A second workshop should be held to discuss the proposed strategic objectives and options and to reach agreement on the priorities to be included in the assessment. The draft SECAP preparatory study report will be shared with key stakeholders for comments before its finalization. The document should not exceed a length of 25 pages, excluding the annexes.

D. Scope of work

On the basis of: (i) data obtained from IFAD reports and development partners; and (ii) field visits and meetings with relevant stakeholders in the country, considering the "Updated Guidelines and Source Book for Preparation and Implementation of a RB-COSOP/CSN", the consultant(s) will perform the following key tasks (see annexes 13, 14, 15 for details):

(i) Analyse the social, environmental, and climate and economic trends/problems in the country (particularly in the agriculture, water, health and biodiversity domains). Identify priorities and themes linked with growth and rural poverty reduction. Provide information on the spatial (using relevant maps) and temporal scope of the SECAP preparatory study, taking into consideration short-, medium- and long-term effects and risks. Also analyse how climate change exacerbates existing environmental health and development challenges in the country.

(ii) Develop relevant environmental, economic, health and social objectives that should be considered in the country programme; evaluate the response at the national level and potential areas of IFAD intervention; evaluate how both the proposed development objectives and proposed actions of IFAD's proposed country strategy (if already identified) relate to these objectives and suggest modifications or proposals for IFAD support.

(iii) Analyse individual and cumulative environmental (and social/economic) impacts of the proposed IFAD interventions in [the country] and suggest any relevant modifications for consideration by the RB-COSOP/CSN design team. Where the proposed IFAD interventions

are not yet identified, make recommendations for the design team with respect to integrating environmental and social/economic considerations into the future RB-COSOP/CSN design.

(iv) *Analyse adequacy of existing policy and institutional frameworks (government, key donors, civil society), implementation arrangements and monitoring plan (whether they provide for realistic monitoring and analysis of key environmental, social, health, economic and climate impacts during implementation of the RB-COSOP/CSN time frame), and suggest options for improvement, as necessary. Depending upon the context of preparation, this can focus on analysis of environmental implications of sector policies, taking into account the policy and regulatory framework, analysis of the institutional and governance issues linked with a particular theme or priority, and/or economic analysis to weigh and prioritize different interventions in a sector (for instance through use of cost-benefit analysis).*

(v) *Develop specific strategic and technical measures/options (including assumptions) and indicators generated by the SECAP preparatory study with key authorities and stakeholders, preferably in a workshop. Key issues to discuss include the identification of two to four possible development scenarios, limits of acceptable change and/or environmental and social quality objectives to fulfil green growth, pollution targets, social upliftment and poverty reduction objectives, among others. These are to be based on existing lessons learned, good practices and country standards, and environmental objectives. Stakeholders include some or all of the following: farmer groups, government ministries (environment, agriculture, livestock, fisheries, water, health, social and economic planning), regional/municipal authorities, civil society organizations, academic organizations, business groups, and the donor community.*

(vi) *Draft a set of investment concept notes for future projects interventions (Green Climate Fund, Global Environment Facility) that incorporate climate change adaptation, and associated mitigation measures, disaster risk reduction and sustainable land management, among others. Identify national and provincial implementation arrangements (government, research institutions and line agencies) that would be ideal in carrying forward the interventions that have been identified. Analyse the interventions proposed by the RB-COSOP/CSN design team and, if necessary, suggest environmental enhancements for "greening" the project ideas. Provide the preliminary environmental and social category and the climate risk classification in each concept note. Propose a knowledge management methodology for facilitating evidence-based policymaking and transferring knowledge back to project-level implementation.*

E. Expected outputs

(i) The **SECAP preparatory study report**, which is concise and consistent with the provisions of the IFAD Social, Environmental and Climate Assessment Procedures, the IFAD Climate Change Strategy and the ENRM policy, is grounded in relevant national strategies and priorities. The report will include the approach and methodology used, and is supported by summaries of the data collected and citations for any references used in interpreting those data. It will also include a table which provides an overview of the key issues (technical and systemic), indicating the rationale for their selection and a synthesis of associated specific recommendations and proposed indicators. Although all recommended actions specific to a particular issue are considered important, some specific actions deserve special attention. It is recommended that the actions be categorized according to those that should be: (i) continued; (ii) reinforced; (iii) modified; and (iv) introduced for the first time. In addition, their level of priority (high, medium or low) should also be indicated. See annex 13 for the indicative outline of the SECAP preparatory study report.

(ii) **A set of investment concept notes** grounded in country-specific analysis for ensuring that the RB-COSOP/CSN and its investments are both climate sensitive and environmentally and socially sustainable. Provide the key SECAP preparatory study findings to the RB-COSOP/CSN design team and ensure that they are reflected in the final RB-COSOP/CSN document. This will require writing sections of the RB-COSOP/CSN, including enhancing project concepts proposed by the other team members.

(iii) **A two-page (maximum) note** outlining rationale and elements for IFAD consideration of an intervention to enhance climate adaptation in the country.

(iv) **Summaries** of the workshop presentations, synthesis of stakeholder meetings (as necessary) and outcomes of the consultations.

F. Time frame

The SECAP preparatory study needs to be planned sufficiently ahead of time to be able to provide meaningful input into the RB-COSOP/CSN development process. Two or three consultants (as necessary) will be recruited on a retained basis for a period of (*estimated at 20 days each for a total of 40 days*). The draft SECAP preparatory study report should be **submitted no later than** (*date*) to the country programme manager [*name of country*] with copies to the Regional Climate and Environment Adviser (ECD), and the Senior Technical Adviser-Environment and Natural Resource Management (ECD). The final SECAP preparatory study report should be submitted by close of business on [provide date].

G. Required expertise of the consultant(s)

The SECAP study will be conducted by specialist(s) with expertise in: (i) environment and natural resource management; and (ii) climate change, both in relation to the agricultural sector. An additional consultant to address social, health and institutional issues may be considered necessary. The consultant(s) should have a minimum of ten years of experience (project implementation and evaluation) in environmental and rural development policy, sustainable land, forest and water management practices, land use planning, socio-economics, climate change, as well as be fully conversant with development work at the strategic level. Other resource persons (including IFAD staff) may be involved in the exercise to evaluate specific issues as deemed necessary. The consultants must be familiar with the country situation and have the ability to think broadly and interact orally.

H. Fees

The consultant's fee rate will be determined according to an assessment of the consultant's curriculum vitae by IFAD's personnel department. All travel expenses, including the daily subsistence allowance, will be covered.

I. Reporting

The work of the consultant will be coordinated by the country programme manager for [*name of country*] and supervised by [*name of the regional climate and environment specialist or the lead technical specialist*, ECD].

J. Relevant IFAD documents

(i) Climate Change Strategy
(ii) Environment and Natural Resource Management Policy

(iii) Updated Guidelines and Source Book for Preparation and Implementation of an RB-COSOP/CSN
(iv) Disaster Risk Management Guidelines
(v) IFAD How To Do Notes
(vi) Country portfolio evaluation
(vii) IFAD policies (Targeting, Gender Equality and Women Empowerment, Improving Access to Land and Tenure Security, Engagement with Indigenous Peoples)
(viii) SECAP
(ix) Other documents, which include relevant country strategic frameworks

Annex 13. Suggested structure and contents of the SECAP preparatory study report for RB-COSOPs/CSNs

Structure of report	Information to include
Executive summary	• Summary of the SECAP preparatory study process (purpose, objectives). • Summary of the likely significant effects of the proposed results-based country strategic opportunities programme (RB-COSOP) and/or country strategy note (CSN) interventions. • Statement on the value addition of the SECAP preparatory study to the RB-COSOP/CSN design process. • SECAP study recommendations.
SECAP preparatory study approach and methodology used	• SECAP study objectives. • Study approach and methodology adopted for the preparation of the assessment and how it fits into the RB-COSOP/CSN development process. • Description of the process to involve different government agencies and civil society organizations (who was consulted and when). • Assumptions, uncertainties, constraints, as well as challenges encountered in compiling information or carrying out the assessment.
National context	• Description of the physical and biological environment, related baselines, and sociocultural context (including vulnerability to health risks). • Main environmental, social and climate change challenges, causes and effects on agriculture development and rural poverty, with a particular focus on water, soil, forests, fisheries and agriculture. • Identify opportunities and constraints. • Identify and assess cumulative impacts – drivers, pressures, impacts and responses. • Role of natural resources in livelihoods (focus on agriculture, food security and rural development). • Observed impacts of climate change and projections on key agricultural and rural development sectors. • Related national policy, regulatory and institutional frameworks, including environment and natural resource management (ENRM), climate change, agriculture, gender, health, poverty reduction, and rural development strategies. • Country priorities and links to regional and international public-private partnerships. • Identify country's obligations in terms of commitments to international conventions, protocols and agreements on health, climate, gender, trade, agrochemicals, pollution, water, etc.
Impact identification, evaluation and lessons learned in IFAD programmes	• Opportunities to build resilience of rural livelihoods to climate change. • Comparison of the environmental/adaptation costs and benefits of the alternatives, with a description of how environmental issues were considered in choosing the preferred strategic investment proposals.

	• Lessons learned from partner experiences, IFAD programmes and previous RB-COSOP/CSN implementation, and rationale for prioritizing ENRM and adaptation.
Recommendations to enhance environmental and climate resilience in the agriculture and rural development sectors	• Analysis of strategic orientation for the RB-COSOP/CSN – include specific environmental and social quality objectives and required results to optimize environmental and social management and resilience to climate change in the agricultural sector and rural development. • Actions proposed (institutional strengthening, budgetary issues, etc.). • Links to other tiers of plans and programmes and the project level (Environmental and Social Impact Assessment, project design cycle, etc.).
Proposals for additional financing and correct Key performance indicators	• Proposals for activities to access Adaptation for Smallholder Agriculture Programme, Global Environment Facility and other sources of funds. • Proposals for monitoring and feedback mechanisms, including environmental and social key performance indicators.
Appendices	• Table on existing ENRM and climate change stakeholders and initiatives. • Table on promising lessons learned and good practices for scaling up. • Summary of stakeholder consultations. • SECAP assessment terms of reference. • Bibliography and references.

Annex 14. Generic checklist: questions for SECAP preparatory studies for RB-COSOPs/CSNs

- **Principles and scope**
  - Have adequate principles, criteria and indicators been defined for the SECAP study?
  - Has the spatial and temporal scope of the SECAP study been adequately defined?
  - Is there a need/opportunity for donor coordination in the conduct of the SECAP study?
  - Have strategic alternatives (to the proposed RB-COSOP/CSN interventions) been identified and considered?
- **Stakeholder engagement**
  - Have all relevant stakeholders had an opportunity to engage in the SECAP preparatory study process and to identify potential impacts and management measures?
  - Have the views of civil society, particularly affected communities (men, women, youth, indigenous peoples, and other disadvantaged and vulnerable groups), been included? What has been their influence in the development of the proposed public-private partnership? Is there adequate environmental education of the public? What is the level of public awareness of the "SECAP preparatory study" (especially among rural communities)?
- **Linkage to other strategies, policies and plans**
  - Have all relevant strategies, policies and plans – at national to local levels – been reviewed (e.g. poverty reduction strategy programme, National Adaptation Programmes of Action, national biodiversity strategy, Sustainable Development Goals [SDGs], HIV/AIDS national strategic plan, district plans, national expenditure reviews), and is the assessed PPP supportive of and consistent with their goals? Have any conflicts been taken into account in the design of the proposal?
- **Generic questions and decisions/activities**
  - How can sustainable management of natural resources be proactively built into proposed programmes and projects?
  - Have limits of acceptable environmental and social change and/or environmental and social quality objectives been identified for the area or country being studied?
  - What are the opportunities for support to climate change, environment, health and natural resource management?
  - What are other development agencies doing to strengthen climate resilience, environment, health and natural resource management?
  - If sector-wide approaches or other forms of basket funding are included, is there a need for complementary analysis or initiatives to minimize possible climate change risks and negative environmental and social effects?
- **Linkages/impacts**
  - What are the key environmental, social and climate change constraints and opportunities and their relation to rural poverty? How is climate change predicted to affect this?

  - What are the linkages between climate change, environment and other important development themes, such as public health (including HIV/AIDS, vector-borne, waterborne and zoonotic diseases), education, human rights and democracy, land tenure, gender, conflicts and vulnerability?
  - What is the importance of environment and climate resilience for pro-poor growth, environmentally and socially sustainable economic development and attaining the SDGs?
  - What are the partner country's commitments[84] to, and actual implementation of the multilateral environmental agreements?
  - How are environmental and climate change concerns addressed in key partner country strategies, such as the poverty reduction strategy programme, trade policies and sector strategies, and how are they reflected in the national budget?

- **Effects**
  - Have the potential direct, indirect and cumulative negative and/or positive effects (short, medium and long term; environmental, climate and social) of the proposed public-private partnership been predicted and analysed?
  - Have relevant environmental externalities been identified and internalized?
  - Have relevant, specific measures been identified and included to counteract/mitigate these? Alternatively, is it made clear how other national policies/programmes are mitigating the potential negative effects?
  - Taking into account differences in power relations, climate risks and environmental vulnerability, who would be the winners and losers for each course of action?
  - Is there potential for enhancing positive effects? Have these opportunities been maximized?
  - Has the quality of the assessment been independently reviewed?
- **Capacity**
  - Is there an institutional framework to manage environmental and climate risks/impacts and major environmental policy and institutional failures?
  - Has the level of awareness of the SECAP preparatory study among government staff and other stakeholders been assessed? Has there been an effort to engage all stakeholders including government ministers on the SECAP preparatory study? Is there sufficient capacity within institutions and agencies, at national and subnational levels, to implement the specific policy, plans and programmes (e.g. to enable them to apply the strategic environmental and social management plan for all sub-elements); and to manage, regulate and be accountable for use of natural resources and improved climate resilience? How can these institutions be strengthened?
- **Institutional/implementation**
  - What is the institutional capacity at the national level to integrate environment and climate change considerations into planning processes?
  - What donor harmonization mechanisms are in place to ensure that environmental and social management are part of donor coordination?

[84] Especially with regard to community empowerment, community participation in natural resource management, etc.

  - What are the challenges and opportunities for civil society organizations and the private sector in relation to climate resilience, environment and natural resource management? What is their level of awareness of the SECAP preparatory study process?

- **Influence of the SECAP preparatory study**
  - Are there specific points in the process to develop the public-private partnership where the SECAP preparatory study can have influence over decision-making?
- **Data, information and monitoring**
  - Are there significant data and information deficiencies and gaps (e.g. weather information, climate modelling, maps)? How can these be filled?
  - Are measures proposed for monitoring? Are these clear, practicable and linked to the indicators and objectives used in the SECAP preparatory study? Are responsibilities clear?

Source: Adapted from OECD, 2006.

Annex 15. Checklist for climate change related issues to be examined in the SECAP preparatory study for RB-COSOPs/CSNs

- **Changes in weather patterns observed over the last 20-30 years**
  - What trends can be observed in the seasonal variation in temperature and rainfall (literature review of existing data, climate scenarios and assessment)?
  - Have extreme weather events (frequency and severity of drought, floods, storms) been experienced during this time horizon?
  - Which are the climate-related risks of the existing/planned IFAD programmes in the country?
- **Current and expected vulnerability to climate variability and change**
  - What are the latest available estimates of climate impact on local communities, poor rural people, agriculture, ecosystems and biodiversity, land resources, coastal areas?
  - How is current climate variability affecting indigenous peoples' communities, smallholder farmers, the landless, women, unemployed youth, and other disadvantaged and vulnerable groups?
  - How is the productive capacity of the people and land being affected?
  - What has been IFAD's past experience on climate-related work in the country and potential for scaling up?
- **Community-coping strategies and adaptation responses**
  - What measures have local communities been undertaking to cope and adapt to climate variability?
  - Which groups are better able to respond to climate variability?
  - How have local communities been coping with weather-related disasters?
  - What disaster prevention, early warning system and preparedness plans exist at the local level?
- **Building resilience of rural livelihoods in the face of climate variability and change**
  - Which are the national climate change and disaster risk reduction/disaster risk management strategies as delineated in the United Nations Framework Convention on Climate Change (UNFCCC), National Communications and National Mitigation and Adaptation Frameworks and how can these guide IFAD's investments?
  - Which are the priorities for the agricultural and rural development sectors?
  - What are the "low-hanging fruits" in terms of no-regrets interventions that can be implemented in the short and medium term?
  - Which technical, institutional and capacity needs at local and national levels should be addressed for increasing local communities' adaptation and resilience?
  - What policies would assist in promotion of robust adaptation measures?
  - Which are the major national actors/initiatives supporting adaptation?
  - How can IFAD best collaborate with these to ensure coherency/complementarity in building resilience?

- **Selected relevant resources**
  - Web-based tools and platforms for knowledge-sharing climate change related data and information:
    - Intergovernmental Panel on Climate Change website: www.ipcc.ch/index.htm
    - UNFCCC website: unfccc.int/2860.php
    - Global Facility for Disaster Reduction and Recovery: www.gfdrr.org/gfdrr
    - United Nations Development Programme, University of Oxford Climate Change Country Profiles: www.geog.ox.ac.uk/research/climate/projects/undp-cp
    - World Bank Climate Change Knowledge Portal: sdwebx.worldbank.org/climateportal/index.cfm
    - Adaptation Learning Mechanism (United Nations Development Programme, Global Environment Facility, UNFCCC, World Bank, United Nations Environment Programme): www.adaptationlearning.net; We Adapt: weadapt.org
- **Spatial datasets**
  - Local climate estimate tool: www.fao.org/nr/climpag/data_5_en.asp
  - World Bank Global Climate Data: sdwebx.worldbank.org/climateportal/index.cfm?page=climate_data
- **Climate change vulnerability analysis and climate proofing tools**
  - Participatory Vulnerability Analysis (Action Aid): www.actionaid.org.uk/doc_lib/108_1_participatory_vulnerability_analysis_guide.pdf
  - Climate Vulnerability and Capacity Analysis (CARE): www.careclimatechange.org/index.php?option=com_content&view=article&id=25&Itemid=30
  - Community-based Risk Screening Tool – Adaptation and Livelihoods (CRiSTAL) (International Institute for Sustainable Development, Stockholm Environment Institute, International Union for Conservation of Nature, Intercooperation): www.iisd.org/cristaltool

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International Association for Impact Assessment. See www.iaia.org.

Guidance statement 1 – Biodiversity

INTRODUCTION

1. The Convention on Biological Diversity recognizes that biodiversity is about more than plants, animals and micro-organisms and their ecosystems – it is about people and our need for food security, medicines, fresh air and water, shelter, and a clean and healthy environment in which to live.[1] Biodiversity is essential for the maintenance of ecosystem services, such as the provision of water and food and other services that are important to both the ecosystems themselves and human life. Conservation of biodiversity aims to maintain global biological resources and their related services to meet the needs of humanity today while ensuring availability for future generations – a fundamental criterion of sustainable development. Natural resource management that tries to preserve biodiversity focuses on enhancing the sustainable use of these resources and managing protected areas. Losing biodiversity at the genetic, species or ecosystem level means losing opportunities for coping with future challenges (e.g. related to climate change, energy, food security).

SOCIAL AND ENVIRONMENTAL ASPECTS OF BIODIVERSITY

Trade and biodiversity

2. Trade in agrobiodiversity products can be a huge source of economic growth and may contribute to human development if done sustainably. However, due to lack of resources, poor policies, effective legal framework, and corruption, etc., in most developing countries, it is the major force driving changes in land use and agricultural practices, resulting, in most cases, in the conversion of natural biodiversity inhabited ecosystems into agrobiodiversity ecosystems biodiversity.

3. Governments regulate trade flows using trade policies, which cover many areas including import tariffs and quotas, export taxes, subsidies and a variety of non-tariff barriers, to trade in goods or services. Changes in these trade-related measures influence the cost structures and potential revenues that farmers and farming companies use as a basis for their production decisions, which affects the relative intensity of various factors of agricultural production such as land, soil and labour, as well as inputs such as fertilizers and pesticides. This, in turn, can have significant impacts on various aspects of biodiversity, such as food crop diversity, biodiversity in adjacent ecosystems (for example, through run-off and agrochemicals), and biodiversity located on land previously under alternative use (“the cut down forest”).

4. Capacity-building and market incentives should be given to private businesses, civil society as well as all relevant stakeholders in biodiversity-rich areas to help them engage in sustainable biodiversity management practices.

5. The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity is designed to ensure a win-win situation whereby the private sector and scientific communities have access to genetic

[1] Convention on Biological Diversity – www.cbd.int.

resources for use in research and development, while the local resource owners are guaranteed the equitable sharing of benefits derived from the commercial use of these resources. This fosters cooperation between companies and industries on the one hand and resource owners on the other hand.

Poverty and biodiversity

6. The rural poor, especially those living in areas with low agricultural productivity, have a high dependence on wild biodiversity for their existence, relying directly on genetic, species and ecosystem biodiversity to support their livelihoods (health care, nutrition, crop development, etc). As a result, the challenge being faced by most development initiatives lies on how to create a win-win situation whereby both biodiversity resources and poverty alleviation can co-exist. Mechanisms such as joint protected area management, wild biodiversity-based value chains, payments for environmental services, nature-based tourism, mangrove restoration, agroforestry, grasslands management and agrobiodiversity conservation have been used successfully to address both biodiversity conservation and poverty reduction. Combining rural development with sustainable biodiversity management may therefore be one of the channels through which IFAD may be able to address rural poverty. This approach represents a major challenge – for both its staff and its clients – but without this approach, IFAD's ability to successfully tackle poverty in rural areas may be limited.

Tourism and biodiversity

7. Tourism is seen as one way to provide economic incentives to local people in support of sustainable biodiversity management as well as a way to help raise funds for investment in biodiversity conservation. Recommendations related to tourism and biodiversity[2] include:

   - Ensure an appropriate allocation of tourism revenues between national governments, tourism site managers and local populations.
   - Use participatory strategic environmental assessments, including tourist carrying capacity assessments and zoning (in space and/or time), to keep tourists away from the most fragile and significant areas for biodiversity.
   - Develop destination-level environmental management plans that encourage appropriate forms of transport, accommodation and a mix of activities.
   - Develop appropriate national and international standards or codes of practice (for example, guidelines on waste management) and prepare licensing systems which incorporate environmental criteria and which can be supported by effective monitoring and enforcement capacity.
   - Strengthen local tenure rights over land (including access to wildlife, scenic destinations and other tourism assets).
   - Support local communities with targeted capacity-building and access to finance (including microfinance) to enable them to participate effectively in tourism. This should include education and training to disadvantaged and poor groups (particularly women) to enable them to take up employment and self-employment opportunities.

[2] All Biodiversity Development Project (BDP). 2010. Biodiversity in Development. Biodiversity Brief 9.

- Develop core tourism assets and infrastructure in relatively poor areas where there is potential for commercially viable products.
- Encourage tourism developments that take place gradually and avoid crash developments that rely on outside investment. This requires business and private sector support to improve quality, reliability and transport links.

CLIMATE CHANGE

Biodiversity and climate change interactions

8. Conserving natural terrestrial, freshwater and marine ecosystems and restoring degraded ecosystems (including their genetic and species diversity) is essential because ecosystems play a key role in the global carbon cycle and in adapting to climate change, while also providing a wide range of ecosystem services that are essential for human well-being. While ecosystems are generally more carbon dense and biologically more diverse in their natural state, the degradation of many ecosystems is significantly reducing their carbon storage and sequestration capacity, leading to increases in emissions of greenhouse gases and loss of biodiversity at the genetic, species and ecosystem level. Climate change is a rapidly increasing stress on ecosystems and can exacerbate the effects of other stresses, including from habitat fragmentation, loss and conversion, overexploitation, invasive alien species and pollution.

Impacts of climate change on biodiversity

9. Changes in the climate and in atmospheric carbon dioxide levels have already had observed impacts on natural ecosystems and species. Some species and ecosystems are demonstrating some capacity for natural adaptation, but others are already showing negative impacts under current levels of climate change (an increase of 0.75° C in global mean surface temperature relative to pre-industrial levels), which is modest compared to future projected changes (2.0-7.5° C by 2100 without aggressive mitigation actions).

10. Aquatic freshwater habitats and wetlands, mangroves, coral reefs, arctic and alpine ecosystems, and cloud forests are particularly vulnerable to the impacts of climate change. Montane species and endemic species have been identified as being particularly vulnerable because of narrow geographic and climatic ranges, limited dispersal opportunities and the degree of other pressures.

11. Information in the Fourth Assessment Report of the Intergovernmental Panel on Climate Change suggests that approximately 10 per cent of species assessed so far will be at an increasingly high risk of extinction for every 1° C rise in global mean temperature, within the range of future scenarios modelled in impact assessments (typically < 5° C global temperature rise). Continued climate change will have predominantly adverse and often irreversible impacts on many ecosystems and their services, with significant negative social, cultural and economic consequences. However, there is still uncertainty about the extent and speed at which climate change will impact biodiversity and ecosystem services and the thresholds of climate change above which ecosystems are irreversibly changed and no longer function in their current form.

12. Risks to biodiversity from climate change can be initially assessed using available vulnerability and impact assessment guidelines. However, further development and validation of tools is necessary because uncertainties limit our ability to project climate change impacts on biodiversity and ecosystem services.

Reducing the impacts of climate change on biodiversity

13. Conservation and management strategies that maintain and restore biodiversity can be expected to reduce some of the negative impacts from climate change; however, there are rates and magnitude of climate change for which natural adaptation will become increasingly difficult. Options to increase the adaptive capacity of species and ecosystems in the face of accelerating climate change include:

    - Reducing non-climatic stresses, such as pollution, overexploitation, habitat loss, and fragmentation and invasive alien species.
    - Wider adoption of conservation and sustainable use practices, including through the strengthening of protected area networks.
    - Facilitating adaptive management through strengthening monitoring and evaluation systems.

    Relocation, assisted migration, captive breeding, and ex situ storage of germplasm could contribute to maintaining the adaptive capacity of species; however, such measures are often expensive, less effective than in situ actions, not applicable to all species, usually feasible only on small scales, and rarely maintain ecosystem functions and services. In the case of relocation and assisted migration, unintended ecological consequences need to be considered.

Ecosystem-based adaptation

14. Ecosystem-based adaptation uses biodiversity and ecosystem services in an overall adaptation strategy. It includes the sustainable management, conservation and restoration of ecosystems to provide services that help people adapt to the adverse effects of climate change. Ecosystem-based adaptation can be a useful and widely applicable approach to adaptation because it:

    - Can be applied at regional, national and local levels, at both project and programmatic levels, and benefits can be realized over short and long time scales.
    - May be more cost-effective and more accessible to rural or poor communities than measures based on hard infrastructure and engineering.
    - Can integrate and maintain traditional and local knowledge and cultural values.

15. Ecosystem-based adaptation may require managing ecosystems to provide particular services at the expense of others. For example, using wetlands for coastal protection may require emphasis on silt accumulation and stabilization, possibly at the expense of wildlife values and recreation. It is therefore important that decisions to implement ecosystem-based adaptation are subject to risk assessment, scenario planning and adaptive management approaches that recognize and incorporate these potential trade-offs.

Impacts of adaptation activities on biodiversity

16. Adaptation to the adverse impacts of climate change can have both positive and negative consequences for biodiversity and ecosystem services, depending on the way in which such strategies are implemented, for example:

    - Increasing the diversity of landscapes and interconnecting agroecosystems, natural floodplains, forests and other ecosystems can contribute to the climate resilience of both human communities and biodiversity and ecosystem services.
    - Hard infrastructure in coastal areas (sea walls, dykes, etc.) can often adversely impact natural ecosystem processes by altering tidal current flows, disrupting or disconnecting ecologically related coastal marine communities, and disturbing sediment or nutrition flows.

17. The planning and implementation of effective adaptation activities that take into account impacts on biodiversity, can benefit from:

    - Considering traditional knowledge, including the full involvement of indigenous peoples and local communities.
    - Defining measurable outcomes that are monitored and evaluated.
    - Building on a scientifically credible knowledge base.
    - Applying the ecosystem approach.

BIODIVERSITY IN THE IFAD PROJECTS

18. Conservation of biodiversity should be a cornerstone of IFAD projects, particularly those for agricultural development. Value chain development projects may also offer opportunities for preserving biodiversity by promoting the sustainable harvesting and marketing of products derived from old plant varieties and breeds (e.g. underutilized species), locally used plants (e.g. medicinal plants) and non-timber forest products. Short value chains supplied by many small producers, who use considerably more species and varieties than larger farms, are more suitable for the conservation of agrobiodiversity than long value chains served by a few large farms with monocultures. In addition, agricultural practices such as mixed cropping and agroforestry have proved beneficial for climate change adaptation and improved agricultural productivity.

19. IFAD does not implement projects in areas of critical habitats or which result in conversion or degradation of such habitats. Emphasis will be to identify alternatives and ensure that any potential degradation or conversion is appropriately mitigated. IFAD will protect biodiversity by designing its projects appropriately, ensuring that they are implemented sustainably with full community participation, and providing sound recommendations for improving borrowing countries' agricultural policies, many of which are currently top down.

WAY FOWARD

20. IFAD can protect biodiversity by designing its projects appropriately, ensuring that they are implemented sustainably with full community participation, and providing sound

recommendations for improving borrowing countries' agricultural policies, many of which are currently top down. The following are the issues to be considered in this identification process:[3]

21. Adopt an ecosystem perspective and multisectoral approach to development cooperation programmes:
    - Focusing on the ecosystem reduces reliance on a single species and strengthens ecosystem functions such as climate stabilization and soil formation. It also allows for impact assessments to be done easily at different points in time, as well as facilitating the integration of social, biological and economic issues across in a holistic manner. This approach would take into consideration the biological specificity of the area, which may extend beyond administrative boundaries.
    - Pinpoint the important biophysical features (flora, fauna, soils, water, air, etc.) within the different habitats and ascertain the interaction of these habitats within the affected ecosystems. Determine which species (native, migratory, domesticated, etc.) will be sensitive to the changes proposed by the project and identify in which ways climate change will affect these sensitive biological features.
    - Evaluate the impact of the agroecosystems on the natural ecosystems and the possibilities of impacts to other areas or surrounding areas because the project impacts or changes should be understood and mitigated if needed.
    - Understand how heavily the local communities rely on biodiversity and ecosystem services for their livelihoods. Finding ways to educate the local communities about unknown biodiversity that is critical to their livelihoods and related to project details.
22. Promote fair and equitable sharing of costs and benefits from biodiversity conservation and sustainable use at all levels: local, national, regional and international.
    - Where projects involve biodiversity conservation activities, unless the costs and benefit sharing are perceived by the locals as equitable, they are unlikely to support any new biodiversity management policies, which can lead to a failure of such policies.
    - Local people should be supported in the development of income-generating activities that sustainably make use of biodiversity resources.
    - Ensure that traditional and customary rights to and uses of biodiversity are recognized and that benefits from the commercial use of biodiversity are shared fairly. Seek alternatives to activities that trade in biodiversity capital to meet short-term needs where this could jeopardize the ability of future generations to meet their needs (IAIA, 2005).
23. Encourage full stakeholder participation, including partnerships between civil society, government and the private sector.
    - Each project should promote the active participation of local populations throughout the project cycle, including in identifying suitable ways to minimize environmental and climate change effects of proposed activities.
    - Reach, fully involve and empower poor and marginalized groups, including women and youth, in the development processes.
24. Ensure that IFAD programmes and projects are consistent with the wider policy framework, and/or changes are made for supportive policies and laws.

[3] Biodiversity in Development Project. 2001. *Guiding Principles for Biodiversity in Development: Lessons from Field Projects*. European Commission, Brussels, Belgium/IUCN. Gland, Switzerland, and Cambridge, UK. 56 pp.

- Respect and promote local peoples' rights of access to, and tenure of, land, natural resources and biodiversity.
- Harmonize national policies with international conventions and treaties.

25. Ensure that institutional arrangements are effective, transparent, accountable, inclusive and responsive.
    - All stakeholders, especially the weak, marginalized and poor, should be represented in any institutional arrangement and any decisions should be taken in a transparent manner.
    - Capacity-building is necessary to support and empower poor and marginalized groups, and train government and civil society members on how to interact with each other as well as with the private sector.
    - Strengthen the institutions that manage and protect biodiversity, and establish appropriate regulatory systems to reduce the detrimental environmental impacts of development interventions during and after the project ends.
    - Collaborate with local community groups to establish effective management systems for protected areas, restore damaged habitats, and offset unavoidable losses of habitat by ensuring compensation and increased benefits for affected communities.

26. Provide and use accurate, appropriate, multidisciplinary information, accessible to, and understood by, all stakeholders.
    - For most biodiversity-related developments projects, effective information-sharing is primordial to the project's success. Dissemination of information should be such that accountability and transparency are recognized by all stakeholders.
    - One way of building confidence in this domain is to encourage participatory data collection at the early stages of the project. This not only helps build bonds between participants, but also forms a basis for better acceptance of findings for data collected.
27. IFAD's investments should be sensitive to, and complement, local and national structures, processes and capacities.
    - Ensuring project ownership (by national governments, local governments, etc.), combined with the use of locally available staff, consultants, contractors, non-governmental organizations and businesses, not only ensures that work is done by people who know the area and its specific sociocultural context, but can go a long way in ensuring acceptance of the project by the affected individuals.

MITIGATION

28. Mitigation aims to eliminate or reduce the negative impacts of a project on biodiversity. Measures for protecting biodiversity must ensure that local populations are not adversely affected by project activities and that they benefit from environmental opportunities. As a guide, mitigation activities should follow the following order of preference:
    - **Complete avoidance of adverse impact.** If a project was initially classified as category A because of its impact on a sensitive biodiversity site, an alternative solution may be found to maintain the project. For example, a project that may need the significant clearance of forest resources may be located in areas where significant depletion has already occurred.
    - **Reduction of impacts on biodiversity where unavoidable.** For most IFAD projects, it may be necessary to carry on with a project even with its known effects on biodiversity. In such cases,

it will be necessary to undertake further environmental and/or climate risk assessments to further understand the risks and access the viability of available mitigation options.

- **Restoration of habitats to their original state.** This is a case whereby a project attempts to return a biologically depleted land form into its original state. While it may not always be an economically feasible option – restoring converted wetlands to their original form, for example – in some situations (such as assisted forest regeneration) it may not only be potentially successful, but also cost-effective.
- **Relocation of affected species.** In extreme cases where a project continues in spite of its adverse effects, one option may be to relocate the species. This is an uncommon option and requires detailed studies to understand the potential impacts of such an intervention at both the original and proposed site. IFAD will not be undertaking this option for its projects.
- **Compensation for any unavoidable damage.** This refers to a case whereby a project is allowed to continue in spite of its negative effects to biodiversity. The project, however, compensates for its negative effects on biodiversity by supporting mitigation or restoration of similar biodiversity-rich habitats located elsewhere. IFAD should never use this as a stand-alone solution, but may consider it on a very limited scale, such as when other mitigation options have been exhausted.

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Guidance statement 2 – Agrochemicals (Under revision)

INTRODUCTION

1. Increased food production is one of IFAD's central objectives; the use of agrochemicals (mainly fertilizers and pesticides) may be necessary to achieve higher yields per unit area. However, the environmental and social (including health) concerns raised by such use of agrochemicals must be carefully considered. These concerns include undesirable soil and water contamination, acidification of soils, human health risks, pest resistance, damage to non-target organisms and secondary pest problems. For example, the use of nitrogen fertilizers on a farm has an environmental impact because crops recover only about half of the nitrogen supplied in global crop production, with the rest ending up in water resources and causing eutrophication (Eickhout, Bouwman and van Zeijts, 2006). The use of agrochemicals may also result in unacceptable toxic residues on agricultural products and unnecessary financial burdens because of overapplication.

2. Agrochemicals are among the most important secondary sources of greenhouse gas (GHG) emissions in the agriculture sector. A large share – often more than half – of the energy used in farming is for the production of synthetic fertilizers, particularly nitrogen fertilizers (which produce 3.3–6.6 kg of carbon equivalent per kilogram produced, transported and stored) and pesticides (Rundgren, 2011).

3. The production of fertilizers is energy-intensive and emits about 1.2 per cent of the world's total GHG emissions (Wood and Cowie, 2004.). However, appropriate fertilizer use can increase cultivated soil carbon reserves by augmenting the photosynthetic conversion of carbon dioxide to biomass (IFIA website). In comparison, manure (when available) emits far less carbon in providing soil with nutrients (Lal, 2004).

4. Compared with fertilizer use, the manufacture and application of pesticides represent far lower proportions of fossil fuel use and GHG emissions in farming (Pesticide Action Network Europe, 2009). However, the reduction in synthetic pesticides and the use of biopesticides and organic farming will save both energy and global warming emissions from pesticide production, transport and use.

5. Agrochemicals include fertilizers, liming and acidifying agents, soil conditioners, pesticides, and chemicals used in animal husbandry such as antibiotics and hormones. The use of agrochemicals has been critical to raising crops for food. However, some of these chemicals cause substantial damage to the environment, ecology and human health, greatly reducing their net benefits. The World Health Organization estimates that there are 3 million cases of pesticide poisoning each year and up to 220,000 deaths, mostly in developing countries. Pesticide exposure can cause a range of neurological health effects, such as memory loss, loss of coordination, reduced stimulus response, impacts on vision, altered or uncontrollable mood and behaviour, and reduced motor skills. Pesticides have also been linked to cancer, hormone disruption, and problems with reproductive and foetal development (see guidance statement 14).

Use of agrochemicals in IFAD projects

6. IFAD projects promote the use of agrochemicals directly, as a project component for increased crop productivity, or – more commonly – indirectly, by increasing the availability of short-term credit for farm inputs or water for irrigation, which encourages increased use of agrochemicals. Careful selection of the type of agrochemicals and management of their use (timing, dosage, mode of application, etc.) can reduce to acceptable levels the environmental risks they pose while providing the needed benefits for increased production with lower financial and health risk costs. IFAD projects should strive to improve existing pesticide and fertilizer use by ensuring that the proper institutional, legal and regulatory framework is in place and that sufficient technical and managerial capacity-building is provided for the selection, application, storage, disposal and monitoring of pesticides, which are often hazardous if they are misused or handled improperly.

7. Pests, including insects, weeds, fungi and pathogens, can be a significant constraint to agricultural production, frequently requiring the use of pesticides for their control. IFAD should ensure the proper application, storage, disposal and monitoring of agricultural chemicals, in line with international standards. This requires the enhancement of environmental awareness, farmer training and field extension services for the application of integrated pest management (IPM).[1]

8. The use of agrochemicals can also be reduced or eliminated by promoting indigenous farming practices, such as the cultivation of locally adapted crops and varieties, which are often resistant to local pests and diseases; the use of locally available natural biopesticides and pest-repellent crops, with adapted cultivation strategies (seeding periods and methods, etc.); the use of natural on-farm animal and green manure; and organic farming techniques. Ensuring diversity in the crops and varieties cultivated on a farm, especially indigenous crops, reduces the risk of high-level pest infestations and disease epidemics and facilitates enhanced ecosystem services, including through pollinators and active soil fauna and flora.

Environmental, climate change and social issues

9. Several potential environmental and social consequences are associated with the use of agrochemicals (also refer to other relevant guidance statements):

    - *Water pollution* from the use of agrochemicals may affect both groundwater and surface water through leaching and run-off. High concentrations of nitrates and phosphates can lead to eutrophication in rivers, lakes and coastal waters. High levels of nitrogen and phosphorus cause the depletion of oxygen in lakes and reservoirs by excessive algal and bacterial growth (eutrophication), eventually reducing aquatic life. The problem is aggravated by organic effluents, especially human sewage, and eutrophication in drinking water reservoirs is a public health concern. In addition, the toxic compounds contained in some pesticides and herbicides may pollute groundwater and surface water, posing threats to both human and animal health, including marine and freshwater fish.

[1] IPM refers to the balanced use of biological controls (e.g. the introduction of insect predators or parasites), cultural practices and selection of pesticides (those that are toxic only to specific target pests) and fertilizers. IPM programmes should be tailored to particular geographic locations, crops, pest complexes and available resources. Effective IPM must be built and designed from the farmer up, not from the scientist down.

- *Hazards to humans and animals:* Improper application of pesticides, overuse and neglect of safety periods between application and harvest often result in high residues in harvested crops and processed food and unnecessary exposure of farmers and their families to toxic material. Contact can be direct (skin or eye) or through inhalation or ingestion. Agrochemical residues are also known to persist in contaminated clothing. Pesticides may move off target and poison fish, cattle, beneficial insects, pollinators, soil organisms and nearby communities. Pesticides may have acute or chronic toxic effects. While people are aware of their acute effects, which vary from mild irritation to death, their chronic toxicity results from the accumulation of small amounts of residue in consumed food – of both plant and animal origin – in the human body over a long period, leading to various toxicity symptoms and diseases (see guidance statement 14).
- *Bioaccumulation* implies that toxic levels increase over time and along the food chain (e.g. in carnivorous mammals or predatory fish). The bioaccumulation of toxins resulting from agrochemical use is a very serious issue, causing biodiversity loss and disease in both animals and humans, especially in poor rural communities that rely on wild food. Bioaccumulation is also very serious for the marine and freshwater life that is critical to a large proportion of the poor.
- *Pest resurgence:* Misuse of pesticides can cause elimination or suppression of the natural enemies that keep insect pest populations under control and at economically acceptable levels. This suppression leads to outbreaks of secondary pests previously not considered important. This not only affects crops, but can also affect livestock and community health (see guidance statement 14).
- *Pest resistance:* The misuse of pesticides can lead to the build-up of resistance in insect pests, pathogens and weeds. This resistance has great economic and ecological consequences because increasing amounts of more expensive and toxic pesticide formulations are required to achieve pest control. In some areas of the world, pesticide overuse has created a population of resistant pests, which threaten subsistence and cash crops, livestock and human health.
- *Loss of bees and other beneficial insects:* Pesticides can kill bees and other beneficial insects that are essential for the pollination of indigenous plants, honey production, etc., thus causing negative impacts on the food production, livelihoods and incomes of poor rural communities.
- *Soil fertility loss* may be related to excessive or inappropriate application of chemical fertilizers, which could result in soil salinization, sodicity or acidification, depending on the inherent soil chemistry, the quality of irrigation water and other external factors (such as acid rain). Soils may also lose their fertility due to the lack of, or insufficient application of fertilizer, which causes a decline in natural nutrient availability. Degraded agricultural land that has lost its fertility may retain its capacity to recover through fallowing. However, beyond a critical point, fertility loss may become an irreversible phenomenon. While inorganic fertilizers may improve soil fertility, various forms of organic inputs such as manure, also improve the soil structure, which enhances microbial activity, air and water infiltration and retention.
- *Soil loss* is caused by wind and water erosion on lands that have been overgrazed or overutilized for crops. Marginal and poor soils are particularly vulnerable to erosion, especially if soil fertility is depleted and natural vegetation fails to regenerate adequately. Loss of topsoil and valuable organic matter is usually irreversible.
- *Climate change* is expected to affect the population and life cycles of several pests and diseases, mainly through the influence on their distribution and expansion ranges. More invasions by introduced or migrated alien species of pests and diseases are expected, with higher intensities of infection. However, the impact of climate change will be most clear through its effect on crops, as crops growing under various types of climate stress will be more susceptible and vulnerable to pests and diseases. Anticipated effects include reduced tolerance

and resistance levels in crops, and losses in biodiversity, especially of wild crop species needed for resistance breeding. Because of higher pest and disease pressure, more pesticides will be applied, which might lead to increased misuse and overuse if not well managed (World Bank, 2009). Environmental instability and increased incidence of extreme weather may also reduce the effectiveness of pesticides on target pests, or result in more injury to non-target organisms. However, climate change may affect biological control negatively or positively (Patterson et al., 1999).

Criteria for environmental screening and scoping of IFAD projects

10. Whenever an IFAD project includes the purchase, promotion or use of agrochemicals, environmental analysis should seek to address the following issues:

- *Identification of specific crops and their existing or potential pests requiring pest management:* Investigate the options for using available safe pesticides and non-pesticide alternatives such as natural deterrents.
- *Identification of nationally approved and available pesticides*, and management and application techniques for their judicial and effective use to protect human and environment health.
- *Assessment of local and national capacity for the safe handling, use, storage, disposal and monitoring of agrochemicals:* Identify training needs for regulatory institutions, agro-dealers, extension agents and farmers, and assess the needs for building community environmental awareness.
- *Development of an IPM programme* for minimizing/optimizing pesticide application, including – if possible – provisions for monitoring residues on crops and in the environment. The programme should include IPM strategies for enhancing the resilience of vulnerable agroecosystems to climate variability and changes, and the adaption of IPM practices to deal with pests in different climatic conditions (World Bank, 2009).
- *Reduction of environmental impact:* As fertilizers have a high carbon footprint, it is prudent to enhance the efficiency of nitrogen use (by minimizing losses caused by erosion, leaching and volatilization) and to identify alternative sources using integrated nutrient management strategies, such as biological nitrogen fixation, animal manure and the recycling of nutrients in crop residues (Lal, 2004).

11. The following questions should guide the environmental and social screening and scoping of IFAD-supported projects:

By component:

- Will the project include direct financing or short-term credit for agrochemical procurement? Are measures being designed for the support or strengthening of pesticide regulatory institutions, and is special training required for the proper application and use of the pesticides selected? Is the project providing home garden packages/kits? Do these kits contain pesticides by default? Pesticides should be available only when needed and not by default.
- Will the project encourage plant protection, or disrupt indigenous production practices? Are the pest control methods promoted in the project area easy for local people to adopt, and will the practices be sustainable?[2]
- Are the crops promoted suitable for the geographic location, pest complexes and available resources, and will they require additional pesticide inputs? If the project promotes

[2] Sustainability is a critical issue because imported pesticides may be too expensive or not easily available in the long term after the project ends.

monoculture in time and space – of specific varieties or of crop types in general – what measures are being taken to reduce the increased risk of pest and disease infestation? Do the selected crop varieties typically require high pesticide applications (e.g. cotton)? Does the project favour native varieties, which may be more suitable to the local environmental and socio-economic conditions of farms?

- Will the project require any specialized post-harvest treatments? Will these treatments require the use of fumigants that may pose a hazard to operators and the environment and leave dangerous residues in food?
- Are the selected pesticides of high toxicity? Do they require specialized training or application equipment for their safe handling and use? Is the choice of pesticides recognized as being particularly hazardous? Will the project require the use of soil fumigation treatments that may pose hazards to operators and the environment?
- Are there particular hazards associated with the pesticides selected? Are alternative, less toxic pesticide options available? Are there any hazards linked to the handling, mixing, field application, transportation, storage and disposal of unused pesticides and their containers? A major hazard assessment may be necessary if substantial quantities of pesticide are to be stored, transported or disposed of. Is training being provided to agro-dealers and to farmers and their families on the safe use, storage and disposal of pesticides in and around the household?

By receiving environment:

- Does the project area include any vulnerable drinking water supplies for people and animals?
- Does the project area contain any aquifers and water reservoirs used for human or animal consumption?
- Does the project area cover any natural or commercial fisheries or breeding grounds downstream?
- Does the project area contain any local wells or informal drinking water sources?
- Does the project involve activities that use agrochemicals adjacent to any natural park or reserve?
- Does the project use polluted water for irrigation?
- Do local people use water courses that may become contaminated with agrochemicals for potable water, livestock drinking, fishing, laundry and bathing?

Potential mitigation

12. The following paragraphs outline activities for the prevention or mitigation of inappropriate or excessive agrochemical application. The recommended activities and any additional site-specific measures should be incorporated in the Environmental and Social Management Plan (ESMP) for the programme or project. In operations where large-scale pesticide use is proposed, such as for suppression of locust infestations, or is likely to occur because of agricultural development, a stand-alone pest management plan may be appropriate.

Fertilizer management:

- Ensure that dressings do not exceed recommended doses.
- Reduce leaching through appropriate choice of fertilizer to suit soil conditions, split applications and fertilizer placement.

- Reduce run-off through incorporation of fertilizer into soil, timing of applications to avoid erosive rains, and soil and water conservation measures.
- Limit nitrate use in sensitive watersheds serving urban areas.
- Select non-ammonium sources of nitrogen such as urea.
- Carry out liming (usually to pH 5.5 for tropical crops).
- Explore the potential for increasing production without the use of chemical fertilizers, especially using indigenous technologies, including organic fertilizers, and supporting integrated soil fertility systems.
- Promote community education on improving indigenous practices to maximize production, avoiding chemical fertilizers in favour of local options that are available on farm.
- Support crop management practices that increase the nutrients available to crops, including by: (i) using more organic and less inorganic fertilizer;[3] (ii) increasing the efficiency of fertilizer use through appropriate fertilizer selection, timing and split applications; (iii) increasing nutrient recycling using crop residues and livestock grazing after crop[4] harvest (mixed farming); use of nitrogen fixing trees, where feasible (agroforestry); and (iv) improving rotations (e.g. inclusion of legumes, multicropping).
- Monitor receiving water courses and soil for fertility to avoid overapplication of agrochemicals.

Pesticide management:

- The project should be explicit about the pesticides it proposes, including those that farmers are expected to use when credit for input purchases is made available. **For projects that entail significant pesticide use or have the potential to result in increased pesticide use, a pesticide management plan is prepared, either as a stand-alone document or as part of the Environmental and Social Impact Assessment** (**ESIA) or ESMP.** The most important criteria for assessing the environmental impact of a pesticide **are its toxicity level and the degree of biodegradability. Consideration should also be given to residue-level guidance** for countries that intend to export crops. Unregistered, restricted-use or experimental-use pesticides should be avoided, unless their use in the project has been reviewed and approved by the Food and Agriculture Organization of the United Nations (FAO)/World Health Organization (WHO) Joint Meeting on Pesticide Residues.

- Pesticides in WHO Class la and Class lb[5] should generally be avoided.

- For general use, the formulated product should be at a low enough concentration to be in at most a WHO Class II. Low-toxicity formulations should be favoured: from least toxic to most toxic, the options are granule, dust, wettable powder, flowable, emulsifiable concentrate, ultra-low volume and fumigant.

- Low-concentration granulars, seed dressings, bait formulations and pheromone traps generally present the least hazard to users and are especially suitable for small-scale farmers unfamiliar

[3] The use of treated sewage effluent could be considered only in those countries where the quality of the effluent can be regularly checked in a laboratory, and where there are strict water quality standards in place for the use of such effluent for agricultural practices.
[4] An outline of a pesticide management plan is provided in annex 2.1 to this guidance statement.
[5] The World Bank prohibits the use of pesticides in Class Ia and Class Ib, and restricts the use of pesticides in Class II in the projects that it finances.

with pesticide use; they cause minimal environmental contamination and minimal adverse effects on non-target organisms.

- Aircraft application should be avoided whenever possible, and used only when speed in covering large areas is essential, such as in the emergency control of migratory pests.

- Safe application equipment and servicing facilities should be promoted, along with correct calibration of equipment. Training should be provided for personnel and farmers applying the pesticides.

- Protective clothing, including masks, gloves and boots, should be provided or promoted, especially for pesticides that are absorbed through the skin. However, improper use of protective clothing may be even more hazardous than doing without protection: unless it is washed, protective clothing can become saturated with pesticides – such as in the lining of boots and gloves – and can greatly increase pesticide absorption. Training should be provided.

- Training is crucial to the safety, use and cost-effectiveness of pesticides, and is recommended for inclusion in any project that increases the availability or accessibility of pesticides. A range of actors will require education: users, operators, extension officers, retailers, health workers treating cases of poisoning, and legislators in pesticides law.

- Application guidelines for pesticide use should be made clear to the borrowing country, and a legal document should be drawn up providing assurance that the guidelines will be followed. All the pesticides used in the project should be properly labelled, and all labels and application guidelines should be provided in the local language.

- Monitor water courses, soil and community health on a regular basis to ensure that pesticide concentrations are within legal environmental and health limits.

International legal context

13. The Rotterdam Convention contributes to the environmentally sound use of hazardous chemicals by creating legally binding obligations for the implementation of prior informed consent (PIC) procedures. The fundamental principle of the PIC system is that international shipment of a chemical that is banned or severely restricted for health or environmental reasons should not proceed without the agreement, or contrary to the decision, of the importing country. The International Register of Potentially Toxic Chemicals of the United Nations Environment Programme has a database on PIC.

14. Agrochemicals banned in developed countries are often illegally dumped in developing countries, so pesticide use has to be carefully monitored by governments.

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Guidance statement 3 – Energy (under revision)

INTRODUCTION

1. Worldwide, 2.4 billion people rely on traditional biomass such as fuelwood and charcoal for cooking; 1.3 billion people do not have access to electricity (REN21, 2012). Households expend significant proportions of their disposable incomes, time and labour on low-quality energy sources. This situation entrenches poverty, constrains the delivery of social services, limits opportunities for women, and erodes environmental sustainability at the local, national and global levels (UN-Energy, 2004). Today, energy from traditional biomass fuel is thought to account for nearly one-tenth of all human energy demand – more than hydro and nuclear power together – and wood-based fuels probably make up two-thirds of household use. Poor households in developing countries often burn wood, charcoal and other solid fuels (mainly agricultural residues and coal) in open fires or poorly functioning stoves, resulting in various health risks (pneumonia, bronchitis and emphysema) which accounts for the deaths of more than four million people annually, more than half of whom are children under 5 (African Development Bank, Guidance Note of Health and FAO, 2006).
   Modern bioenergy technologies can offer a wide range of solutions that are appropriate to rural domestic energy needs (e.g. for cooking on flexi-biogas) or to energy demand for productive uses (e.g. water pumping for irrigation). In terms of electricity generation, renewable energy represented about 16 per cent, with non-hydro accounting for only a small fraction of that. It should be noted that off-grid renewable energy, while small in terms of installed capacity, has real potential to support sustainable access to modern energy[85]. Small-scale solar photovoltaic, wind, solar thermal, micro- and mini-hydro, and hybrid systems (e.g. solar/wind systems) for mini- grids are very effective tools for energizing sustainable agriculture and rural development. These sources also contribute to climate change mitigation through the reduction of greenhouse gas emissions.
2. Broad and reliable access to energy allows the powering of agricultural and transport equipment, is particularly important for producers who are off the power grid or connected to an unreliable power supply, and reduces rural poverty through increased agricultural and labour productivity. The social benefits of energy access are significant. Electrification in poverty-stricken areas facilitates access to health (refrigerator for medicines, light in a health centre or local laboratory), to information technology (radio, television, telephone) and leads to higher educational achievement. Cleaner energy reduces the incidence of respiratory diseases by decreasing indoor air pollution, and reduces women's workload and drudgery related to collecting fuel, fetching water for domestic needs and processing food. Women benefit from the labour-saving, employment-creating and income-generating impact of rural energy provision. Many countries are adopting renewables[86] other than traditional biomass in their energy strategies, to reduce carbon dioxide emissions and help mitigate global climate change. The renewable sources also offer opportunities to expand supply and in some cases maintain energy security where sources such as hydro-power generation, may be negatively impacted by climate change. Despite being natural and renewable, these fuel sources should

[85] http://www.un-energy.org/cluster/renewable_energy
[86] Renewables are sources of energy that can be renewed indefinitely, such as hydro-, solar, geothermal and wind power, as well as sustainably produced biomass.

be assessed for their potential environmental impacts, especially in the case of biofuels, as their feedstock supply chains may not be sufficiently sensitive to the principles of sustainable natural resource management and may compete with (rather than complement) food production.

3. Gender-related differences and inequalities influence the outcomes of energy planning projects. Attention should be given to women's time and labour constraints; women should be provided with opportunities to participate in decision-making regarding the development and adaptation of fuel-efficient technologies, and with the necessary technical skills to compete with men in green job opportunities. Giving women and men access to project participation can change overall gender inequality. The harnessing of rural renewable energy sources to create a rural energy market offers many opportunities for improving gender balance: field experience shows that many activities– such as commercial distribution, rural credit, marketing, training and agricultural work for securing feedstock for bio-energies – would benefit from increased entrepreneurship and leadership of rural women in the energy value chain.
4. According to IFAD's Environment and Natural Resource Management Policy, basic guidelines and good practices for IFAD interventions in the energy sector are to promote and support: (i) sustainable practices in developing rural energy resources that expand markets and ensure a steady energy service; (ii) development and dissemination of bioenergy[87] and renewable energy-efficient technologies that do not create competition with food crop production; (iii) development of institutional approaches to managing local-level energy production and the associated distribution systems; (iv) scaling up of the use of clean and renewable energy; and (v) poor people's access to sustainable energy, with appropriate consideration of gender roles in sourcing the energy.

ENERGY IN IFAD PROJECTS

5. Energy security is receiving increased attention in the IFAD portfolio, which focuses on improving access to energy for domestic, processing and farming purposes, to enhance the quality of life and living standards of poor rural people. In partnership with other entities, and in support of country-owned initiatives, IFAD explores alternative sources of energy for poor people, to reduce their dependence on fossil fuels or traditional biomass by capitalizing on opportunities to use renewable energy sources at the farm and community levels, and promoting low-cost technologies that use local resources to provide energy to rural areas. IFAD assists countries in developing rural energy systems through the analysis and projection of demand and supply trends for renewable energy and its substitutes, at the sub-regional, national and local levels; producing biogas from animal and human waste and biofuel from energy crops; and constructing stand-alone or grid-connected home solar systems for lighting, refrigeration and water pumping in poor remote households. IFAD also promotes the use of energy-efficient stoves.

[87] Bioenergy is energy that is directly or indirectly produced from biomass. Bioenergy resources include wood biomass such as fuelwood, charcoal and forestry residues; energy crops such as sugar and cereals; and agricultural and livestock by-products such as straw, leaves, stalks, husks, shells, manure and droppings. Bioenergy is a renewable energy with three main applications: electricity generation, heating and transport fuel (FAO, 2004).

ENVIRONMENTAL, CLIMATE CHANGE AND SOCIAL ISSUES

6. Renewable energy is of growing interest because of its potential to diminish reliance on fossil fuels, reduce carbon emissions and mitigate climate change. For example, biogas can provide poor rural people in developing countries with clean and renewable energy all year round. The use of biogas stoves frees women from the need to collect fuelwood, enabling them to undertake other productive activities. The organic residual end product of the biogas process can be used as a fertilizer to boost the productivity of agricultural plots. As well as reducing the need for fossil energy, biogas technology also reduces the greenhouse gas (GHG) emissions caused by burning fuelwood, and – especially – the methane emissions from natural decomposition of organic waste. It also improves sanitation conditions because animal and human waste is channelled into biogas digesters. Another alternative technology with potential for rural areas is small- scale, solar photovoltaic technology, especially now that its price has decreased dramatically with the expansion of global manufacturing capacity. The massive uptake of an IFAD-led innovation, flexi-biogas, through private sector manufacturers and retailers demonstrates the insatiable demand for reliable and cheap renewable energies. These are opportunities that IFAD operations should exploit, because although the technology has become more affordable, remote rural markets still need substantial assistance in developing the market structure necessary for financial sustainability. Investments in solar electrification and flexi-biogas should include proper management of the market for after-sale services, to reduce the risks of environmental hazards, such as from improper disposal of used batteries.
7. Strategic considerations must be part of the planning process, to ensure that the intensity and methods of exploiting natural resources for energy purposes respect the overall goal of environmental and economic sustainability. For instance, there has been much debate about the true net energy and carbon balances of bioethanol and biodiesel production. Savings in GHGs range considerably, depending on the structure of the overall value chain. Weak national legislation and regulatory frameworks, uncontrolled private sector initiatives and ill-conceived donor projects for energy crop production have led to negative environmental impacts from the replacement of forests, monocropping, land degradation, soil erosion, depletion of water resources, and pollution from pesticide and fertilizer use, as well as social impacts such as pressures on smallholders' land. Fortunately, awareness of the potential risks of bioenergy initiatives is rising, and it is now more widely recognized that energy gains from biofuels are possible only when the energy content of the biofuel is higher than the energy inputs for feedstock production, farm mechanization, crop processing and fuel distribution (UN-Energy, 2007). Additional concerns regard the impact of biofuel on the food security of the poor, which may be compromised by increased demand for energy crops. Bioenergy production may also result in poor labour practices, with health and safety risks and the use of child or forced labour. Large-scale biofuel production may lead to the dislocation of rural communities and an increase in landlessness.

POTENTIAL MITIGATION

8. Energy development is a cross-sector activity. When formulating a new, or evaluating an existing investment proposal, many issues need to be understood and analysed. The use of

multicriteria analysis, cost-benefit analyses or approaches such as life cycle analysis[88] can be of great assistance. A convincing and balanced bioenergy investment with attractive economic returns, as well as ecological and positive net energy balances, has to address many aspects, including diversions from food to energy crops, land-use change, smallholder inclusiveness, production of appropriate feedstock, and adoption of optimal agricultural and water-use practices. Other aspects for consideration are post-harvest management, agro-industrial processing and its effluents, and energy conversion and utilization efficiencies. Similar attention to the multiple facets of other renewable energy systems is fundamental for appropriate exploitation and diffusion as drivers of rural development and livelihood improvement.

9. As the rising long-term trend in oil prices constrains agricultural production and livelihood security, IFAD should support comprehensive planning and investment in alternative rural energy sources and should seize emerging opportunities for energy production through investment in the following:
    a. *Renewable sources of rural electricity:* The use of mini-hydro, biogas, small-scale wind and solar photovoltaic energies often competes well with grid extension, and/or reduces the consumption of fossil fuels (particularly diesel) and other traditional energy sources for lighting (kerosene, candles, batteries), while reaping the benefits of establishing green-technology market infrastructure to sustain rural renewable energy services and improving health. Even small renewable electricity supplies have proved capable of powering small-scale rural productive activities (FAO, 2000).
    b. *Renewable sources of thermal energy* can substitute fossil fuel or biomass combustion in rural small and medium-sized enterprises (agroprocessing). They can also satisfy households' demand for cooking energy. Examples include biofuel and biogas stoves, solar cookers, and the latest biomass gasification stoves. These will also result in net benefits for health.
    c. *Energy efficiency investments:* Energy efficiency remains largely unexplored, but it is often associated with renewable energy systems. For instance, the use of solar electric water-pumping systems with water storage can dramatically cut the power requirements of irrigation systems, which traditionally depend on oversized diesel pumps. An example for rural areas is the production and marketing of improved or energy-efficient solid biomass cooking stoves, which can substantially decrease exposure to air pollution, consumption of traditional biomass, and global warming impacts. Investments in energy efficiency can also be applied to rural productive energy uses.
    d. *Biofuel investments:* Well-managed, low-input biofuel production systems matched with efficient transport and processing systems have potential in developing economies in the tropics, not only for producing energy, but also in linking smallholders to markets, and facilitating agro-industries' effective use of resources. However, the considerations in point 8 are particularly relevant here. Careful analysis of biofuel production and processing systems should revolve around the following:

[88] Life cycle analysis refers to a group of methodological approaches that analyse the full production and consumption cycles of products (including several in the biofuel sector) and assess their sustainability performance along their life cycles.

i. *Land-use planning*, to minimize competition for food production, increase transport efficiency and maximize processing capacity.
ii. *Cost-benefit analysis* of a country's potential to establish a sustainable biofuels development programme, including current agricultural production and estimated future expansion of energy crop cultivation, land availability and utilization, production potential in marginal and degraded lands, current uses of agricultural and forestry by-products, availability of water and other resources, national dependence on fossil fuel imports, and bioenergy and food security synergies and risks.
iii. *Improved agronomy and breeding*, to increase agricultural efficiency and investments in the energy crops that are most suitable for local environments and climates.
iv. *Secure access to natural resources and land tenure rights for small farmers*, to minimize land appropriation by large-scale biofuel producers, promote small and medium-sized enterprises by linking farmers to the bioenergy value chain and market, and support local processing and use of the energy produced. For example, development of Jatropha oil production in Malawi was based solely on a network of 25,000 smallholders planting the energy crop as hedgerows around their food farming plots (BERL, Malawi website).
v. *Safeguarding of natural ecosystems and biodiversity*, to limit the risks of environmental degradation associated with the expansion of energy crops. Deforestation can counteract the GHG benefits of biofuels for decades. Regenerate and cultivate bioenergy plantations on unused, degraded and marginal lands to limit expansion of the agricultural frontier and reduce competition over land use for food production. Adhere to good agricultural practices, avoid monocropping by applying crop rotations or associations, reduce inputs, and avoid the use of genetically modified crops. Map and respect biodiversity-rich areas – legally protected areas, and areas harbouring rare, endangered and threatened species and ecosystems – and set up systems for monitoring conditions.
vi. *Exploration of the potential for using biomass residues and wastes:* Bioenergy feedstocks include manure, forest thinning, rice husks and straw, which together supply up to half of a country's bioenergy potential (FAO, 2007; 2010). Second-generation biofuels, such as bioethanol produced from enzymatic processing of agricultural waste, have high potential for sustainability, although they are still at the development stage.
vii. *Development of strong local biofuel markets:* Biofuel investments have been dominated by large-scale, high-input plantations for exports of raw materials, or (in the best scenario) locally pressed vegetable oil or locally manufactured bioethanol. Recently, however, a growing number of biofuel initiatives are tapping into the local fuels market. The macro-economies of many producing countries are highly dependent on fossil fuel imports, with low-quality, high-cost imported fossil fuels and a weak distribution network in rural areas. In such instances, significant new biofuel markets can be harnessed: examples

include using biofuels instead of large volumes of fossil diesel to power the generators of mobile phone networks in rural areas; and nascent fuel blending standards and policies that mandate the oil industry to mix biofuels in diesel and gasoline for the local transport sector.

viii. *Synergy with food value chains:* This point merits particular attention, as careful planning, coordination and entrepreneurial effort can provide ample opportunities for making biofuel production an engine for improved agrifood production. Building synergies means planning biofuel production as a complement to food production. For example, in the Jatropha hedgerow-planting model from Malawi, an agro-energy company is testing contract farming of sunflower in the plots between hedgerows (BERL, Malawi website). Another idea is to plan and build value chains that link agriculture, food production, waste management and energy generation: for instance, sunflower oil contract farming could involve an agribusiness intermediary that would press the vegetable oil for sale on the local market and collect the waste oil, which would in turn be regenerated for fuel use.

ix. *Potential impact of climate change on energy sources:* Investments being made in alternative energy sources particularly in rural areas should take into consideration the impacts of climate change on the energy sources of the communities through appropriate climate risk analysis to avoid mal-adaptation.

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Guidance statement 4 – Fisheries and aquaculture

INTRODUCTION

1. IFAD fisheries and aquaculture projects can be divided into two main categories: (i) capture fisheries – concerned with management and utilization of wild fish stocks in marine (offshore and inshore) and inland waters (lakes, rivers and reservoirs); and (ii) aquaculture – concerned with the culture and utilization of particular aquatic living organisms in freshwater, brackish water and marine system (mariculture). Commonly (and in this document) aquaculture is equated to fish farming, but its scope goes beyond just the culture of fish and includes crustaceans such as shrimp, molluscs such as oysters, and aquatic plants such as seaweeds.

2. The demand for fish has steadily increased over the past five decades and it is no longer possible to meet this demand from wild fish stocks alone, which are rapidly declining in many areas. Capture fisheries now account for just about 50 per cent of world food fish production, the rest coming from aquaculture, which has spectacularly expanded since the 1950s (FAO, 2016). As a result of massive pressure on capture fisheries, about 90 per cent of commercial marine fish stocks are either overfished or at their maximum sustainable yield, meaning that fishing activities can only realistically expand for 10 per cent of fish stocks. Inland fisheries contribute around 13 per cent of total capture fisheries production and have also reached their sustainable limit in most areas (FAO, 2016). Increased fish production can only be achieved through better management of capture fisheries resources and the aquatic ecosystem and expansion of aquaculture. Aquaculture can improve food security and diversification of livelihoods, thereby reduce households' vulnerability to natural hazards and economic uncertainty. However, aquaculture must be managed responsibly to avoid negative social and environmental impacts, including pollution, damage to aquatic biodiversity, conflicts over resource rights, and marginalization of small-scale actors.

3. Climate change poses new challenges for the sustainability of fisheries and aquaculture systems all across the globe. Coastal communities are in the frontline of climate change impacts and are vulnerable to sea level rise, extreme weather events, changing distribution and abundance of fish stocks, eroding coastlines, salt water intrusion, expansion of tourism amenities, and the impacts of ocean acidification on food security and coastal resources. Without proper programmes for adapting to extreme weather in terms of infrastructure, early warning systems and knowledge of appropriate response, coastal communities and small island states remain at high risk (WorldFish Center website; FAO, 2008). IFAD aims to address these challenges by analysing current and future vulnerabilities, supporting coping mechanisms, adaptation and mitigation of climate risks, and supporting partner states to make fisheries and aquaculture systems more resilient (IFAD, 2015).

4. IFAD's Environment and Natural Resource Management Policy (2011) explains the broad environmental objectives for IFAD fisheries and aquaculture sector interventions to: (i) strengthen fisheries management and the tenure rights of fishing communities to common pool resources; (ii) introduce ecosystem approaches for both fisheries and aquaculture; (iii) restore and develop protected areas; (iv) promote integrated coastal and marine resource management to ensure sustainable fishing practices; (v) invest in retraining and education for fishers to create alternative employment opportunities; and (vi) encourage sustainable forms of aquaculture.

FISHERIES AND AQUACULTURE IN IFAD PROJECTS

5. Over 500 million people in developing countries, including some of the poorest and most marginalized population groups, derive their livelihood from marine and freshwater fisheries and aquaculture production, and trade and related activities, while fish is an important source of animal protein for nearly 3 billion people (FAO, 2012). IFAD recognizes the important role and huge potential of this sector in addressing poverty, food and nutrition security, and employment, especially for women and youth. Small-scale fisheries and aquaculture development projects are therefore very relevant to IFAD's mandate and contribute to many of IFAD's corporate priorities, including on nutrition, gender, youth, indigenous peoples and sustainable use of natural resources.

6. IFAD has been engaged in fisheries and aquaculture development programmes since the 1980s. About 80 IFAD projects addressing development issues in the fisheries and aquaculture sector have been implemented in 60 countries through loans, grants, and other non-lending interventions. Some of these are entirely fisheries and aquaculture sector projects, while other projects take a more diverse multisectoral approach, which include components of agriculture, livestock, forestry and other productive sectors. Currently, in 2017, there are 35 ongoing fisheries and aquaculture-related IFAD projects, mostly in Asia-Pacific, Africa and the Caribbean regions. Some of these projects support communities in the most challenging and susceptible environments around the world, including in the small island states faced with various climate vulnerabilities. IFAD has supported coastal fishing communities affected by extreme climatic events, such as the 2004 tsunami, in asset recovery and re-establishment of economic production in a more resilient manner. Additionally, IFAD has provided support to ensure effective inclusion of small-scale fishing communities in the development and implementation of important international policy instruments for sustainable fisheries and aquaculture, such as the *Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication* (FAO, 2015)

7. IFAD seeks to achieve the following social, economic and environmental outcomes through investments in fisheries and aquaculture:

   - increase food production;
   - improve nutrition for fishing and fish farming communities, surrounding communities and extending to the national level;
   - increase incomes and employment opportunities, including for youth and women;
   - improve the health and quality of life in fishing communities;
   - increase national trade and exports of fisheries and aquaculture products;
   - reduce the immigration of young fishers to urban areas;
   - provide access to financial services for small-scale fishers and fish farmers;
   - preserve and strengthen habitats that are important for rejuvenating fish stocks, such as mangroves and coral reefs;
   - enhance access to knowledge and sustainable fisheries and aquaculture technologies;
   - strengthen policies and institutions for fisheries resource management, tenure and access rights of local people; and
   - enhance resilience of coastal communities against climate change and other shocks by incorporating climate change impacts in the design of new fisheries and aquaculture projects.

ENVIRONMENTAL, CLIMATE CHANGE AND SOCIAL ISSUES

8. Small-scale fisheries have many advantages over industrial fisheries, including enhanced economic efficiency through greater utilization and reduced discarding, fewer negative impacts on the environment through higher selectivity, and wider sharing of economic and social benefits through decentralization and geographical spread. The development of artisanal fisheries therefore has many beneficial effects, but this often comes with an increase in fishing capacity (boats and fishing gear) and expansion of infrastructure (ports, harbours, markets, processing and cold storage facilities), which exert more pressure on fisheries and the environment. The main environmental issues in capture fisheries include:

    - *Overfishing.* The catching of more fish than can be replaced through natural reproduction, leading to overall degradation of the aquatic ecosystem. The urge to catch as much fish as possible may seem profitable in the short term, but has serious consequences on biodiversity and biological equilibrium and can lead to extinction of some species. The increase in fishing effort and destructive fishing practices have pushed several important commercial fish populations to the point where their survival is threatened. Developing countries, often with limited technical capacity for effective monitoring, control and surveillance of fishing operations in their waters, bear the brunt of illegal, unreported and unregulated fishing activities (FAO, 2012). This denies them an opportunity to benefit fully from the resource and adversely affects their efforts to promote food security and eradicate poverty.

    - *Capture and discarding of non-target species (by-catch).* Use of inappropriate fishing gear, methods and bad practices, including carrying out fishing activities in the wrong places, lead to catching of species that are not the principle target. In some cases, these are juvenile fish or low value species that will not fetch high market prices. Discards are especially a serious concern in industrial vessels fishing in offshore waters where large quantities of non-target species are often thrown into the sea to create cold storage space for higher value fish. In small-scale fisheries, the main issue is extensive fishing of juvenile fish caught by small mesh gillnets, seining activities, or trawling in nursery grounds and other fragile inshore areas. The discard of non-target species reduces fish available for human consumption, especially the poor households who cannot afford high value species.

    - *Habitat damage.* This can result from a number of events, including oil and fuel spills, direct dumping of debris (gear, twine, food containers, plastic bands, etc.) by fishing fleets, damage from anchors, destructive fishing practices such as the use of explosives and poison, and coastal pollution from processing plants. In addition, deforestation may occur around fishing villages because of the increased demand for fuelwood for the production of smoked fish. Deforestation of mangroves, a common practice to clear land for shrimp farming, not only increases coastal erosion, but also damages the rejuvenation of aquatic species that depend on mangroves for spawning and habitat.

9. Aquaculture can also have significant impacts on the environment, particularly in areas where aquaculture is newly introduced or intensively practiced and if the system of production has high demand for water in an area where freshwater is a scarce natural resource. However, fish farming can also be part of a strategy for water storage and conservation; for example, fish ponds can store rainwater in the rainy season for irrigation and for animal use in the dry season. The advantage of fish ponds has made it a relatively easy entry point for the introduction of aquaculture in developing countries, particularly for small-scale producers. Aquaculture should use technologies that are adapted to local conditions and, wherever possible, should utilize intact ecosystems. The following are the most important environmental risks of aquaculture:

    - *Conversion of wetlands and clearing of coastal vegetation.* Aquaculture operations can be particularly destructive in mangrove swamps, exposing coastal areas to erosion and flooding,

altering natural drainage patterns, increasing salt intrusion, and removing a critical habitat for many aquatic species.

- *Poor aquaculture siting.* The siting of ponds in valleys and lowlands interferes with other water uses, such as irrigation, washing, drinking and urban expansion. The placing of fish cages in navigation waterways or areas used for domestic purposes can generate serious conflicts. Siting of infrastructure and design standards for fish production and processing may also overlook some of the climate-related risks and exposure to damage factors such as extreme climate events, thus making the investments unsustainable.
- *Changes in hydrology.* Water quality is affected by stagnation, acidification, and pond effluents if fish farming is poorly practiced and regulated. Nutrient and organic enrichment of recipient waters result in the build-up of anoxic sediments, high concentrations of fish waste and uneaten food, which can lead to oxygen depletion and alteration of other water quality parameters (e.g. pH) and contribute to harmful algal blooms and other forms of eutrophication. Diversion and interference with water flow patterns can create conflicts. Water availability for other uses is also reduced, both directly and indirectly through pollution.
- *Introduction of invasive and exotic species* can result in damage or extinction of native fish populations through predation and the spread of diseases and parasites, and genetic impacts through the escape of non-native and genetically modified organisms (GMOs). Fish farming can achieve adequate production levels without the use of GMOs, as careful selective breeding programmes can help to improve the genetic characteristics and overall productivity of cultivated species. The long-term impacts of GMOs on local biodiversity are difficult to predict and likely to be very detrimental and more research is necessary on this aspect.
- *Overfishing.* Paradoxically, some forms of aquaculture production increase – rather than reduce – the pressure on ocean fish stocks. In particular, carnivorous aquaculture species depend on high-protein feed formulated from a blend of other low value fish, and it takes roughly 2 kg of feed to produce 1 kg of farmed fish or shrimp (assuming a feed conversion ratio of 2). The result is a net loss of fish protein (World Resources Institute website; FAO, 2014).
- *Impacts on human and animal health.* The use of antibiotics and other chemicals to control fish diseases and parasites in aquaculture can have very serious negative impacts on the health of both animals and people through contamination of the environment with antibiotic-resistant micro-organisms. In addition, the deliberate or unintentional use of wastewater in ponds can lead to serious health impacts, especially for fish farm workers (see guidance statement 14).

POTENTIAL MITIGATION AND ADAPTATION

10. Many fishery projects are designed with a clear understanding of the potential negative impacts, and that they can be avoided or mitigated by promoting good practices. However, the capacity of regulating authorities and aquaculture practitioners to implement or enforce good practices is sometimes impaired. The mitigation measures to resolve or alleviate the negative impacts of fisheries and aquaculture are often simple and straightforward; however, it should be kept in mind that considerable monitoring of fish and water quality may be necessary during and after project implementation. Environmental monitoring capacity in developing countries is often inadequate and should be improved throughout project implementation.

11. The following mitigation measures may be considered for inclusion in the Environmental and Social Management Plan for capture fisheries:

    - *Overfishing* can be mitigated by making a provision for comprehensive and accurate baseline information on fish stocks, a prediction of potential impacts of fisheries operations, and an

evaluation of the significance of these impacts. Stock assessment and stock monitoring based on biological reference points is a good strategy for sustainable fishing through the ecosystem management approach. There should be clear plan of actions to adjust fishing activities accordingly in order to comply with biological reference points. This information should form the basis for preparing fishery management plans for optimum sustained yields, including measures for reducing fishing capacity such as selective gear size, limited fishing zones and seasons, and minimum fish size, and enforcement of marine protected area regulations. Attention should be given to the reduction of post-harvest waste, artificial habitat technologies appropriate for aquaculture, and promoting the ecolabelling of products from sustainable sources.

- *Capture of non-target species* can be mitigated through increased education and awareness of fishers and vessel operators, control of damaging fishing equipment and practices, development of markets for non-target species, and promotion of selective gear and improved gear technology (e.g. biodegradable material, collapsible traps). One of the good practices includes the use of turtle excluding devices to avoid unintended trapping of sea turtles in fish trawl nets.
- *Habitat damage* can be mitigated through public education, provision of oil disposal sites, designation of anchoring sites, and effective enforcement of regulations against destructive fishing practices, including the use of explosives and fish poison. Increased demand for fuelwood for smoked fish production can be mitigated by promoting energy-efficient stoves for smoking, developing knowledge and infrastructure for fish drying, establishing marine protected areas, and replanting mangrove and other forest resources.
- *Community compliance* can be promoted through public environmental education and strengthening the formal and informal fisheries management institutions, ensuring that they can protect tenure rights of fishing communities to common pool resources. Capacity-building, information-sharing and community participation in management contribute to building a sense of ownership, which promotes sustainable resource use. Formation of fishers' cooperatives can empower local communities, ensure compliance and protect artisanal fisheries from conflicts with commercial fishing vessels.
- *Fish preservation and value addition* can be achieved through the development of cold chains, solar processed products, and advocacy for ecolabelling products that meet sustainability criteria.

12. Mitigation measures to be incorporated in the Environmental and Social Management Plan for aquaculture projects may include the following:

- *Locally adapted technology.* Use locally adapted technologies where fish farming can be practised without significantly altering the local ecosystem.
- *Minimizing conversion of wetlands and clearing of coastal vegetation.* Prepare development plans that set aside areas of particular ecological significance, avoiding locating aquaculture projects in fragile areas such as wetlands and mangrove forests.
- *Appropriate siting.* Site fish ponds and draw up development plans that ensure equitable distribution of land and water resources among different users. Aquaculture in common use water pools must not obstruct other water uses for domestic and livestock. Infrastructure related to fish processing should also be sited in locations where exposure to extreme climate events is considered low and building standards adjusted accordingly to factor in the climate risks.

- *Good water management.* Ensure adequate pond water exchange and flushing systems, and dilution or treatment of pond water prior to release. Ensure careful application of feeds, fertilizers and other inputs based on recommended standards to avoid excess usage and water pollution. Regularly monitor pond water quality and in the wider environment to ensure that it meets the required standards for the safe production of fish and aquaculture products.
- *Biodiversity conservation.* The introduction of exotic species and GMOs into new environments should not be permitted until extensive research has been carried out into the potential long-term impacts. Establish reserved areas for natural regeneration; restock, protect and maintain native species; and limit disturbance to other vegetation and land forms.
- *Ecolabelling.* Advocating for ecolabelling schemes that certify fish production from sustainable farming practices.
- *Community compliance.* Community education and empowerment are vital and can be achieved through capacity-building, training, organization into cooperatives, and participatory management practices that allow communities to contribute, enhance ownership and support sustainable resource use.

13. The health status of fisheries is greatly influenced by the immediate external environment and especially the quality of discharges into the aquatic ecosystem. The most important impacts affecting the quality of rivers and seas come from the following sectors and factors:
    - Agriculture – land-use changes, including forest clearing, overgrazing, irrigation development and agricultural chemicals.
    - Mining – discharge of mine tailings and effluents directly into rivers and into the air (e.g. acid rain).
    - Industry – release of atmospheric and water pollutants.
    - Urban areas and tourism – disposal of untreated waste and sewage.
    - Climate change – the potential impacts of climate change on rivers, lakes and sea levels are likely to have significant effects on fishery productivity and stock distribution and should be taken into account when designing projects.

14. Social, environmental and climate analysis of IFAD projects needs to take these external factors into consideration in an integrated planning approach that seeks to reach compromise solutions acceptable to competing interest groups. A wide range of adaptation options for capture fisheries include: (i) relocation of fishing efforts/strategies and processing and distribution facilities to respond to changes in the distribution of fish stocks; (ii) design of disaster response infrastructure and adaptation of infrastructure to climate hazards; (iii) investment in market-led mechanisms along the fisheries value chain[1] for increased sustainability of market demand and added value of fishery products; (iv) use of fish aggregating devices; (v) improved early warning systems and increased safety at sea; (vi) promotion of culture-based fisheries[2] and stock enhancement practices; (vii) support to the establishment of marine protected areas and other conservation areas; and (viii) promotion of fisheries of underexploited species (Fezzardi and Corsin, 2011).
15. Adaptation efforts to be considered for aquaculture include: (i) selective fish breeding and genetic improvements to develop species that are tolerant to higher temperatures; (ii) improved materials,

[1] For example, by promoting Marine Stewardship Council certification, which is the main scheme for sustainable capture fisheries worldwide.
[2] Culture-based fisheries are community-based activities that utilize common property water resources, such as reservoirs and other inland waterbodies, floodplains and coastal lagoons, for raising, transferring and releasing seeds to the open waters.

planning and siting of aquaculture, in line with climate change predictions; (iii) greater use of hatchery seeds to cope with reduced catches from coastal and inland capture fisheries (FAO, 2008); (iv) promotion of climate-smart aquaculture production systems; (v) cultivation of fast-growing species to shorten the farming period and reduce the risk of losses to climatic disasters; and (vi) promotion of the use of flooded and/or salinized land and waterbodies (Fezzardi and Corsin, 2011).

ACCESS RIGHTS

16. Fisheries projects usually operate within the context of powerful political influences which undermine fishing communities interests. Protection of traditional rights of poor communities to fishing grounds and fish landing sites is therefore critical when designing projects. It is important to put in place mechanisms to facilitate access to financial resources, knowledge and technology for environmentally sound traditional fishing practices. It is also necessary to include measures for improving efficiency of fishing gear and boats, adding value to fish, cold storage and dry preservation and enhancing access to markets so as to reduce waste.

INTERNATIONAL KNOWLEDGE SYSTEMS

17. FAO and WorldFish, a CGIAR institution, are among the leading international development organizations with repository expert knowledge in global fisheries and aquaculture. FAO, in particular, has produced codes of conduct, guidelines and international policy instruments touching on a broad range of fisheries and aquaculture aspects. In the absence of other environmental standards, FAO guidelines can be used as reference points. FAO and WorldFish can also provide technical support in designing and monitoring fisheries and aquaculture projects. Within IFAD, there is growing knowledge of how to tackle climate change and environmental issues related to fisheries and aquaculture. This has resulted in the recent production of two knowledge products specifically providing guidance on the effects of climate change and how to incorporate climate change impacts when designing new projects. These are: *Guidelines for Integrating Climate Change Adaptation into Fisheries and Aquaculture Projects* (IFAD, 2014), and *How to: Fisheries, Aquaculture and Climate Change – Guidance for Adaptation and Mitigation* (IFAD (2015).

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Guidance statement 5 – Forest resources

INTRODUCTION

1. Forests have an important role in supporting local and global ecosystem services and providing resources to some 1.6 billion people (UNEP, 2008), due to their highly productive nature. Based on the Millennium Ecosystem Assessment classification, forest ecosystems can be classified into four categories (United Nations, Millennium Ecosystem Assessment Board https://www.millenniumassessment.org/documents/document.356.aspx.pdf Page iv) namely:
    - Provisioning: Useful physical products of the forest such as food, wood, fibre and fuel.
    - Regulating: The "preventative" benefits of forests are their role in erosion control, flood prevention, climate regulation, carbon sequestration and water purification.
    - Cultural: Forests are sources of aesthetic and spiritual regeneration as well as recreation and education, which supply services for the tourism industry.
    - Supporting: This describes the role of ecosystems as a "nursery" for other environmental benefits, such as nutrition cycling and soil formation. Biodiversity services such as species and habitat conservation fall into this category.

2. Forests equally have untapped potential to lift rural people out of poverty (Sunderlin, Angelsen and Wunder, 2010), providing a source of employment, income, food, energy and housing. Forest-based livelihood activities include livestock grazing, controlled hunting, and the collection of wild fruits and insects, all of which provide highly nutritious resources that can contribute to food security and alleviate dietary deficiencies. This is especially true with poor and marginalized households with few sources of income, few assets and minimal education and skills. Payments for environmental services, mainly through carbon sequestration or watershed protection projects, can provide additional sources of income from sustainably managed forests.

3. In spite of the combined ecosystem and socio-economic services provided by forests, the unsustainable exploitation of forest resources has led to extremely high rates of forest degradation and deforestation: between 2000 and 2010, an average of 13 million hectares of forest area was destroyed every year (FAO, 2010). In developing countries, commercial agriculture is the most important driver of deforestation, followed by subsistence agriculture and shifting cultivation. Timber extraction and logging cause the most degradation, followed by fuelwood collection and charcoal production, uncontrolled fire, and livestock grazing and clearing for cattle ranching (Hosonuma et al., 2012). Other drivers are biofuel production, mining and infrastructure expansion (roads, mines, settlements, etc.). However, large-scale afforestation and the natural expansion of forests have significantly offset the loss of forest area globally, resulting in a net loss of 5.2 million hectares per year in the period 2000-2010 from 8.3 million hectares net loss per year in the period 1990-2000 (FAO, 2010). Unsustainable farming methods continue to be the greatest threat to forests, and climate change will increase pressure to convert forests to agricultural land.

4. Forests have been identified as a critical ecosystem for any successful strategy aimed at addressing issues related to climate change because of their ability to capture carbon dioxide from the atmosphere in a process known as photosynthesis. They have a unique potential to contribute to climate change mitigation by reducing emissions and enhancing carbon sinks. On

the negative side, however, forest degradation and deforestation contribute to climate change by releasing approximately 17 per cent of annual global greenhouse gas (GHG) emissions. According to the Intergovernmental Panel on Climate Change (IPCC), reducing and/or preventing deforestation is the mitigation option expected to have the largest and most immediate impact on carbon levels in the atmosphere in the short term. IFAD is already addressing mitigation indirectly through reforestation and the improvement of land use and land management practices, including by implementing agroforestry systems, promoting assisted tree regeneration, and developing and piloting payments for environmental services systems. As emerging new financing mechanisms associated with the compliance and voluntary carbon markets may bring potential for increased investment in the forestry sector, IFAD should seize opportunities to improve the well-being of people dependent on forests by facilitating access to climate finance by smallholders.

According to IFAD's Environment and Natural Resource Management Policy, basic guidance and good practices for IFAD interventions that deal with forests include promoting: (i) secure access to and sustainable management of forests, focusing particularly on incentives and participatory forest management; (ii) introduction of an ecosystem approach in forest management; (iii) restoration and development of protected areas that include forest lands; (iv) development of value chains for sustainable and renewable natural products and of certification schemes for sustainable forest management; (v) strengthened tenure rights to forest resources and governance systems for local communities; (vi) increased investment in diversified agroforestry systems; (vii) development of wild foods and non-timber forest products; and (viii) development of local institutions' capacity to participate in, and benefit from, existing and emerging carbon and ecosystem markets.

FOREST RESOURCES IN IFAD PROJECTS

5. In order to ensure that the world continues to benefit from forest ecosystems, the members of the United Nations, at the United Nations General Assembly of April 2017, adopted the United Nations Strategic Plan for Forests 2017-2030. The strategic plan consists of six Global Forest Goals and 26 associated targets, which are voluntary and universal, to be reached by 2030 (see annex 5.1). The plan was also designed to enhance the contribution of forests to both the 2030 Agenda for Sustainable Development adopted at the United Nations General Assembly in September 2015[1, 2] and the Aichi Biodiversity Targets, developed as part of the Strategic Plan for Biodiversity 2011-2020 and adopted at the tenth meeting of the Conference of the Parties in October 2010; see table 5.2 in annex 5.1.

6. IFAD, as an agency of the United Nations, is committed to implementing the strategic plan for forests. As such, it recognizes the importance of managing forests sustainably to reduce land degradation while improving food security and providing alternative income sources for communities and small farmers. IFAD target groups are rural communities, which often rely on a combination of agriculture and forestry and have a role in improving the coexistence of small-scale agriculture with forest ecosystems. IFAD interventions in the forestry sector aim to provide economic benefits while conserving the natural resource base through afforestation, reforestation or the establishment of community-based forest plantations. IFAD projects addressing the management of forest resources can be broadly grouped into three main areas: (i) community and participatory forestry management; (ii) agroforestry programmes; and (iii) compensation schemes for environmental services. New areas of attention involve value

[1] www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E.
[2] www.undp.org/content/dam/undp/library/corporate/brochure/SDGs_Booklet_Web_En.pdf.

chains and the greening of the entire product cycle, as well as helping poor rural people to benefit from climate financing. IFAD aims to create a basis for continued, sustainable exploitation of the wide range of forest products on which smallholders depend, and to support farmers and forest dwellers without recognized titles to forest lands by strengthening the tenure rights and governance systems of local communities.

ENVIRONMENTAL, CLIMATE CHANGE AND SOCIAL ISSUES

7. For IFAD, a major concern regarding forest resources is the possibility that projects induce the clearance of forest land for agricultural or other purposes. IFAD project components might involve low impact use of forest resources, expansion of agricultural operations or construction of roads, which may facilitate access to the forest and inadvertently result in forest conversion or degradation. This process of conversion to agriculture can be rapid (taking only a few years) and systematic, as when land is cleared for specific monoculture crop production such as cotton, or when government-sponsored or spontaneous settlement occurs in previously inaccessible or remote areas. The process can also be gradual (taking place over several decades), as in large areas of the dry tropics, where population pressure is intensifying and previously sustainable land uses such as shifting agriculture reach unsustainable levels. Biofuel production also raises concerns if it is not accompanied by strict land-use laws, particularly in countries with tropical forests at risk of destruction. Biofuel expansion has the potential to contribute to soil depletion, habitat loss and reduced biodiversity if biofuel crops are grown on previously wild grasslands or forests.

8. When forests are transformed into cropland or rangeland, there can be immediate as well as long-term impacts (livestock herding, however, need not involve forest destruction because animals can graze in intact forests, as they do in pastoralist communities). The obvious benefit conferred by agriculture is increased food production, but land clearing also has negative environmental effects. These negative impacts are very similar to the indirect effects of road construction in or near forests, which are examined in guidance statement 7.

9. Climate change is also expected to have significant impacts on forest ecosystems. The degree of vulnerability varies greatly by region and forest type, and is a function of the forest's exposure, sensitivity to changes and adaptive capacity. There is evidence that climate change is affecting many aspects of forest ecosystems, including tree growth and dieback, insect outbreaks, species distributions and the seasonality of ecosystem processes. Most IPCC global emission scenarios predict that some areas will experience increased frequency and intensity of storms, fire, insect pests and diseases, and a reduction in forests' capacity to provide ecosystem services. Higher temperatures and changes in rainfall also threaten forests, and extreme weather events such as droughts and floods pose additional risks to forest ecosystems (IUCN, 2008). For these reasons, adaptation and mitigation objectives are interlinked and complementary.

10. Typically, negative effects of forest clearance affect the following:

    - *Vegetation* – loss of the trees and undergrowth that are cleared and damage to surrounding wooded areas.
    - *Soils* – increasing susceptibility to soil erosion, loss of topsoil, particularly on sloping land, and loss of soil fertility.
    - *Water* – greater run-off, increased risk of flooding, reduced water content in soil, reduced groundwater recharge, reduced atmospheric moisture, disrupted natural water cycle, increased erosion along riverbanks and seashores, and increased silting of rivers. On the

other hand, reforestation and afforestation may cause depletion of groundwater and soil moisture, lowering of the water table, and reduced base flow and water supply. The magnitude of the impact depends on the water demand of the selected species and the extent of the reforested area.

- *Biodiversity* – loss of or threat to wildlife, fragmentation or loss of habitat, and loss of unique locally adapted indigenous plants and animals of potential global significance. Invasive alien species pose a risk to the balance of the existing ecosystem. The introduction of new tree species through reforestation and afforestation may deprive animal species of food and shelter, as well as generating diseases and the emergence of pests.
- *Desertification:* Forest tree clearing in arid and semi-arid lands is likely to initiate the desertification process, aggravating the poverty situation in these marginal lands.
- *Climate change* – reduction of carbon stocks, destruction of carbon sinks and release of GHG emissions in the atmosphere. Depending on the extent of deforestation, reduced tree cover may result in reduced cloud cover and rainfall. On the other hand, climate change affects forest conditions, inducing increases in growth rates in some areas while endangering the survival of species and forest communities in others, and ultimately affecting the sustainability of IFAD interventions.
- *People:* Indigenous peoples and rural communities living in or near forests have complex rules for the use and tenure of forest land, trees and forest products. Natural forest management improvements and forest clearing may affect the customary rights of men and women differently. Women may end up with a greater workload after the project because they need to travel further to find fuelwood and other resources. Lack of access to or loss of traditional forest uses may result in loss of livelihoods, negative impacts on the nutrition and health of rural communities, and land tenure conflicts between forest dwellers and new farming communities. Improved access to forests may lead to the spread of spontaneous settlement and shifting cultivation in forest areas, and the emergence of new human diseases resulting from the migration of people into virgin forest areas.

11. Forest-based industries give rise to additional environmental concerns, such as damage to forest habitats and biodiversity at the beginning of the supply chain, and pollution from emissions, waste and chemical products in the manufacturing process.

POTENTIAL MITIGATION

12. The key to controlling the adverse impacts of unsustainable land clearing is careful land-use planning. It is difficult to balance the natural resource needs of different users and stakeholders, particularly for project implementation agencies such as ministries of agriculture, which are not normally equipped to handle all the issues. In such cases, environmental assessment is a valuable tool for identifying and reconciling diverse resource needs and expectations.

13. The following are specific measures for preventing the negative impacts of deforestation:

- Landscape planning and use through sustainable forest management (SFM): SFM comprises a set of tools and techniques that aim to consider all the economic, ecological and social functions of forests, so that forest management can be pursued at different spatial scales, from the wider landscape to the forest stand and single ecosystem components. Consideration should be given to transition or buffer zones and appropriate approaches be developed if required.

- People: Improve local communities' access and tenure rights to forests, promote good governance systems, transfer public forest lands to local control, and provide incentives for participatory forest management. Local communities, including marginalized communities, should be involved in land-use planning and project design. With regard to indigenous peoples, efforts to promote free prior and informed consent are required.

- Gender: Projects promoting community forest management and forest-based alternative livelihoods should involve women.

- Climate change mitigation: Afforestation, reforestation and, particularly, forest restoration all have potential for climate change mitigation. Increase the efficiency of fuelwood use through energy-saving stoves and the installation of renewable sources of energy, such as solar or biogas systems, to meet rural people's power needs. IFAD should also explore opportunities for tapping financial resources in existing and emerging carbon and ecosystem markets, and invest in building the capacity of national and local institutions so they can obtain access to international financial mechanisms and benefit from them. Payments for environmental services, such as carbon sequestration, can provide an additional source of income, thereby incentivizing SFM.

- Climate change adaptation: Although knowledge on the impacts of climate change on forest ecosystems is currently limited, adaptation is clearly crucial to maintaining the functions of forest ecosystems and protecting rural communities' livelihoods. Management activities that can increase the adaptive capacity of forests include those aiming to: (i) maintain forest health and vitality, such as by applying appropriate silvicultural treatments and controlled fire, pest and disease management; and (ii) conserve biodiversity in forests, such as through the effective management and creation of protected areas, enhancing connectivity between forest areas. Many management actions also contribute to mitigation through the reduction of emissions from forests, the conservation of forest carbon or the enhancement of forest carbon sinks. Forests also play a role in reducing people's vulnerability to negative climate change impacts and help them adapt, for example, by developing forest-based employment and enterprises for diversifying livelihood options (FAO, 2010).

- Development of value chains and SFM certification schemes for sustainable and renewable forest products, including where possible, community funds that benefit from a percentage of the resources generated through these mechanisms.

- Roads, power lines and pipelines: Avoid the construction of roads and other linear infrastructure in natural forests and other sensitive habitats, or in those areas which would fragment them.

- Ensure compliance with national and international laws and treaties, such as the United Nations Framework Convention on Climate Change, and Reducing Emissions from Deforestation and Forest Degradation, plus the sustainable management of forests and the conservation and enhancement of forest carbon stocks (REDD+).

14. The following are specific measures for mitigating the negative impacts of deforestation; these and any site-specific measures identified in Environmental and Social Impact Assessments or other environmental studies can be included in project Environmental and Social Management Plans:

    - *Vegetation:* Identify and establish protected areas/parks for ecologically significant forest areas, encourage the integration of trees and shrubs that maintain or enhance biodiversity

and ecosystem functionality, and minimize damage to surrounding wooded areas. Establish multipurpose forest areas such as grazing reserves.

- *Biodiversity:* Ascertain the presence of endangered species, and ensure that adequate areas are available for the migration of wildlife and conservation measures are in place (protect the change of status from natural forest to officially protected forest area).
- *Soils:* Limit the clearing of land systems to the areas that are most suitable for agricultural production, and identify areas that should not be cleared. Avoid clearing during the rainy season, and protect cleared areas with plant remnants and other material (litter, mulch, etc.). Avoid the use of fire as a land clearing method. Encourage the combination of and interaction between agriculture and forestry, particularly in the buffer zones. These activities also promote integrated soil fertility management, which is a good practice and low regret option for climate change adaptation.
- *Water:* Maintain vegetation as a buffer zone along all streams and bodies of water, emphasizing the importance of riparian vegetation. Provide adequate facilities for the disposal of agricultural wastes. If appropriate, reward upstream land practices that improve the quality and quantity of water available for downstream users.
- *Limit the negative environmental effects of reforestation and afforestation* activities through careful selection of the locations and tree species to be planted.

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Annex 5.1

United Nations Strategic Plan for Forests 2017-2030[1]

Global Forest Goal 1: Reverse the loss of forest cover worldwide through sustainable forest management (SFM), including protection, restoration, afforestation and reforestation, and increase efforts to prevent forest degradation and contribute to the global effort of addressing climate change.

- Forest area is increased by 3 per cent worldwide (based on FRA 2015: www.fao.org/docrep/017/ap862e/ap862e00.pdf).
- The world's forest carbon stocks are maintained or enhanced.
- By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.
- The resilience and adaptive capacity of all types of forests to natural disasters and the impacts of climate change is significantly strengthened worldwide.

Global Forest Goal 2: Enhance forest-based economic, social and environmental benefits, including by improving the livelihoods of forest dependent people.

- Extreme poverty for all forest dependent people is eradicated.
- Increase the access of small-scale forest enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets.
- The contribution of forests and trees to food security is significantly increased.
- The contribution of forest industry, other forest-based enterprises and forest ecosystem services to social, economic and environmental development, among others, is significantly increased.
- The contribution of all types of forests to biodiversity conservation and climate change mitigation and adaptation is enhanced, taking into account the mandates and ongoing work of relevant conventions and instruments.

Global Forest Goal 3: Increase significantly the area of protected forests worldwide and other areas of sustainably managed forests, as well as the proportion of forest products from sustainably managed forests.

- The area of forests worldwide designated as protected areas or conserved through other effective area-based conservation measures is significantly increased.
- The area of forests under long-term forest management plans is significantly increased.
- The proportion of forest products from sustainably managed forests is significantly increased.

[1] www.un.org/esa/forests/wp-content/uploads/2016/12/UNSPF_AdvUnedited.pdf.

Global Forest Goal 4: Mobilize significantly increased, new and additional financial resources from all sources for the implementation of SFM and strengthen scientific and technical cooperation and partnerships.

- Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation.
- Forest-related financing from all sources at all levels, including public (national, bilateral, multilateral and triangular), private and philanthropic financing is significantly increased.
- North-South, South-South, North-North and triangular cooperation and public-private partnerships on science, technology and innovation in the forest sector are significantly enhanced and increased.
- The number of countries which have developed and implemented forest financing strategies and have access to financing from all sources is significantly increased.
- The collection, availability and accessibility of forest-related information is improved through, for example, multi-disciplinary scientific assessments.

Global Forest Goal 5: Promote governance frameworks to implement SFM, including through the UN Forest Instrument, and enhance the contribution of forests to the 2030 Agenda.

- Number of countries which have integrated forests into their national sustainable development plans and/or poverty reduction strategies is significantly increased.
- Forest law enforcement and governance are enhanced, including through significantly strengthening national and subnational forest authorities, and illegal logging and associated trade is significantly reduced worldwide.
- National and subnational forest-related policies and programmes are coherent, coordinated and complementary across ministries, departments and authorities, consistent with national laws, and engage relevant stakeholders, local communities and indigenous peoples, fully recognizing the United Nations Declaration on the Rights of Indigenous Peoples.
- Forest-related issues and the forest sector are fully integrated into decision-making processes of land use planning and development.

Global Forest Goal 6: Enhance cooperation, coordination, coherence and synergies on forest-related issues at all levels, including within the United Nations System and across Collaborative Partnership on Forests (CPF) member organizations, as well as across sectors and relevant stakeholders.

- Forest-related programmes within the United Nations system are coherent and complementary and integrate the Global Forest Goals and targets where appropriate.
- Forest-related programmes across CPF member organizations are coherent and complementary and United Nations Strategic Plan for Forests 2017-2030 Advance Unedited Version 6 together encompass the multiple contributions of forests and the forest sector to the 2030 Agenda for Sustainable Development.
- Cross-sectoral coordination and cooperation to promote SFM and halt deforestation and forest degradation is significantly enhanced at all levels.
- A greater common understanding of the concept of SFM is achieved and an associated set of indicators is identified.

- The input and involvement of major groups and other relevant stakeholders in the implementation of the United Nations Strategic Plan for Forests 2017-2030 and in the work of the Forum, including intersessional work, is strengthened.

Table 5.1. Relationship between the United Nations Strategic Plan for Forests 2017-2030 and the Sustainable Development Goals

United Nations Strategic Plan for Forests, 2017-2030 Global Forest Goal	SUSTAINABLE DEVELOPMENT GOALS																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	No Poverty	Zero Hunger	Good health & Well-being	Quality Education	Gender Equality	Clean Water & Sanitation	Affordable Clean Energy	Decent Work & Economic Growth	Industry, Innovation & Infrastructure	Reduced Inequalities	Sustainable Cities and Communities	Responsible consumption & Production	Climate Action	Life Below Water	Life on Land	Peace Justice and Strong Institutions	Partnership for the Goals
Goal 1: Reverse the loss of forest cover worldwide through SFM, forest degradation and climate change.						■						■	■	■	■		
Goal 2: Enhance forest-based economic, social and environmental benefits.	■	■		■	■	■		■	■			■			■		
Goal 3: Increase significantly the area of protected forests worldwide and other areas of sustainably managed forests.							■					■		■	■		
Goal 4: Mobilize significantly increased, new and additional financial resources from all sources.												■			■		■
Goal 5: Promote governance frameworks	■	■			■										■	■	■
Goal 6: Enhance cooperation, coordination, coherence and synergies on forest-related issues at all levels.																	■

Table 5.2. Relationship between the United Nations Strategic Plan for Forests 2017-2030 and the Aichi biodiversity Targets

United Nations Strategic Plan for Forests, 2017-2030 Global Forest Goal	AICHI BIODIVERSITY TARGETS																		
	1 Awareness increased	2 Biodiversity values integrated	3 Incentives reformed	4 Sustainable consumption and production	5 Habitat loss halved or reduced	6 Sustainable management of marine living resources	7 Sustainable agriculture,	8 Pollution reduced	9 Invasive alien species prevented and controlled	10 Pressures on vulnerable ecosystems	11 Protected areas increased and	12 Extinction prevented	13 Genetic diversity maintained	14 Ecosystems and essential services safeguarded	15 Ecosystems restored and resilience	16 Nagoya Protocol in force and operational	17 NBSAPs adopted as policy instrument	18 Traditional knowledge respected	19 Knowledge improved, shared and applied	20 Financial resources from all sources
Goal 1: Reverse the loss of forest cover worldwide through SFM, forest degradation and climate change.					■		■				■			■	■					
Goal 2: Enhance forest-based economic, social and environmental benefits.					■									■				■		
Goal 3: Increase significantly the area of protected forests worldwide and other areas of sustainably managed forests.							■				■	■				■				
Goal 4: Mobilize significantly increased, new and additional financial resources from all sources.																			■	
Goal 5: Promote governance frameworks to implement SFM.		■	■																	
Goal 6: Enhance cooperation, coordination, coherence and synergies on forest-related issues at all levels.																				

Guidance statement 6 – Rangeland-based livestock production

INTRODUCTION

1. Driven by population increases, urbanization and economic growth, livestock production is one of the fastest growing agricultural subsectors in developing countries. Accounting for 30 per cent of agricultural gross domestic product and spurring a demand for animal-source food products that is likely to double in the next 20 years (FAO, 2002), livestock production contributes to the sustainable livelihoods and food security of more than 800 million poor smallholders. The growth of the sector exerts some pressure on natural resources such as the rangelands for the livestock, and without adequate measures being taken, in rangeland and feed stock management, may lead to an increase in greenhouse gases and thus contribute to climate change.

2. Managing the environmental and social impacts of the livestock sector requires, at a minimum, disaggregating between extensive and intensive production, although it is recognized that the line between the two is sometimes blurred. Nevertheless, there is considerable difference between extensive livestock production, in which livestock are reared outdoors on natural and semi-natural forage, and intensive production of livestock, often indoors and based on cultivated inputs or by-products. The nature of the environmental impact and the appropriate environmental responses vary entirely between these two broad types of systems (McGahey et al., 2014).

3. These guidelines address extensive livestock production on rangeland resources. This reflects one popular definition of pastoralism (IUCN, 2011), although extensive livestock production on rangelands may also include forms of production that do not identify with the term “pastoral”. In developing countries, it is recommended to focus on both greening the intensive livestock sector and capitalizing on the inherent sustainability of pastoralism for local, regional and international markets (McGahey et al., 2014). There are many opportunities for IFAD to harness the environmental as well as the economic benefits of extensive livestock production in order to strengthen livelihoods and local resilience. Overall reduction in livestock consumption at the global level, which is advocated for environmental reasons, is inappropriate in most developing countries because of the importance of livestock products in providing high-value protein and energy.

4. Livestock and rangeland[1] management are two areas in which IFAD is very active. Frequently, the land and natural resources on which poor rural people depend are common pool resources. Common pool resources are at risk of mismanagement when community tenure and management are not legally recognized. Weak legal recognition of livestock keepers’ rights and low respect for their local knowledge and management practices have led to widespread changes in herd management, which has contributed to damage to vegetation, loss of biodiversity and soil carbon, and reduced soil fertility and water supply. Other negative impacts include public health problems with diseases and pests, and competition for resources with wildlife. In arid, semi-arid and dry subhumid lands, human activities such as fuelwood harvesting, charcoal

[1] Rangelands include grasslands, woodland savannahs, open forest (and some cleared areas of closed forests), shrublands, wastelands, abandoned agricultural areas, and deserts that support domestic ruminants and wild herbivores. The uses of these range areas include large-scale commercial ranching, mixed farming and pastoralism.

production and slash-and-burn crop cultivation have huge impacts on rangelands and accelerate their degradation. Rangeland degradation causes lower productivity and a decline in ecosystem function, including hydrological cycles, which can contribute to more severe and more frequent cycles of drought and flood.

5. In IFAD's Environment and Natural Resource Management Policy, basic guidance and good practices for IFAD interventions in the management of rangeland-based livestock involve promoting and supporting: (i) integrated crop/livestock systems; (ii) development of improved, locally adapted livestock genetics, and avoidance of erosion or loss of animal genetic resources; (iii) pastoral institutions and recognition of tenure rights and customary grazing lands; (iv) strengthened local governance capacity, national governance policy and institutional coherence; (v) livestock diversity; (vi) management and recycling of livestock manure as organic nutrients for restoring soil fertility; and (vii) range restoration, enhancement and sustainable rangelands management.

RANGELANDS AND LIVESTOCK PRODUCTION IN IFAD PROJECTS

6. IFAD projects address small- and medium-scale livestock operations through, for example, technology transfer, education and training, credit for restocking, delivery of animal health services, feed and breed improvement, and best husbandry practices. These operations may occur in traditional extensive pastoral systems relying mainly on grazing on natural range vegetation, or in pastoral systems that involve a mixture of natural and cultivated feed resources. Such livestock projects aim to improve the productivity and competitiveness of livestock products through the efficient and sustainable use of natural resources while creating stable incomes and sustainable livelihoods. Effective development of rangeland livestock production generally involves developing and adapting the existing management system rather than replacing production with imported management systems and approaches. However, new technologies and management strategies are often adopted by livestock keepers if introduced in the right way.

7. The primary beneficiaries are poor livestock keepers, particularly those who are economically or socially at risk and politically marginalized, such as rural women, youth, landless poor people, and people for whom animals such as poultry and small ruminants provide, at most, subsistence or a minimum contribution to daily nutritional guidance. IFAD is committed to developing a sustainable livestock sector in which poor farmers and herders might obtain higher incomes and better access to assets, services, technologies and markets.

ENVIRONMENTAL AND CLIMATE CHANGE ISSUES

8. The term rangeland can describe both ecological and social systems and is interpreted differently by different audiences. Ecological definitions of rangelands emphasize the natural and semi-natural nature of vegetation, the importance of grasses, forbs and shrubs, and the presence of wild or domestic ungulates (Allen et al., 2011). However, the term rangelands may also encompass woodlands and wetlands and other ecosystems that are not dominated by grasses, but which are integral to livestock production, or the wider livelihoods of pastoral communities. Trees in the rangelands often play a crucial role in rural livelihoods, providing fodder, food, fuel, medicines, shelter and other benefits.

9. The wide diversity of natural resources used by rangeland livestock producers require different management approaches and they respond differently to the impact of livestock. Often the grass-dominated ecosystems exist as the result of interaction between animals and plants, and particularly between grazing species and grasses. These can be sensitive to changes in grazing

patterns and can suffer from undergrazing as well as from overgrazing. The most important element in sustainable management of these ecosystems is the frequency and duration of grazing, rather than the absolute number of animals. The term “overgrazing” is frequently misused in the rangelands and has sometimes led to inappropriate destocking that is both economically and environmentally harmful (IUCN, 2011).

10. Rangeland livestock projects may lead to increased pressure on natural resources, for example by increasing the period of time livestock spend in a given location. They can increase the exploitation of non-fodder resources, such as wild fruit or bush meat. They may also lead to competition with wildlife for forage and water and result in human–wildlife conflicts. However, appropriate incentives can be developed to promote co-management of livestock and nature. There are many examples worldwide of pastoralists deriving secondary incomes from environmental services, such as conservation of wildlife (e.g. through ecotourism), protection of rangeland biodiversity (e.g. sustainable harvesting of medicinal plants) or protection of ecosystem services (e.g. incentives for protecting watersheds).

11. Several social and institutional issues have a direct impact on how rangelands are used and managed, with direct effects on the state of the natural resource base. The most important factors to assess in the development of new projects are formal and informal resource tenure arrangements, livestock ownership patterns, land/population ratios, and local and national governance capacity and institutions.

12. Rangeland management projects are subject to external land-use changes that affect range resource use in the project area. Agricultural encroachment on rangelands, mining, wildlife conservation measures, tourism and other uses generally reduce the land available for livestock production and increase the pressure on the remaining resources, even when available alternatives would yield a win–win scenario, particularly for agriculture, wildlife and tourism.

13. Climate change is expected to have far-reaching consequences for dairy, meat and wool production in the rangelands, mainly through its impact on grassland and rangeland productivity. The heat stress suffered by animals as a result of increased temperature will reduce animal feed intake and result in poor growth. Higher temperatures and changing rainfall patterns could translate into increased spread of vector-borne diseases and macroparasites, accompanied by the emergence and circulation of new diseases. In some countries, lack of water and increased frequency of drought will affect the primary productivity and quality of forage and rangelands. However, some livestock systems – particularly the most extensive ones – have enormous intrinsic potential for climate change adaptation that makes herders more resilient as long as their capacity for herd mobility is conserved.

14. Livestock production systems contribute to global warming directly through the production of greenhouse gas (GHG) emissions, and indirectly through land-use changes and deforestation. The latter relate more to intensive livestock systems that require large areas of land to produce feed crops. The three main sources of GHG emissions are enteric fermentation of animals, manure, and production of feed and forage (Dourmad, Rigolot and van der Werf, 2008). However, environmentally sound rangeland management practices offer significant carbon sequestration potential. Rangelands account for about 40 per cent of the total land surface area and store about 30 per cent of the world’s carbon stocks (Tennigkeit and Wilkes, 2008).

MEASURES REQUIRED IN PROJECT PREPARATION

15. Environmental impacts and opportunities need to be assessed at an early stage in the development of projects involving range/livestock production systems. For effective consideration in project design, the following steps should be carried out with extensive consultation and full participation of local communities. To reduce potential conflicts, decision-making processes should be designed to include all stakeholders (different livestock grazing systems, agricultural and non-agricultural users). The following subsections list measures for the preparation of effective projects.

Scoping exercise

- Identify the full geographical area and ecosystems that livestock herders exploit over a full cycle of wet and dry seasons/years, including the resources needed for survival in dry seasons and drought periods.
- Identify where the area for project intervention differs from the area managed by livestock keepers, including where livestock are moved into neighbouring countries, and assess the implications for project design.
- Evaluate rangeland ecology, including patterns of inter-annual climate variability, seasonal extremes, and climate change projections, herbivore-dependency and fire regimes, and the implications of ecology for rangeland productivity.
- Assess the extent of rangeland degradation and degradation processes according to the production objectives of rangeland users, including soil erosion, compaction, decreased fertility, salinization, pollution, shrub encroachment and vegetation decline.
- Assess the state and trends of biodiversity, including high value plant species, wildlife populations and habitats, and the range of current and potential uses for stakeholders.
- Evaluate rangeland production potential, including biomass productivity, and appropriate management regimes, taking into account the high inter-annual variability in carrying capacity and the practical challenges to modulating livestock numbers to track resource availability.
- Assess likely changes in potential land use and management under different climate scenarios.
- Identify loss of access or other factors that impede the mobility of herds or encourage voluntary sedentarization, such as lack of access to education, health and financial services and need for women's empowerment.
- Analyse traditional knowledge and customary practices relevant to rangeland management and the factors that undermine communities' ability to manage resources sustainably, such as weak land tenure or unpredictable access to land.
- Identify key stakeholders in rangelands management, including different socio-economic and ethnic groups as well as public and private institutional stakeholders, and determine their rights and responsibilities.
- Identify major investments and externally planned land-use changes in the project area and evaluate their impact on rangeland health and rangeland management strategies (and vice versa).

- Identify significant policies that govern rangeland resource management and evaluate their suitability and extent of implementation.
- Identify risks from pastoralism to other stakeholders, including risks of conflict or resource competition and risks of disease transmission to other domestic animals, wildlife and humans.
- Assess the location, quality and demand for water based on overall livestock mobility patterns as well as domestic needs and the implications (negative and positive) of water infrastructure for herding strategies and land tenure.

Project design

- Conduct an Environmental and Social Impact Assessment (ESIA) to address all concerns identified in the scoping exercise. The ESIA should determine the type and degree of all the potential negative impacts of project interventions on vegetation, soils, water and wildlife resources, and on the rights and livelihoods of all key stakeholder groups.
- Conduct an in-depth conflict analysis, based on dialogue with all stakeholder groups, to assess the potential negative impacts of the project in terms of exacerbating or initiating conflicts between resource users and other rights holders.
- Identify appropriate project partners according to the roles and responsibilities of stakeholders defined in the scoping exercise.
- Conduct extensive consultations with all stakeholder groups to discuss the relevance and significance of potential impacts, including potential impacts on women's status and economic control over resources and property, and to ensure free, prior and informed consent over the project.
- Integrate social issues into project interventions, including consideration of women's roles and needs in livestock management.
- Develop an environmental management plan with participation of stakeholders, including recommendations on how to avoid, mitigate or compensate for significant negative impacts of project components, and including an estimation of the costs of implementing environmental management measures.
- Integrate environmental management issues into project interventions, including providing communities with environmental education and practical training in, for example, rangeland rehabilitation and landscape protection measures.
- Ensure that the project is aligned with national policy measures that guide environmental project design.
- Take into account current climate variability and future climate change impacts in project design and integrate livestock adaptation strategies in the project. Adaptation options could include (Thornton et al., 2008; Sidahmed, 2008):
    - Production adjustments, such as modifications to stock routes and distances, and changes in livestock/herd composition
    - Invest in local breeds and enhanced local breeds that are adapted to local climatic stress and feed sources, for example by cross-breeding local breeds with heat- and disease-tolerant breeds

  - Promote innovations in livestock and rangeland management that are compatible with production objectives and management strategies, including promotion of fodder trees and crops, and use of crop residues.
  - Establish early warning systems and other forecasting and crisis-preparedness systems
  - Train communities in the use of risk management tools, including financial services and insurance schemes
  - Improve understanding of climate change impacts on livestock production and build capacities to plan and implement risk management strategies

- Ensure project monitoring and evaluation includes indicators of performance in relation to social and environmental risks. The effectiveness of adaptation measures should also be monitored during project implementation. Important changes in resource conditions and in social conditions affecting range resource users should be brought to the attention of project managers for remedial action. Community-based monitoring of range resources (during and after project implementation) can be included in project design.

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Guidance statement 7 – Water (agricultural and domestic use)

INTRODUCTION

1. Agricultural production accounts for 70 per cent of global freshwater use, mainly through crop irrigation[1] (World bank, 2014); this figure rises to more than 95 per cent in many countries where agriculture is the primary economic activity (FAO, 2007, 2008). Roughly 15 to 35 per cent of agricultural water use is considered unsustainable (Millennium Ecosystem Assessment, 2005). Industrial use (that includes agroprocessing) and domestic use of water account for 15 per cent of global freshwater use each.

2. Many poor rural people face severe constraints in their access to adequate quantities of good quality water for domestic and agricultural uses. Clean water supplies and sanitation remain major problems in many parts of the world, with 11 per cent of the global population lacking access to safe drinking water. Worldwide, about 780 million people do not have access to an improved water supply (UNICEF-WHO, 2012). This water scarcity is amplified by increasing levels of pollution. Climate change is exacerbating water scarcity in some regions, while other regions will have increased or even excess water flows. Events such as droughts and floods are also expected to increase in both frequency and intensity in some locations. With an increasing number of countries facing severe water shortages, agriculture's efficient use of water to reduce poverty and hunger is a significant issue, which can be addressed by putting in place systems and investments for managing water resources equitably. These activities need to be grounded in: (i) improved governance through community empowerment; (ii) coordinated watershed- or landscape-based approaches; and (iii) sustainable use of water resources.

WATER MANAGEMENT[2] IN IFAD PROJECTS

3. An IFAD evaluation of water in 2013 made it clear that about 61 per cent of IFAD's projects have a water component to them (166 of 272), and that all regions have at least 55 per cent of projects that have some water intervention, including water resource management at the catchment or watershed level, hence going beyond the immediate household or community level of use. Water-related interventions are often linked to enhancing or restoring the asset base, particularly to building, rehabilitating or modernizing small-scale irrigation projects or multiple-use water infrastructure. IFAD's investment strategy focuses on supporting farmer-managed crop water management systems and domestic water supply, with all day-to-day activities and decisions undertaken by the farmers. Irrigation schemes initiated by governments are also financed, but are then handed over to farmers.

[1] Irrigation systems for improving crop yields per unit of land include: (i) water storage; (ii) water conveyance; (iii) water delivery to plants; and (iv) disposal of drainage water. https://blogs.worldbank.org/opendata/chart-globally-70-freshwater-used-agriculture

[2] Water resource management covers all aspects of the rural water sector, including institutional aspects. Its operational scope varies from transboundary flows, through parts of river basins and smaller watersheds, to small-scale groundwater and drainage schemes. Its institutional scope ranges from international, national and lower-level administrative units, through associative group forms to the communal and household levels, with efforts to improve rural people's institutional capacities to obtain, allocate, use and manage water sustainably and productively.

WATER IN AGRICULTURE

4. Water management in agriculture includes projects fed by surface water or groundwater and/or rainfall in irrigation, soil and water conservation, swamp rehabilitation, watershed management, water for livestock, and inland fisheries and aquaculture. The size and scope of interventions vary widely, from a single well or rainwater harvesting system for household backyards covering a few hundred square metres, through a series of small groundwater or surface irrigation schemes covering about 5 hectares, inland valley and other swamps of several hundred hectares, smallholder development through large-scale irrigation schemes of tens of thousands of hectares, and catchment and watershed improvement of several square kilometres, to soil and water conservation measures covering several thousand square kilometres. All infrastructure measures are mirrored in corresponding social capital building for ownership and secured operation and maintenance.

WATER FOR DOMESTIC USE AND SANITATION

5. Water and sanitation projects are designed to respond to the needs of poor rural communities, and are aligned with national strategies for poverty reduction. Investments focus on domestic water provision for communities and, where possible, households. Activities include rehabilitation and/or construction of water infrastructure such as boreholes and shallow wells, water harvesting and ponds, and pipes and tanks; training of local beneficiaries in operation and maintenance; and formation of domestic water user associations.
6. As stated in IFAD's Environment and Natural Resource Management Policy, the basic guidance and good practices for IFAD interventions in water management involve promoting: (i) integrated water resource management approaches at different levels within watersheds; (ii) water-use efficiency and sustainability in production, and good practices in irrigation, sanitation and wastewater management; and (iii) enhanced rural water institutions and integrated, pro-poor governance of land and water.

ENVIRONMENTAL, CLIMATE CHANGE AND SOCIAL ISSUES

7. The potential negative impacts of water investments affect several environmental and social aspects and include soil degradation, water quality, public health, effects on flora and fauna and disruption of ecosystem services, particularly when introduced on a large scale. In the near future, accelerating changes in the global climate will cause major alterations in the patterns of the water cycle and the geographical distribution of water, with significant effects on agricultural activities (UNEP, 2008). For poor countries with limited capacity to respond to hydrologic variability, climate change will make the achievement of water security even more difficult and costly. Extreme variability of precipitation is expected to put 2.8 billion people at risk of water shortages (World Bank Water and Climate Change website).

8. Climatic change will have significant consequences on water supply, water systems, infrastructure and agriculture. For example, sea level rise could lead to salinization of water supplies from coastal aquifers; irrigation demand might increase because of decreased rainfall and increased evapotranspiration, placing additional pressure on irrigation systems; and soil erosion from increased rainfall intensity could affect watershed sustainability and lead to sedimentation in reservoirs (World Bank, 2009), with impacts on the operation of facilities. In addition, the water supply for human communities will become uncertain – particularly water accessibility – with increased levels of water stress worldwide exacerbating existing conflicts over water use (UNEP, 2008).

9. Unless adequately addressed in all development stages, climate change could undermine IFAD's investments and reduce the long-term sustainability of results. IFAD should therefore aim to reduce the vulnerability of water management and infrastructure to current climate variability while also considering the long-term effects of climate.

10. Environmental impacts can occur at four main phases of water management and infrastructure development – siting, design, construction and operation – and are quite different for each phase. To facilitate and focus environmental assessments for IFAD projects, the following issues should be considered (taking into account that many of these factors may have greater impacts in wetland areas):

    - *Siting phase* – possible displacement of people, loss of agricultural land, loss of unprotected natural forests and biodiversity, impact on protected areas, impact on historic sites, effect on water resources upstream and downstream of the command area, depletion of the aquifer, and loss of access to water for non-irrigation users (e.g. livestock), flood prone areas, coastal low lying areas exposed to.
    - *Design phase* – inadequate engineering and design of infrastructure, disruption/modification of surface water flow, drainage adjustments, inefficient uses of water, and inadequate analysis and consideration of climate change-associated risks on water resources and standards for infrastructure.
    - *Construction phase* – soil erosion at construction, sand mining and borrow sites, disposal of construction spoils, public health concerns associated with construction camps, conflicts between construction crews and the local population, and wastewater management.
    - *Operation phase* – inefficient use of irrigation, domestic and other uses, soil degradation (salinization, waterlogging), pollution by agrochemicals, changes in groundwater levels, changes in surface water quality (return flows), reduction of downstream flows (with implications for downstream drinking water quality and aquatic biota), intrusion of seawater, and spread of waterborne diseases associated with permanent waterbodies serving as breeding ground for vectors.

POTENTIAL MITIGATION

11. This section provides guidance on mitigation measure for reducing the possible negative environmental impacts of projects which mobilize surface water or groundwater for irrigation. Rainwater harvesting or improved rainfed farming systems investments are typically in less need for mitigation.

12. IFAD projects dealing with irrigation should include a comprehensive Environmental and Social Management Plan with all the measures deemed feasible and necessary to reduce significant adverse environmental, health and social impacts. Most measures can be incorporated in the project design phase. Once remedial measures have been identified, they should be clearly spelled out in contract documents. Tenders should specify the environmental mitigation measures in detail, and include them as work items. Bidders should be asked for detailed descriptions and cost estimates of proposed remedial works. The active involvement of rural communities, and the use of a multisectoral approach that considers many issues – gender, social, health, and new concerns such as energy sources and climate change – in both the planning and implementation stages will contribute to: (i) prevention of potentially harmful design choices; (ii) optimum use of locally available materials; (iii) sustainability of service by involving a critical mass of users, operators and suppliers; and (iv) incorporation of locally adapted environmental measures.

13. In IFAD projects, responsibility for the engineering design, construction, supervision and handover of infrastructure components is usually delegated by the responsible government agency (e.g. Ministry of infrastructure , ministry of agriculture) to local authorities, which normally have their own standards and expertise. National authorities may delegate measures for mitigating environmental damage to construction firms through the project, but enforcement of compliance and monitoring of environmental protection measures are often weak. The project's mitigation plan must indicate suitable engineering designs, quality construction standards and make provisions for the effective implementation of recommended environmental and social actions. Training may be required for infrastructure engineers and technicians, construction crews and site supervisors, local public works agencies and contractors, organizations responsible for infrastructure maintenance, and local administrative authorities. Project mitigation plans should assess the institutional needs and include recommendations to ensure that supervising agencies have the authority, skills and means to enforce (contractual) compliance with environmental guidance.

Sitting phase

- *Water-use efficiency and sustainability:* Promote water-efficient irrigation systems (e.g. drip irrigation) and enhance water drainage on agricultural land. Support watershed assessments and sustainable land-use plans for coastal or inland wetlands. Minimize the relocation of local people and their animals, and develop resettlement plans. Optimize water use by selecting irrigated areas with suitable soils and corresponding crops and farming systems. Promote water harvesting practices including capture of run-off where feasible.
- *Climate change proofing:* Assess how vulnerable project sites and water management systems are to climate change, based on the status of regional and local water resources, water demand, use and depletion, and the primary hydrologic drivers of vulnerability such as annual average precipitation, precipitation extremes, glaciers and snow melt, sea level rise, evapotranspiration, soil moisture, run-off and river discharge (World Bank, 2009). Develop water-related disaster risk reduction strategies (UN Water, 2010).
- *Water use conflict:* Infrastructure must be compatible with the physical resource base and complementary to upstream and downstream activities. It should take into account competing, gender-differentiated demands, especially for agriculture and domestic and livestock drinking water. Development plans should address issues regarding the current efficiency of (rainfed) water use or irrigation practices. Proposals for water infrastructure for a given area should match midterm and long-term, upstream and downstream, agricultural and non-agricultural developments. Decisions regarding the location of a new water point or distribution network should consider the potential growth of new settlements or communities. Assess the potential impacts of water management development at the transboundary level.

Design phase

- *Watershed protection:* Preserve surface water and underground water hydrology, and ensure water quality and supply within and adjacent to the project area. Avoid detrimental changes in downstream water flow. Limit erosion in watershed areas, intakes, waterways and reservoirs, including by designing all infrastructure to minimize scouring, sedimentation and stagnant water and to facilitate cleaning. Explore options for rewarding communities for watershed or ecosystem services (financially and non-financially) or benefit-sharing mechanisms.
- *Participation of target groups and equitable distribution of benefits:* Consult all local water users, and involve beneficiaries in all stages of infrastructure development, from design through operation and management, to rehabilitation and reconstruction. Ensure equitable,

reliable and sustained access to, and use and control of, water. Address the gender dimensions in all stages.

- *Climate change:* Incorporate climate change risk analysis into projects; the potential impacts of climate change on water availability should be thoroughly examined when designing any type of intervention – climate moisture index, local climate variability data, and projections can be very useful in this regard. Projects in areas prone to floods, drought and other natural disasters often require explicit incorporation of climate change effects into economic analysis, including assessment of the cost of adaptation and measures for reducing vulnerability at the river basin or watershed level (World Bank, 2009). Promote multiple-benefit approaches or technologies that have positive impacts on climate resilience, yields and soil moisture, such as rainwater harvesting and conservation agriculture.
- *Project design:* Prioritize the rehabilitation of existing irrigation schemes, the development of several small-scale irrigation schemes rather than one large system, the use of sprinkler or drip irrigation, the use of treated wastewater, and the combined use of surface water and groundwater. Include early warning systems and emergency plans for extreme events. Introduce new technologies such as wastewater reuse, recycling and solar panels (UN Water, 2010).

Construction phase

- *Site selection:* Select project sites where social, environmental and climate change impacts are commensurate with the expected long-term benefits. Include flood control works. Build additional or improved water storage facilities or diversify the community's water supply portfolio to hedge against drought. Rehabilitate and revegetate borrow pits after use so that they do not allow pools of stagnant water to accumulate, and also to avoid livestock and human accidents. Control the disposal of construction waste (human faeces, fuel, oil, chemical containers etc.), and provide adequate camp facilities for construction crews and local labourers.

Operation phase

- *Water-use efficiency and sustainability:* Maintain drainage systems and flush soils to leach the salinity, which may have been caused by irrigation and/or the poor application of agrochemicals. Use sprinkler or drip irrigation to minimize soil degradation (salinization, waterlogging). Maintain level irrigation fields. Monitor surface run-off water and groundwater levels for long-term effects, and regulate run-off. Adopt a watershed approach and correct design weaknesses in a timely fashion to avoid seepage and overwatering problems.
- *Health and sanitation:* Promote good waste management and ensure proper drainage to prevent ponding. Support prophylaxis and treatment against waterborne diseases. Enforce water quality criteria and promote environmental and public health education of local communities (see guidance statement 14).
- *Institutions and pro-poor governance of land and water:* Given the need to strengthen national land and water governance systems in the countries in which IFAD invests, capacity-building in water management should blend traditional knowledge and local institutions with modern, state-level considerations on water use. Focus on empowering water users by strengthening their local institutions or, where these are absent, supporting the creation of water user groups. Wherever feasible, promote delegation or turnover of the management of water management schemes, or pass the schemes themselves to local groups – with attention to gender equality issues in management, and clearly defined operation and management responsibilities. Local and customary laws and regulations for resource allocation, costing and cost recovery should be taken into account.

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Guidance statement 8 – Dams, their safety and SECAP

INTRODUCTION

1. A "dam" is an artificial barrier that is constructed to impound or control water. It includes the barrier itself and all its appurtenant structures, such as the spillway and outlet works. Dams may be constructed from earth or other suitable materials such as rock, masonry or concrete – the choice usually being determined by foundation conditions and the availability of locally occurring construction materials. "Subsurface dams" are barriers built below the surface of a stream bed to intercept and store subsurface flows to provide water supplies in arid and semi-arid zones.

2. Dams provide a variety of benefits, including water for irrigation, livestock and domestic supplies and fisheries, as well as flood mitigation – and all these activities have had significant impacts on poverty reduction. But too often in the past dams have also created adverse social and environmental impacts. Moreover, dams are normally threatened by various forces that can cause failure and these generally continue to be active over the entire life of the dam. Dams often therefore present a safety hazard, as evidenced by various dam failures and incidents around the world, some with substantial loss of life.

3. IFAD-assisted projects often include the construction of a new dam, or directly depend on an existing dam, either of which could result in adverse impacts or involve a risk of failure. This *guidance statement* is intended to help stakeholders, including country programme managers and country project management teams, to appreciate: (i) the potential for adverse social and environmental impacts and need for safeguards; (ii) how the dam planning and development process fits into the IFAD Project Cycle and SECAP; (iii) the need for **sound technical advice** in dam design and construction to minimize the risks of catastrophic failure; and (iv) the implications for project design in terms of the additional time and finance required.

4. Cross-cutting issues such as gender, participation, farmers' organizations, as well as free, prior and informed consent (FPIC) and the like are discussed in the main text of this document and in various "How to Do" notes.[1] They are taken as read, and for the sake of brevity are not discussed in any detail in this *guidance statement*.

CLASSIFICATION OF DAMS

Classification by size

5. Dam height, reservoir capacity and the magnitude of incoming floods are critical factors in deciding on the level of technical expertise required for design, construction, operation, maintenance and decommissioning of dams. Obviously, the greater the dam height, reservoir capacity and incoming flood, the more sophisticated the engineering design skills need to be, and for this reason classification by size remains a common practice worldwide.

6. IFAD distinguishes between three sizes of dam, namely "small", "medium" and "large", defined as follows:
   - Small: any dam of 5 m or less in height.
   - Medium: any dam of between 5 m and 15 m in height.

[1] For example, IFAD. 2015. *How to Do: Seeking Free, Prior and Informed Consent in IFAD investment projects.*

- Large: any dam of more than 15 m in height.

7. In addition, any medium dam should be treated as a large dam if it meets at least one of the following conditions:
   - its crest length is 500 m or greater;
   - its reservoir capacity is 3 million m^3 or greater;
   - its maximum incoming flood is 2 000 m^3/s or greater; or
   - it is located in a zone of high seismicity.

Classification by hazard potential

8. Notwithstanding the above, dams are also classified by "hazard potential". In this context, it should be noted that "hazard" is not the same as "risk". For example, a large dam may be rated a **high hazard** structure because its location is such that its failure or misoperation could cause catastrophic loss of life and property downstream. However, the same dam also could be at a **low risk** of failure because it is well engineered, receives regular inspections, and is exceptionally well maintained. In contrast, a smaller sized dam located miles from human habitation may be rated a low hazard structure by virtue of its location, yet be at a high risk of failure or misoperation because it was poorly designed, has never been inspected and is poorly maintained.

9. For the purpose of this *guidance statement,* three hazard classes are adopted, as summarized in table 8.1.

Table 8.1. Hazard potential classification for dams

Classification	Loss of human life	Economic loss, environmental loss and/or disruption of livelihoods
High	Probable (one or more expected)	Yes (but not necessary for this class)
Significant	None expected	Yes
Low	None expected	Low and generally limited to owner

10. A high hazard rating for a new or existing dam indicates a need to adopt more stringent design standards than might be applied to a lower hazard rating dam. For example, while the design engineer for a low hazard dam might select a spillway design flood return period of say 1 in 500 years, the same engineer might select a flood return period of 1 in 10,000 years for a high hazard dam. For the same reason, a high hazard structure indicates a need for a higher standard of instrumentation and more frequent inspections than might otherwise be the case because of the potential consequences of failure or misoperation.

Environmental and social categorization

11. The three environmental and social categories considered by IFAD (A, B and C) are defined according to the likely significance of concerns (see main text of this document). However, any project that supports or induces the construction or use of a large or medium dam would be considered category A, while a project that includes only small dams would be considered category B.

12. For category A projects, SECAP require a full Environmental and Social Impact Assessment (ESIA) for the whole programme/project together with elaboration of an Environmental and Social Management Plan (ESMP) for implementation. However, in the case of a programme containing a number of dam subprojects, an Environmental and Social Management Framework (ESMF) for

the overall programme will suffice, provided that an ESIA is prepared during programme implementation – and an ESMP implemented – for each subproject that includes a large dam.

13. No formal ESIA is required for category B projects. In some cases, medium-size dams may only require an environmental analysis be carried out to confirm that there will not be any displacement and/or resettlement. Where displacement or resettlement is expected, the project design report should specify the required process for obtaining FPIC[2] and a Resettlement Action Plan (RAP) should be developed and implemented. In the case of a programme containing a number of dam subprojects, a Resettlement Action Framework will suffice, provided that a RAP is prepared and implemented for each subproject.

SOCIAL AND ENVIRONMENTAL ASPECTS OF DAMS

The World Commission on Dams

14. The World Commission on Dams was convened in the late 1990s to take up the growing debate at the time on the benefits and costs – especially the social and environmental costs – of large dams. The lessons learned were published in the Commission's 2001 report on *Dams and Development*.[3] The main messages include the following:

    - Dams have made an important and significant contribution to human development and the benefits derived from them have been considerable.
    - In too many cases, however, an unacceptable and often unnecessary price has been paid to secure those benefits, especially in social and environmental terms, by the people displaced, by communities downstream, by taxpayers and by the natural environment.
    - Lack of equity in the distribution of benefits has called into question the value of many dams in meeting water (and energy) development needs when compared with the alternatives.

15. Regarding the latter, the Commission observed that alternatives to dams do often exist and that the range of possible options should always be fully considered before deciding to invest in a dam. It also recommended that in the assessment process, **social and environmental aspects should have the same significance as economic and financial factors**.[4]

16. Although the Commission's focus was specifically on large dams, in many cases the lessons derived can be taken to also apply to smaller dams.

Social and environmental impacts

17. As mentioned, dams provide a variety of benefits, including water for irrigation, livestock and domestic supplies and fisheries, as well as flood mitigation – and all these activities have had significant impacts on poverty reduction. However, the potential adverse environmental consequences of dams are numerous and varied, and include direct impacts to the biological, chemical and physical properties of rivers and riparian environments. Dams act as barriers for the upstream and downstream movement of migratory river animals such as fish. They also act as barriers for sediment transport, trapping sediment that would otherwise naturally replenish downstream ecosystems. Dam construction for irrigation usually results in the loss of natural ecosystems in favour of irrigated farming. The control or attenuation of floods by a dam may

[2] See guidance statement 13.
[3] World Commission on Dams. 2000. *Dams and Development: A New Framework for Decision-Making.* Nairobi
[4] This guidance statement, however, proceeds from a point at which the alternatives have been compared and discarded in favour of a dam.

destroy livelihoods that were previously based on flood recession cropping and/or dry season grazing that depended on seasonal flooding of the river floodplain.

18. Large dams have also historically led to the involuntary resettlement of people from their lands, and indigenous tribal and peasant communities have generally been the hardest hit. Those displaced by reservoirs and losing their homes, food sources and other natural resources are only the most visible victims of the dams. Many others have lost land and homes to the canals, irrigation schemes, roads, power lines and other developments that have accompanied the dams. And many, again, have suffered from the hydrological changes that dams bring to rivers and ecosystems. Again others have suffered from the upsurge in diseases that dam development can bring, including bilharzia, malaria and, in many cases, HIV/AIDS transmitted by migrant construction workers.[5]

Potential for dam disasters

19. During the twentieth century, there were about 200 notable dam failures resulting in the loss of over 8,000 lives. Of these 200 failures, less than 40 were concrete or masonry dams and the remainder earth and/or rockfill dams. The fact that there were many more failures of earth dams than masonry or concrete dams was primarily due to three factors: (i) there were many more earth dams; (ii) masonry or concrete dams are typically built on more stable foundations; and (iii) masonry and concrete is an inherently stronger material than earth or rock fill.

20. The main causes of embankment dam failure are: overtopping during floods because of an undersized or obstructed spillway; inadequate provision for energy dissipation at the downstream end of a spillway; "piping"[6] of the embankment or foundations; and slope instability as a result of inadequate internal drainage. Piping has caused a larger number of catastrophic failures of embankment dams than any other cause, apart from overtopping.[7] Many small earth embankment dams have failed on first filling through piping as a result of the use of dispersive soils and/or poor compaction. Masonry or concrete dam failures do, however, occur and typically result in massive property damage and significant loss of life.

21. All types of dam are susceptible to earthquake damage and failure, as well as failure in the event of a landslide into the reservoir and consequent overtopping of the structure. All types of dams are also susceptible to sedimentation, leading to functional failure.

DAM SAFETY

Objective of dam safety measures

22. Because there can be major consequences – including loss of life or injury, property losses and environmental damage – if a dam malfunctions or fails, IFAD places the utmost importance on the safety of new dams that it finances, as well as on the safety of existing dams upon which an IFAD-assisted project is directly dependent. To achieve this objective, IFAD will require the loan agreement to contain a covenant to ensure that dams and reservoirs are designed, constructed, operated, maintained, superintended and eventually decommissioned to the highest possible standard of safety appropriate to their size and hazard potential, to protect people, property and the environment from the harmful effects of possible failure.

[5] ILO has produced a *Code of Practice on HIV/AIDS and the world of work,* which sets out fundamental policy principles and gives guidelines for concrete responses. It is complemented by a manual on *Implementing the ILO Code of Practice on HIV/AIDS: An Education and Training Manual*.
[6] "Piping" is the progressive erosion of concentrated leaks.
[7] Sherard, J.L. et al., 1963. *Earth and Earth-Rock Dams.* Wiley. New York.

Responsibility of owner

23. Every dam has an owner – who may be the national or local government, a parastatal, a private company, a private individual, or a consortium of legal entities. In general, a "community" is not the owner of a dam – even if it is known as a "community dam" and even if the community has constructed the dam on its own initiative/at its own cost – unless it has adopted a legal identity, such as becoming a trust. Hence, in general, "community dam" is a misnomer: the legal "owner" in such cases is likely to be the local (or higher) administrative authority.

24. In most jurisdictions, the owner remains responsible for the safety of the dam throughout its life. The owner has a duty of care to take appropriate measures to ensure the safety of the dam, from investigation and design through construction, operation, maintenance, periodic inspections, emergency preparedness and eventual decommissioning. This duty of care includes ensuring that, as a workplace, the dam is safe for those engaged in its construction and those employed in subsequent operation and maintenance, as well as other persons who may enter the site, such as livestock herders, fishers and recreational users. It also includes making sure, if necessary by insistence on appropriate wording of construction contracts, that working conditions for all personnel employed in construction, operation and maintenance comply with the norms of good practice established for the construction industry and set out in the labour regulations of the country concerned.[8]

25. The dam wall should be fenced, and signs should be provided to warn the public of the particular depth of water there and possibly elsewhere in the reservoir. While the reservoir may seem to be a convenient point for drawing livestock and domestic water supplies, this should be discouraged on health grounds. Instead, if supplies are required, the project should include drinking troughs for livestock and a slow sand filter for humans, just downstream from the dam and supplied by gravity. These should remain the responsibility of the owner.

26. Where the owner is not IFAD's borrower, the latter must ensure that its obligations for dam safety are properly assumed by the owner under arrangements acceptable to IFAD.[9]

Government's role

27. In addition to its possible responsibilities as owner of the dam, the government's role is the enactment and enforcement within its national legal system of such legislation, regulations, directives, and other standards and measures as may be necessary to effectively fulfil all of its national responsibilities and, where relevant, its international obligations regarding dams. These should include the enforcement of environmental law, including enforcement of environmental management/mitigation plans, as well as health and safety regulations.

IFAD's role

28. IFAD's role is to finance the project in accordance with its own policies and operational procedures. It is responsible to its Governing Council to ensure, in close collaboration with the borrower, that dam safety procedures and SECAP are complied with throughout programme implementation and that it will provide support to national implementation teams to achieve this. IFAD's role is not, however, to direct, adjudicate on or take responsibility for technical

[8] IFAD and ILO. *Rural Development through Decent Work. Promoting decent and productive employment of young people in rural areas: A review of strategies and programmes.* Rome

[9] If an entity other than the one with legal title to the dam site, dam and/or reservoir holds a lease or easement or licence to build and/or operate the dam (e.g. in a public-private-partnership), this will generally include delegated responsibility for safety.

decisions relating to the design, construction, commissioning, operation, maintenance or inspection of dams.

29. While responsibility for the technical adequacy and safety of IFAD-financed dams rests squarely with the owner and its technical staff/consultants, and while ”no objection” does not imply approval or any sharing of the owner’s responsibilities, IFAD will need regular and ready access to consistent, qualified engineering advice on all matters that it is not objecting to. Continuity will be key. This may require the engagement, on an as-required basis, of a dam engineer, either by the country programme manager or, depending on the anticipated demand, by the policy and Technical Advisory Division.

Design and construction of dams

30. New dams. When IFAD finances a project that includes the construction of a new dam, it requires the borrower to ensure that it is designed, and its construction is supervised, by suitably qualified and experienced engineers. It also requires that the borrower adopts and implements dam safety measures for the design, bid tendering, construction, operation and maintenance of the dam and associated works.

31. For small dams, generic dam safety measures (such as ensuring adequate spillway capacity, freeboard and protection of the downstream outfall, an adequate foundation key/cut off, protection of the outlet works from differential settlement and leakage, upstream and downstream slopes appropriate to the properties of the material used for construction, adequate drainage, avoidance of unsuitable materials and adequate compaction under competent supervision) are usually all that is required, and the FAO irrigation and drainage paper[10]may be used as a reference. Nevertheless, the borrower should provide IFAD with details of the qualifications and experience of the civil engineer responsible for supervision for review.

32. The requirements for a medium-sized dam are more stringent. For such dams, IFAD requires that a suitably qualified and experienced independent consulting engineer, acceptable to IFAD, be engaged by the borrower to provide recommendations directly to the implementing agency on all aspects of the quality assurance stage at the key stages of the dam development, including:

    - the specification for, and completion of, site investigations;
    - detailed design of the dam and appurtenant works;
    - preparation of the works specifications and bidding documents;
    - excavation of the cut-off trench and outlet works; and
    - construction of the dam wall, through to commissioning, filling and start up of the dam.

33. The consulting engineer will also review and comment on the operation and maintenance plan and emergency preparedness plan, as well the arrangements for periodic inspections. The consulting engineer’s reports will be made available to IFAD during supervision missions for review and “no objection”.

34. In the event that IFAD finances (or cofinances) a large dam, or finances a project that depends on the construction of a large dam, IFAD will require:

    - reviews by an independent panel of experts (the Panel) of the investigation, design and construction of the dam and the start of operations;

[10] FAO. 2010. *Manual on Small Earth Dams: A Guide to Siting, Design and Construction*. FAO Irrigation and Drainage Paper No. 64. Rome. Available at: www.fao.org/docrep/012/i1531e/i1531e00.pdf.

- preparation and implementation of detailed plans for construction supervision and quality assurance, instrumentation, operation and maintenance and emergency preparedness; and
- periodic safety inspections of the dam after completion.

35. The Panel will consist of three or more experts, appointed by the borrower and acceptable to IFAD, with expertise in the various technical fields relevant to the safety aspects of the particular dam. The primary purpose of the Panel should be to review and advise the borrower on matters relative to dam safety and other critical aspects of the dam, its appurtenant structures, the catchment area, the area surrounding the reservoir and downstream areas.

36. The borrower should contract the services of the Panel and provide administrative support for its activities. Beginning as early in project preparation as possible, the borrower should arrange for periodic Panel meetings and reviews, which should continue through the investigation, design, preparation of the specifications for the works, construction, and initial filling and start-up phases of the dam. The borrower should inform IFAD in advance of the Panel meetings, to which IFAD should normally send an observer. After each meeting, the Panel should provide the borrower with a written report of its conclusions and recommendations, signed by each participating member, copied to IFAD for review and "no objection". Following the filling of the reservoir and start-up of the dam, IFAD would review the Panel's findings and recommendations on the event. If no significant difficulties are encountered in the filling and start-up of the dam, the borrower would then disband the Panel.

37. **Existing dams and dams under construction.** IFAD may finance projects that do not include a new dam, but that would rely on the performance of an existing dam or dam under construction. In this context, it should be noted that the fact that an existing dam has stood for years is not necessarily an indication that it will continue to do so. In such cases, IFAD would require that the borrower arrange for one or more (depending on the size and hazard rating of the dam) independent dam specialists to: (i) inspect and evaluate its safety status, its appurtenances and its performance history; (ii) review and evaluate the owner's operation and maintenance procedures, including its emergency preparedness plan; and (iii) provide a written report of the findings and recommendations for any remedial work or safety-related measures necessary to upgrade the existing dam or dam under construction to an acceptable standard of safety.

38. All necessary additional dam safety measures or remedial work should be financed under the proposed project. When substantial remedial work is needed, IFAD requires that: (i) the work be designed and supervised by appropriately qualified and experienced engineers; and (ii) the same reports and plans as for a new IFAD-financed dam be prepared and implemented. For high-hazard cases involving significant and complex remedial work, IFAD would also require that an independent consulting engineer or panel of independent experts be employed to inspect the work on the same basis as for an IFAD-financed new medium or large dam (paragraph 32 onwards).

39. **Accounting for the impacts of climate change.** Of the three potentially adverse impacts of climate change on dams, i.e. increased floods, reduced inflows and increased evaporation, it is the first of these that impacts directly on dam safety since the magnitude of floods and their return periods determine the validity of the spillway design flood. To try to put a value on the additional allowance that should be made for climate change is, however, problematic since, apart from anything else and with due respect to hydrologists, the estimation of probable maximum flood for any given location in the world remains an imprecise science. This is particularly so for dams other than major dams because it is rare indeed to come across a dam site for which anything other than fragmented hydrological data are available.[11]

[11] The term "major" here refers to strategic importance and not size.

40. The spillway width and freeboard is usually designed using a flood return period selected on the basis of the hazard rating of the dam. The spillway of a major dam such as Kariba (in Zambia and Zimbabwe), for example, would normally be designed on the basis of an estimated probable maximum flood (equivalent to a 1:10,000 year flood). But the spillways of many lower hazard rating dams, including large dams, are often designed for much smaller floods of, say 1:500 years or 1:1,000 years return period. Given the problem of estimation referred to above, the best approach for the time being would be to initially ignore the impact of climate change, adopt the same design parameters as before, but then carry out a "what if" check to see how an increase in return period affects the required freeboard or spillway width.[12] A value judgement by a qualified and experienced engineer can then be made on whether to increase the dimensions.

41. In addition to the above impacts, climate change may also impact negatively on the average amount of rainfall that hitherto would have contributed to the moisture available to a crop. The effect of this would be an increase in the average net irrigation requirement per unit area of crop and, other things being equal, a reduction in the average area that could be irrigated from the dam. This needs to be taken into account when estimating net benefits, although for the time being the allowance that should be made can only be conjectural.[13]

42. **Selection of engineers and other professionals.** The constant theme throughout this guidance statement is that dams are complex and hazardous structures. It cannot be overemphasized how important it is to ensure that their design, construction operation, maintenance, surveillance and eventual decommissioning are carried out only by appropriately qualified and experienced engineers and other professionals, such as hydrologists, geotechnical engineers and geologists. The key is to employ engineers and others with the qualifications and experience appropriate to the height and hazard potential of the dam concerned.

43. Thus, if the intention is to design and construct a small earth dam of the type described in FAO's *Manual on Small Earth Dams* (i.e. of height less than 5 m) (FAO, 2010), responsibility for design and construction supervision may be assigned to a relatively inexperienced junior engineer or technician, preferably one who has had the benefit of at least a short course in dam construction (Table 8.2), under the guidance of a more experienced civil engineer.

44. The design and construction supervision of medium-size dams must be carried out by a more experienced civil engineer, who should be supervised by a senior civil engineer with at least 10 years' professional experience in dams, who should inspect and approve all detailed drawings and be available to visit the site and advise the younger engineer in the event that unusual conditions are encountered. The assistance of an experienced hydrologist would normally be required to advise on flood estimation.

45. For any dam larger than 15 m – i.e. for any large dams – a step up in experience is required. Design and full time construction supervision should be provided by a senior civil engineer, who should be responsible to an even more experienced dam engineer of at least 15 years' standing. The engineers should be supported by a hydrologist, engineering geologist and other specialists as required.

[12] See FAO Water Reports, No. 36, on this topic. The first paragraph of the executive summary says that: "*The levels of risk associated with rainfall and runoff events can only be determined with provisional levels of precision. These may not be sufficient to define specific approaches or levels of investment (e.g. the costs of raising the freeboard on an hydraulic structure) in many locations."* Available at: www.fao.org/docrep/014/i2096e/i2096e.pdf.

[13] That said, some countries are making progress in modelling the impact of climate change at the basin level and results may be available in some cases for use in the hydrology analysis.

Table 8.2: Level of engineering expertise required for the design and construction of dams

Classification of dam	Expertise required	
	Site investigation/design/ construction supervision	**Overall technical guidance/direction**
Small	Junior engineer/technician having undergone a short course in dams as part of the training	Civil engineer with > 5 years' experience of design and construction of dams
Medium	Civil engineer with > 5 years' experience of design and construction supervision of similar or larger dams	Senior civil engineer with > 10 years' experience in design and supervision of dams
Large	Full-time senior civil engineer with > 10 years' experience, with most of that experience in the design and construction of similar or larger dams	Senior civil engineer with > 15 years' experience, with most of that experience in the design and supervision of dams

46. It does not matter where the staff are sourced (i.e. whether from the relevant government department or from the private sector), provided that they are qualified in their respective fields and have experience appropriate to the size of dam proposed. However, while suitably qualified and experienced staff for the smaller dams are likely to be found in government departments, qualified private consulting companies will more than likely be needed for the larger dams.

47. The independent panel of experts required for all large dams should be composed of a dam engineer specialized in the type of dam to be constructed (e.g. an arch dam specialist for an arch dam and so on), hydrologist, geotechnical engineer, engineering geologist, and any others with expertise in the various technical fields relevant to the safety aspects of the particular dam. Each member of the panel should be an internationally recognized high-level specialist in his or her respective field.

Operation and maintenance

48. The responsibility borne by the owner of a small dam is the same for the owner of a medium or large dam, because all dams must be operated and maintained regardless of their size. The only difference is in the scale of the work involved. IFAD requires that, for any dam that it finances – whether large, medium or small or high or low hazard – an *Operation and Maintenance Manual* is prepared during the construction stage, to be ready for immediate use upon completion of the work and first filling of the dam. The intention will be to: (i) define practices that will ensure safe operation; (ii) specify a maintenance programme appropriate to the hazard rating of the dam to ensure timely repair of the facilities; and (iii) identify who is responsible for operation and maintenance of the dam on behalf of the owner, from day to day and in terms of engineering.

49. The *Operation and Maintenance Manual* will be submitted to IFAD (and, in the case of a large dam, also to the independent panel of experts) for review prior to the completion of construction. The operating manual should cover the functions of the dam and reservoir and describe the procedures to follow to ensure dam safety during flood conditions. Operational procedures should be specified that ensure:

    - inflows do not endanger the dam structure (e.g. by overtopping);
    - outflows achieve the required environmental (compensation) flow rate where this is applicable; and

- outflows are delivered in such a way as not to endanger the dam or to cause damage downstream.

50. The borrower should ensure that there is extra vigilance during the first filling of the dam, as this process may expose weaknesses that require the dam to be drained.

51. In some cases, the owner may have to take security measures to protect structures from damage by vandals or saboteurs, as well as from unauthorized operation of outlet or spillway gates. For dams with a significant or high hazard potential, the owner must ensure that effective communications are maintained between the site and relevant government departments, as well as with the emergency services.

52. The owner should prepare a maintenance schedule, with instructions and checklists indicating the required procedures for each component of the dam. Protective measures for an embankment dam are likely to include:

    - Generally minimizing erosion by: (a) establishing and maintaining grass cover on the embankment and spillway; and (b) fencing the embankment, spillway and other sensitive areas to keep livestock and people from establishing paths;
    - Preventing the growth of bushes and trees on the embankment; and
    - Making ongoing minor repairs of erosion damage.

53. Special attention should be given to known problem areas, and incident-specific maintenance instructions should be issued following floods, earthquakes and other natural phenomena.

54. Operation and maintenance personnel should be selected on the basis of their capability to acquire the knowledge needed to perform the many functions of operation and maintenance, should be trained for their duties at each specific project, and should enjoy similar, if not better, working conditions to those employed earlier on the construction of the subproject. The owner's engineer should also ensure that maintenance staff possess the requisite skills to ensure that any repair works are carried out to the same, or higher, standard as the original works and provide adequate supervision to ensure that this is achieved.

Periodic inspection programme

55. The purpose of a periodic inspection programme is to check the structural integrity of a dam and appurtenant structures on an ongoing basis throughout their operating life, and to ensure protection of human life and property. Periodic inspections are intended to detect conditions that might disrupt operation or threaten dam safety in time for them to be corrected.

56. Three levels of periodic inspections will be required: "informal", "intermediate" and "formal/special" (Table 8.3). Generally, the required frequency of each type of inspection will depend on the rated hazard potential of the dam. However, to encourage discipline and consistency in the inspection programme, the proposed schedule should be specified in the *Operation and Maintenance Manual*, listing each feature to be inspected.

57. Although, in general, IFAD would not be involved in or concerned with inspections (since these would mostly take place after the project has closed) it would instead seek assurances at loan negotiations that the Borrower will ensure that the requirement for regular periodic inspections would be subsequently respected.

Table 8.3. Level of periodic inspections and engineering expertise required

Level of inspection	Purpose	Frequency	Carried out by	Reporting to
Informal inspections	To have, as far as practicable, continuous surveillance of dam, to identify and report abnormal conditions in accordance with instructions prepared by owner's engineer	Frequent observations of dam and appurtenances scheduled according to hazard potential of the dam. Schedule modified if necessary by owner's engineer to respond to any changing conditions.	Operating personnel at dam, such as dam superintendent, extension officer, water user association officers or the like, as integral part of operation and maintenance activities.	Owner/owner's engineer
Intermediate inspections	Thorough inspection of the dam and appurtenant structures, as well as review of the last formal inspection	Annually for dams rated as having a significant or high hazard potential; at most biennially. Frequency may be reduced by the owner's engineer to once every five years for lower hazard dams.	Qualified engineers experienced in design, construction, operation and maintenance of dams, and trained to recognize abnormal conditions. Dam operator should participate.	Owner/owner's engineer
Formal and special inspections	To determine if the structure meets current accepted design norms and practices	Interval of five years or less for dams rated as significant or high hazard potential, although depending on their history, some dams may require more frequent inspection. Special inspections must be carried out immediately after the dam has passed a large flood or after the occurrence of a significant earthquake, sabotage or other unusual event.	Formal and special inspections should be conducted under the direction of a high-level specialist dam engineer and other specialists, selected on a site-specific basis considering the nature and type of the dam.	Owner/owner's panel of experts

Emergency preparedness plan

58. IFAD requires that an *emergency preparedness plan* be prepared for all dams with a "significant" or "high" hazard potential. This plan should specify the roles of parties responsible for the safety of a dam if and when failure is considered imminent, or when the expected operational flow release threatens downstream life, property or economic operations. The plan will include the following items:

    - clear statements on the responsibility for dam operations decision-making and for related emergency communications;
    - maps outlining inundation levels for various emergency conditions;
    - flood warning system characteristics; and
    - procedures for evacuating threatened areas and mobilizing emergency forces and equipment.

59. The broad framework of the plan and an estimate of the cost of preparing the plan in detail should be provided to IFAD prior to project design completion. The plan itself should be prepared during implementation and given to the panel of experts (in the case of a large dam) and IFAD for review not later than one year before the projected date of initial filling of the reservoir.

60. Emergency action planning is likely to be of less importance for small dams with a low hazard rating.

Decommissioning

61. Decommissioning of a dam would eventually be required when it has reached the end of its economic life. In such cases, the dam must be entirely removed or at least made incapable of storing any water temporarily or permanently. Decommissioning other than by removal is normally done by breaching one or more sections of the dam wall or embankment. The owner would remain responsible for the safety of the dam while it is in the process of removal/decommissioning – and indefinitely thereafter if it is not removed. Even though removal/decommissioning may not be carried out until two or three decades after construction, IFAD should seek an assurance that when the time comes the owner of the dam would exercise due diligence and comply with national regulations for safeguarding: (i) any affected persons; and (ii) the environment. This should include a removal/decommissioning plan based on professional engineering advice to ensure that, to the satisfaction of the environmental authority:

    - the breaching process would be carried out safely, both in terms of the dam itself and in terms of potential damage or loss of life downstream;
    - the unbreached section would be left in a permanently stable condition;
    - the proposed breach would be wide enough not to impound significant quantities of water under flood conditions; and
    - stability of the sediment deposits within the reservoir area would be assured before commencement of the breaching operation.

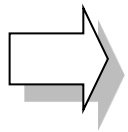
62. The plan should also include proposals for reinstatement and/or regeneration of the inundated area.

DAMS, THE IFAD PROJECT CYCLE AND SECAP

The basic process for a single large or medium-size dam project

63. The various stages of SECAP, the dam development process and how these should fit into the IFAD project cycle are shown in table 8.4, assuming that the overall project consists of a single dam.

Table 8.4. Overview of IFAD's project cycle, SECAP, and basic dam development and safety process

IFAD's project cycle						
RB-COSOP	Concept note	Detailed project design and quality enhancement review	Design completion and quality assurance process	Negotiation and approval	Implementation and monitoring and evaluation	Evaluation
Dam development and safety process						
If practicable, identification of a potential programme from a long list of potential dam projects/subprojects Documentation of the national procedures governing dam safety	Prefeasibility studies and hazard potential rating for the most promising potential subprojects. Selection of subprojects for feasibility studies, taking account of environment, social and climate screening	Preliminary site investigations and feasibility studies (large or medium-size dams)	Finalization of proposed capacity, provision for sedimentation storage, reservoir yield estimates, cropping patterns, marketing/value chain arrangements, farm budgets, cost estimates, financial and economic analysis, and institutional and governance arrangements.	Negotiation and agreement of loan covenants for institutional responsibilities for dam ownership, operation and maintenance, inspections and safety.	Appointment of high-level panel (large dam), or independent consulting engineer (medium-size dam) for independent reviews. Implementation of detailed engineering designs, tendering, award of construction contracts; supervision of construction; preparation of the operation and maintenance manual, including periodic inspection schedule; preparation of emergency preparedness plan	Ongoing dam operation, surveillance, maintenance and periodic inspections 

SECAP							
	Step 1	Steps 2 and 3	Step 4	Step 5	Step 6	Step 7	Step 8
SECAP-COSOP preparatory study (if required)	Environment, social and climate screening of dam as category A, B or C; prepare SECAP review note	Carry out ESIA (or ESMP analysis for category B project) and prepare RAF/RAP and IPP (if applicable); climate risk analysis (if required); update SECAP review note	Review ESIA/ESMP, RAF/RAP and IPF/IPP, as required	Loan negotiations; covenants for implementation of ESMP/RAP/IPP	Executive Board approval	Project supervision and implementation support; implementation of ESMP/RAP/IPP	Project completion ex post ESIA

Note:RB- COSOP = Result based country strategic opportunities programme; ESMP = Environmental and Social Management Plan ; ESIA = Environmental and Social Impact Assessment; ESMP = Environmental and Social Management Plan; IPF = Indigenous Peoples Framework; IPP = Indigenous Peoples Plan; RAF = Resettlement Action Framework; RAP = Resettlement Action Plan; SECAP = Social, Environmental and Climate Assessment Procedures

64. The dam development process for large and medium-size dams follows a natural sequence, beginning with identification (possibly within a country strategic opportunities programme, COSOP) to prefeasibility studies, feasibility studies, preliminary design, detailed design, tender documentation, bidding, construction, commissioning, and operation and maintenance. The eight steps of SECAP begin with environmental and social categorization of the dam through preparation of the Environmental and Social Impact Assessment (ESIA) (or ESMP analysis for category B projects); Resettlement Action Framework (RAF)/Resettlement Action Plan (RAP) and Indigenous Peoples Framework (IPF)/Indigenous Peoples Plan (IPP) (if applicable); climate risk analysis; preparation and implementation of the Environmental and Social Management Plan (ESMP); and an ex post ESIA or audit.

65. As may be seen, the feasibility study for any large or medium-size dam **must be completed in time for quality assurance**. The same applies to the ESIA, RAF and IPP, for category A projects, and ESMP for category B projects to provide the information required for completion of the project design report. Loan negotiation and agreement would follow.

66. The question is how to finance this substantial work prior to loan agreement. In some countries, most of the necessary preliminary studies may have already been completed by the borrower, with or without external assistance, and little further preparation work is required to allow completion of the project design report. In such cases, IFAD may fund the remaining work (such as environmental screening and preparation of an ESMP) from its regular budget.

The process for a project comprising a number of dam subprojects

67. A more likely scenario is that a proposed project would consist of a number of discrete subprojects, including large and medium-size dams, some of which have been studied to feasibility level. Provided that, by the time of the concept note approval: (i) 25 per cent (or a minimum of one subproject, whichever is greater) of the proposed subprojects are already prepared to feasibility level; (ii) the respective feasibility reports for these subprojects indicate that they are suitable for investment; (iii) the remaining 75 per cent of the subprojects identified have been studied to prefeasibility level; and (iv) the 25 per cent is representative of the remaining 75 per cent, the overall project may be considered ready for implementation.[14]

68. The process then required is depicted in figure 8.1. It begins with identifying which, if any, of the subprojects have had an ESIA, satisfactory to IFAD and the borrower, carried out. The remaining subprojects listed would then be subjected to an environmental and social screening for categorization. On this basis, a SECAP review note would be prepared, including the draft terms of reference for the preparation of an Environmental and Social Management Framework (ESMF) for the overall project, to be funded by IFAD from its regular budget. The concept note would then be prepared and submitted to the Operational Strategy and Policy Guidance Committee (OSC).

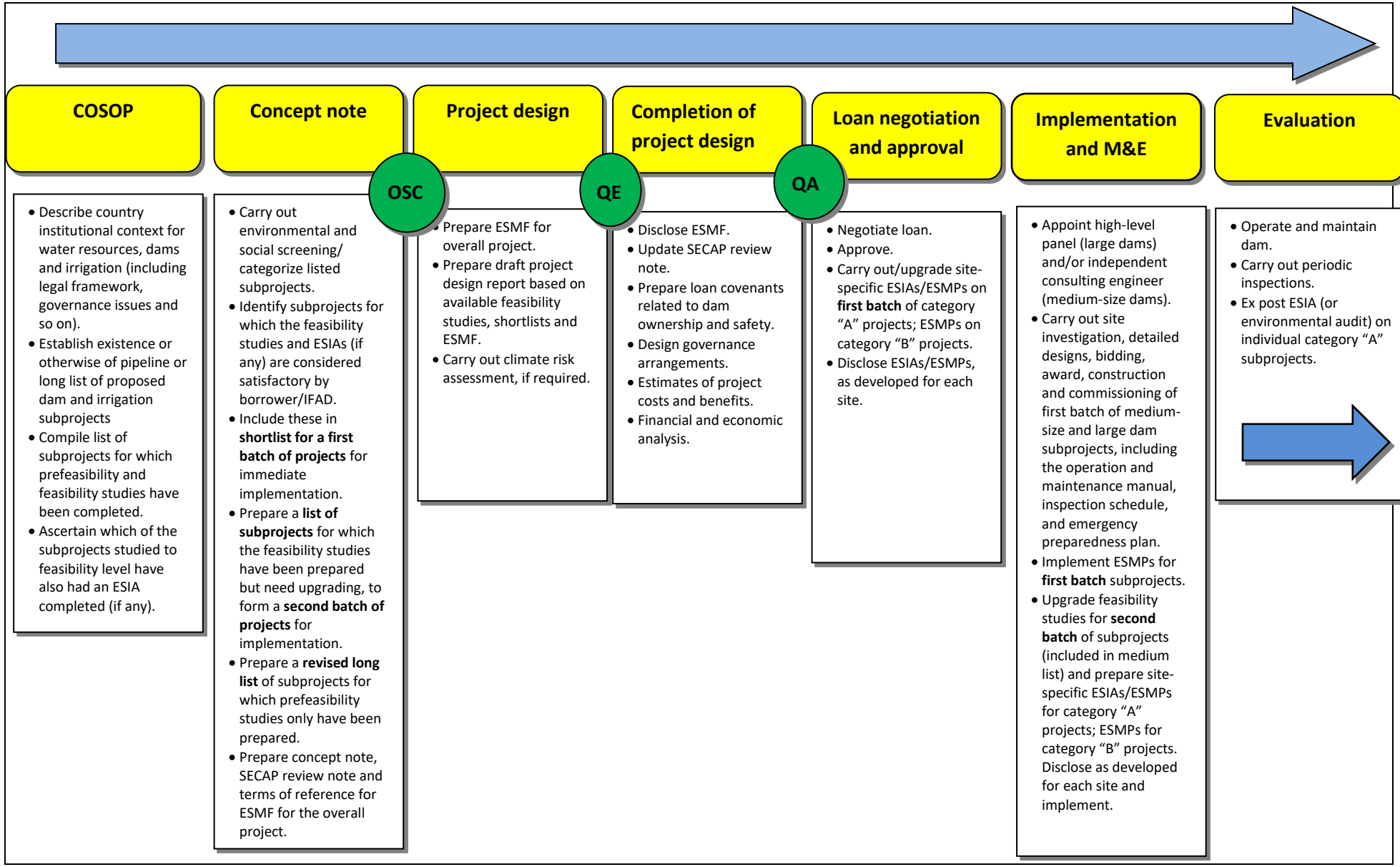
69. The concept note would contain a shortlist of subprojects for which the feasibility studies and ESIAs (if any) are considered satisfactory by the borrower/IFAD, to become the **first batch** of projects for implementation immediately upon the loan signature. It would also contain a list of subprojects for which the feasibility studies have been prepared but need upgrading, to form a **second batch** of subprojects for implementation after the studies have been upgraded. Finally, it would list the subprojects for which prefeasibility studies only have been prepared.

[14] If no subprojects have been prepared to the feasibility level by the time of the concept note, it is unlikely that the project could proceed. Instead, a source of finance should be sought to cover the cost of bringing a representative sample to the feasibility level.

70. During the next stage of project design, the ESMF would be prepared for the overall project. The project design report would then be drafted on the basis of this and the available feasibility/prefeasibility studies for submission to the quality enhancement review. Thereafter, the ESMF would be disclosed, the SECAP review note would be updated and the project design report finalized for submission to the quality assurance panel. Meanwhile, the loan covenants – including those pertaining to dam ownership and safety – would be drafted.

71. Once the loan has been negotiated and approved, a retroactive financing advance should be sought to cover the cost of carrying out/upgrading site-specific ESIAs/ESMPs on category "A" subprojects, and ESMPs on category "B" subprojects within the **first batch** of subprojects for implementation. These would then be disclosed. Implementation of the first batch of subprojects, commencing with detailed design, would follow project start up and upgraded feasibility studies would be launched for the **second batch** of subprojects for subsequent implementation.

Figure 8.1. SECAP approach to the dam development cycle: flowchart for an IFAD project with multiple dam subprojects



Note: ESIA: Environmental and Social Impact Assessment; ESMF: Environmental and Social Management Framework; ESMP: Environmental and Social Management Plan; M&E: monitoring and evaluation; OSC: Operational Strategy and Policy Guidance Committee; QA: quality assurance; QE: quality enhancement.

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Guidance statement 9 – Physical cultural resources

INTRODUCTION

1. For purposes of this guidance statement, physical cultural resources (PCR), also known as cultural heritage or cultural property, may be defined as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, historical, religious, spiritual or other cultural significance. As such, PCR may be found almost anywhere, in urban or rural settings, above or below ground, or even under water.

2. PCR may derive their significance from various sources, whether as part of a community's cultural identity and heritage, as assets for economic or social development, or as sources of valuable scientific or historical information. As a result, their cultural significance may be local, provincial, national, or even international in nature.

3. Although the likelihood that IFAD programmes and projects will involve or affect PCR is small, in such unlikely cases where PCR is found, IFAD will assist borrowers in avoiding, minimizing or mitigating adverse impacts on PCR in the development programmes and projects that it finances. To this end, IFAD will use due diligence in applying its SECAP to ensure that PCR are properly identified and adequately addressed, and that any measures to protect PCR comply with the borrower's national legislation as well as with its obligations under relevant international treaties and agreements (e.g. UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage, 1972).

4. Where IFAD, through the Country Programme Management Team (CPMT), determines that the borrower's capacity to manage or protect the programme- or project-related PCR is inadequate, IFAD may include appropriate capacity-building components in its programme or project. Given that the borrower's responsibility for management and protection of PCR extends beyond the individual programme/project, IFAD may consider broader capacity-building activities as part of its overall country programme.

PHYSICAL CULTURAL RESOURCES IN IFAD PROJECTS

5. While it is unlikely that IFAD's portfolio of agricultural and rural development programmes/projects will involve or affect PCR, IFAD is committed to identifying and protecting PCR in all its operations. After all, even smallholder agriculture and rural development projects on marginal lands may, depending on location, involve resources of archeological (e.g. ancient ruins, monuments, prehistoric caves), historical (e.g. original structures, architectural works, historic sites), religious (e.g. churches, mosques, temples, sacred grounds) or cultural (e.g. cemeteries, traditional meeting places) significance. Of particular concern are IFAD programmes/projects: (i) involving significant excavations, demolition, movement of earth, flooding or other environmental changes; and (ii) located in, or in the vicinity of, a PCR site recognized by the borrower. For this reason, IFAD will use its SECAP to ensure that any PCR involved in or potentially affected by an IFAD programme/project are properly identified and adequately protected.

USE OF ESA PROCEDURES, AVOIDANCE AND MITIGATION

6. The borrower will address PCR in programmes and projects financed by IFAD in the context of the environmental and social assessment (ESA) process established by IFAD's SECAP. The SECAP prescribe general steps for programmes and projects that apply in cases involving PCR: screening, collecting data, assessing impacts, and formulating mitigating measures.

7. As a **first step**, the borrower will screen, using qualified personnel and with full and effective participation of local people, the programme/project area in order to **identify and collect data on any PCR** likely to be affected by the operation and then will **assess the potential impacts** on these resources as part of the SECAP. If the programme/project is likely to have adverse impacts on the PCR, the borrower will **identify appropriate measures** for avoiding, minimizing or mitigating these impacts.

8. As a **second step** in the SECAP, when there is potential for the programme/project to affect PCR, the borrower will **develop a concise PCR management plan** (which may be a component of the overall environmental management plan for the programme/project) that includes: (i) measures for avoiding, minimizing or mitigating any adverse impacts on the PCR; (ii) provisions for managing "chance finds" of PCR during implementation; (iii) necessary measures for strengthening institutional capacity with respect to protection of the PCR; and (iv) a monitoring system to track the progress of these activities. In the end, the PCR management plan will ensure compliance with the country's overall policy framework, national legislation and international standards for protecting PCR and will reflect the institutional capabilities for protecting the PCR.

9. Where a project or programme proposes to use PCR, including knowledge, innovations or practices of local communities for the benefit of the project or for commercial purposes, communities should be informed of their rights under national law, the scope and nature of the proposed use, and the potential consequences. Free, prior and informed consent should be obtained, and there should be arrangements in the project for fair and equitable sharing of the benefits.

10. The IFAD CPMT will work with the borrower in addressing the PCR, reviewing the findings and recommendations developed during the ESA process, and determining whether they will provide adequate protection for the PCR during implementation of the programme/project.

11. As part of the public consultations included in the SECAP, the consultative process for the PCR component will normally include project-affected groups, relevant government authorities, and interested non-governmental organizations. These groups will assist the borrower and IFAD CPMT in documenting the presence and significance of PCR, assessing potential impacts, and exploring avoidance and mitigation options through a consultation process leading to consent.

12. The findings of the PCR component of the SECAP will be disclosed to the public as part of, and in the same manner as, the draft ESIA report.

INTERNATIONAL LEGAL CONTEXT

13. As noted above, UNESCO adopted the Convention concerning the Protection of the World Cultural and Natural Heritage in 1972. The Convention defines the kinds of cultural and natural sites that may be considered for inscription on the World Heritage List. It also sets out the duties of borrower countries in identifying potential sites and their role in protecting and preserving them. By signing

the Convention, each country pledges not only to conserve the World Heritage sites situated on its territory, but also to protect its national heritage.

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Guidance statement 10 – Rural roads

INTRODUCTION

1. What is a "rural road"? Definitions and standards vary from country to country and region to region and the term is often used loosely. Some authorities refer to rural roads as the "last link" in the transport network, but this may be a matter of perspective: rural people might regard rural roads as the "first link". In IFAD projects, rural roads are that part of the public road network that **directly** serves the rural areas. They may also be known as village roads, community access roads, farm-to-market roads, agricultural roads, feeder roads, and in some cases, at the other end of the scale, tertiary roads. They include pedestrian tracks and farm-to-village tracks.

2. IFAD's Strategic Framework 2015-2025 recognizes that weak and imperfect markets continue to be a disincentive to increased agricultural production and productivity by the rural poor. It further recognizes that inadequate rural infrastructure – particularly farm-to-market roads, storage facilities and marketplaces – is a very large part of the problem. IFAD, therefore, seeks to redress the situation by making an investment in productive rural infrastructure, including roads, as one of its key areas of thematic focus. That said, IFAD is unlikely to finance stand-alone rural road projects; it is instead more likely to finance rural roads as part of wider development programmes or simply as components of discrete agricultural development projects.

3. This guidance statement is intended to help stakeholders, including country programme managers and Country Project Management Teams, to appreciate and avoid or mitigate the environmental risks associated with rural road development and to enhance prospects for environmental sustainability.

CLASSIFICATION OF RURAL ROADS/RURAL ROAD PROJECTS

By ownership, responsibility or use

4. In most countries, roads may be broken down into classified roads and unclassified roads. Classified roads include main, secondary and tertiary roads. Unclassified roads include the rest. Classified roads are generally built and owned by the country. Unclassified roads are generally built by local authorities, the private sector and/or communities.

5. Responsibility for the maintenance and repairs of main and secondary roads generally rests with the state, or a state-owned entity. However, responsibility for these tasks on tertiary roads is usually devolved to local authorities. Meanwhile, responsibility for maintenance and repairs of the unclassified network rests with the owners or is devolved to its users, such as private entities (farms, etc.), public institutions (schools, hospitals, clinics) and the community.

6. As mentioned, tertiary roads are considered to be rural roads since without this link farmers would be unable to access the nearest market. Thus this statement is concerned with two distinct types of road ownership/responsibility/use, namely: (i) classified tertiary roads for which

the local authority is responsible for maintenance and repairs; and (ii) unclassified public roads for which the owners or users are, in principle, responsible for maintenance and repairs.

Environmental and social categorization

7. IFAD's system of environmental and social categorization for projects is described in the main text of this document. So far as roads are concerned, the inclusion of any rural road in a project would – all other things being equal – result in that project being considered **category B** unless: (i) the road is to be constructed in an ecologically sensitive or hazard-prone areas; or (b) is likely to involve physical resettlement or economic displacement, and in which case, it would be considered a **category A**.[1]

8. Category A projects (or subprojects) require an Environmental and Social Impact Assessment (ESIA), and a formulation of an Environmental and Social Management Plan (ESMP) to be completed during the project design process, with implementation of an ESMP being carried out as a part of project implementation. Category B projects (or subprojects) merely require that an ESMP be prepared and implemented.

SOCIAL AND ENVIRONMENTAL IMPACTS OF RURAL ROADS

Positive impacts

9. The positive impacts of investment in rural roads are well known. Rural roads help to improve transport and communications for the rural poor. Improved mobility enables access to: (i) services (agriculture, education, health, finance); (ii) markets (inputs, agroprocessing, wholesale, retail, export); (iii) income-generating opportunities; (iv) social, political and community activities; and (v) technology transfer.

Negative impacts

10. However, roads can also create significant adverse impacts on the local environment. They can cause significant erosion and sedimentation, loss of wildlife and vegetation, deterioration of water quality and aquatic life, as well as degrade scenic beauty, waste limited funds and take useful land out of production. Negative impacts can be both direct and indirect.

11. The most important direct negative impacts of investments in rural roads are:

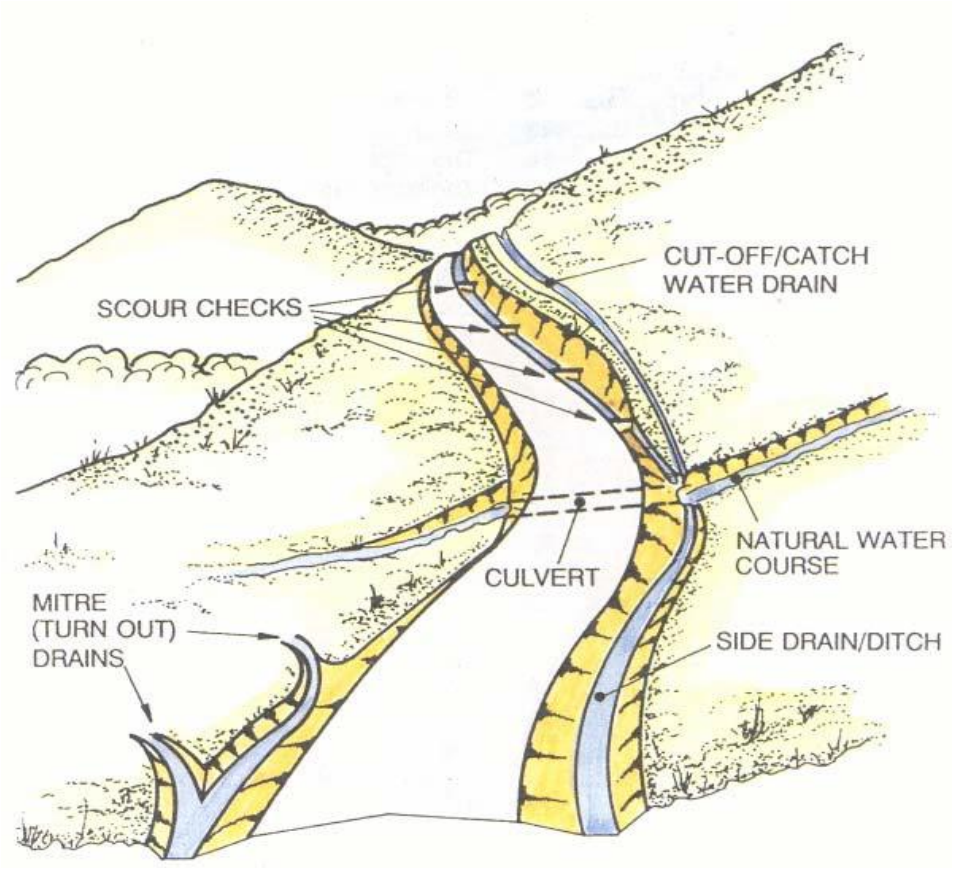
- Physical resettlement or economic displacement – if not carefully aligned, rural road development may necessitate displacement and resettlement, or will involve, in particular, loss of agricultural land.
- Soil erosion – road works may cause exposure of the subsoil to erosion and poorly maintained roads, and tracks may provide initial channels for gully erosion, all leading to

[1] Sensitive areas include: protected areas (national parks, wildlife/nature reserves/biosphere reserves; areas of global significance for biodiversity conservation; habitats depended on by endangered species; natural forests, wetlands; coastal ecosystems, including coral reefs and mangrove swamps; small island ecosystems; areas most vulnerable to change and variability; lands highly susceptible to landslides, erosion and other forms of land degradation; and areas that include physical cultural resources (of historical, religious, archaeological or other cultural significance). Hazard-prone areas include lands susceptible to landslides (e.g. in high rainfall areas) and erosion (e.g. in arid and semi-arid areas).

uncontrolled drainage with consequential damage of land and vegetation, as well as siltation and sedimentation of waterbodies.

- Damage at borrow sites – removal of road construction materials may leave local sites and sources of sand, gravel, rock or coral reef and their surroundings exposed to erosion or permanently damaged. The non-restoration of borrow pits may also lead to increased accident risks (through landslides or drowning).
- Disturbance of drainage – as a result of poor engineering, roads may concentrate and accelerate run-off (e.g. in lead-off ditches or turn outs – Figure 0.1) and increase the risk of flooding and erosion of agricultural land they pass through; non-restored borrow pits may create stagnant pools of water, which are habitats for disease vectors (e.g. mosquitoes) and are a public health hazard.
- Water contamination – road construction equipment, road traffic and chemicals used to control weeds and dust may lead to oil, grease, fuel or chemical run-off from roads.
- Air pollution – vehicle traffic may increase roadside dust and cause damage to vegetation, as well as being a public health hazard.

Figure 10.1. Road drainage nomenclature



Source: TBA

12. Indirect impacts are usually more important than direct impacts in their implications for natural resource management, but they are more difficult to identify and predict. Roads and improved accessibility may lead to the following indirect adverse impacts:

- Vegetation and soil losses – improved accessibility may lead to uncontrollable in-migration, which may result in unsustainable land uses, illegal land clearing and logging, farming of unsuitable soils (including steep slopes), potentially accelerating deforestation and soil

erosion. Examples are roads initially constructed for specific purposes (e.g. ranching, mining, logging, soil conservation) that may become formalized to public roads and leading to land use that is incompatible with land capabilities. Improved accessibility to towns and cities may accelerate charcoal production and deforestation on a large scale because of the high demand for charcoal from urban dwellers.

- Disruption and loss of wildlife – planned development expansion may increase poaching, interrupt migratory routes, or increase noise disturbance, potentially degrading wildlife resources. New roads are also likely to increase the illegal supply of "bush meat" to towns and cities, leading to wildlife depletion.
- Social and economic disruption – planned and unplanned settlement and development may cause an influx of new settlers competing with local people; this in itself may create the need for more new roads. The increase of land value along new roads may also lead to changing land use and ownership, with adverse effects on small landowners and women.
- Spread of disease – increased movement of human/animal population and plant material may affect occurrence and patterns of diseases. The spread of HIV/AIDS has been exacerbated by the increased mobility of individuals. Transport hubs, corridors and sites of infrastructure construction represent locations of high HIV/AIDS risk.

13. In addition to the above, soil erosion and vegetation loss is often accelerated as a consequence of poor maintenance, which is usually the norm for rural roads. Rural road construction also generally involves the use of vehicles and machinery which are hazardous, to a greater or lesser degree according to size and capacity, both to the drivers and others employed in construction, not to mention the population that the road is intended to serve. And finally, road improvements usually result in higher vehicle speeds, which in turn can lead to increased road casualties.

14. Rural road rehabilitation projects are often considered to have less significant negative impacts on the environment, on the basis that they usually provide an opportunity to correct past design and construction mistakes, such as the elimination of stagnant water, inadequate drainage and erosion problems. However, this assumption cannot always be taken for granted: incautious rehabilitation can increase the negative impacts. Therefore, road rehabilitation projects and subprojects must be approached with the same degree of caution as investments in new roads, applying the same criteria for categorization as for new roads (paragraph 7).

MITIGATION

15. IFAD is committed to effective and environmentally sound design, construction (and/or rehabilitation), operation and maintenance of rural roads to the highest possible standards of safety for those involved in construction and those subsequently using the road, whether by motor vehicles, intermediate means of transport (IMTs) or by foot. Best practices include the following mitigation measures:

- Participatory and/or consultative design of road sites using local knowledge – consult local users to establish which tracks (or alignments) offer the best connections to travel safely (flooding, rock fall, animals), as well as whose lands are affected by those alignments. The same applies to borrow pits and construction materials. Consult early to increase local participation and ownership.
- Align for minimum adverse impact – when the project involves the construction of a new road or the realignment of an existing road, consider all alternatives and select the alignment

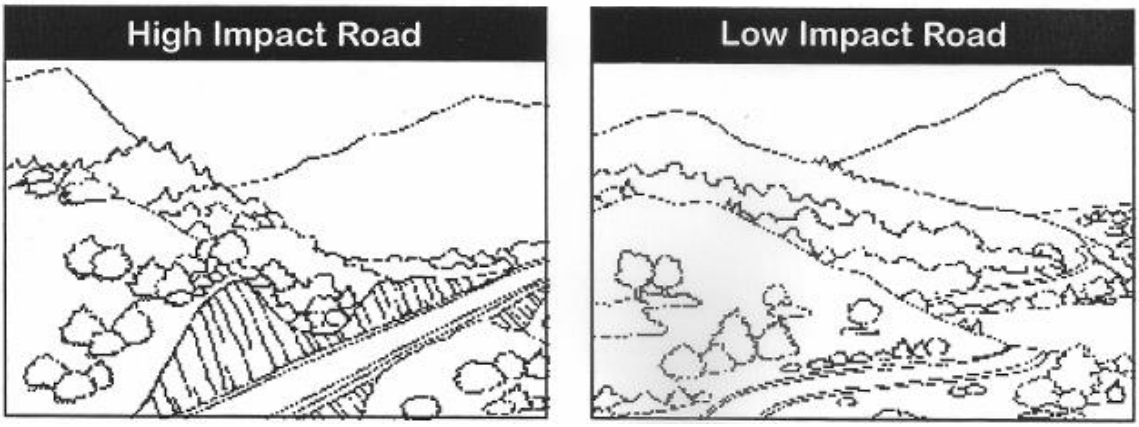
that would result in the least direct and indirect negative impacts, taking account of soils, climate, geology, topography, hydrology, ecology, significant historic or cultural sites, settlement patterns, existing land use and other socio-economic factors.

- Seek free, prior and informed consent (guidance statement 13) – wherever physical resettlement and economic displacement cannot be avoided.
- Assessment of technology choice – design to optimize the use of locally available human and material resources, including local enterprises, contractors, artisans and materials, for ease of maintenance and enhance the prospects for sustainability.
- Design for road safety – consider and accommodate all prospective users, including pedestrians and IMTs; do not exceed the national standard design speed for rural roads; and provide speed bumps (with accompanying warning signs) in highly populated areas such as villages, schools, markets and other centres.
- Traffic safety measures – install road signs to indicate speed restrictions, hazards (such as drifts), junctions and the like.
- Installation of drainage works and river crossings – avoid interruption of subsoil and surface drainage patterns, especially in areas of cuttings or embankments and on agricultural land; put adequate works in place to minimize changes in surface flows and stabilize cuttings with structures (walls, gabions, trees and so on); and provide special drainage requirements, such as “upslope catch water” or cut-off drains (Figure), where necessary.
- Simplify drainage measures – simplify the design of drainage measures (and enhance road safety by reducing road speed) by specifying well sign-posted drifts or “Irish” bridges rather than culverts and bridges, wherever possible.
- Incorporate erosion control measures – carry out earth-moving during dry periods; protect vulnerable soil surfaces with mulch; protect drainage channels with berms, straw or fabric barriers to break flows; and establish vegetative cover as early as possible.
- Crossing points – include animal crossing points (on busy roads or in cuttings/embankments).
- Choice and restoration of borrow pits – locate borrow pits carefully and specify restoration and drainage (where desired) as a contractual requirement.
- Provision for construction operations – specify contractual directives, including watercourse buffer zones (distance allowed should depend upon soil type and vegetation cover), for: prudently dealing with surplus materials, particularly in mountainous, erosion-prone areas; collecting and recycling lubricants; avoiding spills; siting of construction camps; applying water or dust control chemicals to prevent water source contamination.
- Disease control – assess disease vector ecology; fill or drain works areas to avoid creating vector habitats; establish “quarantine check points” at strategic locations along the road to minimize the spread of animal and plant diseases; organize HIV/AIDS sensitization activities and support community-based responses and institutions that may have emerged at works or construction camps.[2]

[2] The World Labour Organization (ILO) has produced the *ILO Code of Practice on HIV/AIDS and the World of Work,* which sets out fundamental policy principles and gives guidelines for concrete responses. It is complemented by the manual on *Implementing the ILO Code of Practice on HIV/AIDS: An Education and Training Manual*.

- Occupational safety – enforce national health and safety regulations among the entire work force and ensure that regulations applying to the control of traffic and public use, both during and after construction, of the road are applied.[3]

Figure 10.2. Low versus high impact road



Source: Keller, G. and Sherar, J. 2003. *Low Volume Roads Engineering: Best Management Practices Field Guide.* USAID.

- Design for road safety – consider and accommodate all prospective users, including pedestrians and IMTs; do not exceed the national standard design speed for rural roads; and consider "speed bumps" within villages.
- Only employ experienced road engineers – rural road engineering may only be a small branch of civil engineering, but it is one that nonetheless requires all the professional skills and expertise of top engineers, who are able to see and apply an appropriate solution from "among the trees". "Appropriate" engineering is smart engineering.

16. All the above mitigation measures are important, but the three most important of all for sustainability are participatory design and construction to enhance the prospects for ownership, selecting the alignment that results in minimum impact, and high-quality appropriate engineering (Figure 10.).

DESIGN STANDARDS

17. Most countries have their own design standards for rural roads. The standards generally vary according to region, topography and rainfall/drainage patterns and no one size fits all. A wealth of design information is available on the internet, from which vast array a small selection has been cited in the Bibliography attached to this Statement. Notable sources are the World Bank, the World Labour Organization (ILO), and Keller and Sherar (2003).

18. However, a World Bank review of best practice for rural road maintenance and improvement prepared in 1994 concluded the following:[4]

    ...design standards are an economic choice... many rural road projects have adopted excessive standards of alignment, width and pavement for the traffic requirements. Rural road

[3] There is a wealth of information on this topic on the ILO website, for example, Module 8 on Occupational Health and Safety, Environmental Issues and Decent Work in a series produced for the Ministry of Rural Development in India.

[4] Hoban, Riverson and Weckerle, 1994.

improvement proposals should therefore evaluate options for reduced design standards, which may offer substantial accessibility benefits with much lower construction costs and long-term maintenance requirements. Where budgets are limited, design standards for low-volume roads should emphasize reliability and durability rather than width and speed. Drainage is an important aspect in ensuring durability and reliability or roads.

19. Indeed Keller and Sherar (2003) observed that the three most important design considerations for rural roads were "*drainage, drainage and drainage*". This implies a need for "appropriate" engineering – i.e. "smart engineering", not superficial or inexperienced en*gineering* – rather than rigid adherence to geometric standards.

CLIMATE CHANGE

Impacts of climate change

20. Climate change has resulted in greater extremes in climate events, such as bigger floods, more severe droughts and higher wind speeds, as well as greater variability of seasonal and average rainfall. These natural events all impact on roads in their own ways. For example, peak floods now exceed the design floods for road culverts, leading to embankments being overtopped and washed away; higher floods in rivers cause bridges (including footbridges) to be outflanked or swept away, and spillways or Irish bridges being impassable for longer. More intense, longer duration rainfall results in drains being unable to cope (especially if they are not effectively maintained), the road base remaining undrained, and therefore weaker, for more extended periods. It also induces more landslides. Higher wind speeds associated with storms can threaten or destroy bridge decks. And prolonged droughts can aggravate the dust hazard.

Climate resilient roads

21. All these potential threats must now be recognized and rural road design standards, particularly for drainage, adjusted to respond so as to avoid increased environmental damage. Thus, for example, where a culvert might previously have been designed for a 1:10 year return period flood, it should now be designed for, say, the 1:20 year flood. For the same reason, spillways (or Irish bridges) must be designed for a flood of a greater return period than hitherto and widened if necessary. A similar approach should be adopted for side drains and turnouts. Upslope cut-off drains should be installed as necessary (Figure 0.1).

22. In the humid zones, consideration should be given to the experience from the project in Bangladesh (Sunamganj Community Based Resource Management Project) on submersible roads, although the benefits and costs should be compared with the alternative of flood-proof raised embankments which could remain passable throughout the year.

SUSTAINABLE MAINTENANCE

Problem

23. It needs to be clearly understood that apart from its loss of intended functionality, **a poorly maintained rural road is a serious environmental hazard** owing to the erosion and sedimentation that it creates. However, it is widely accepted that rural road maintenance has been, and remains, a challenge almost everywhere. Hence IFAD's *Comprehensive Review of IFAD*

Rural Roads[5] cited a well experienced consultant, who noted that: *"The issue that bothers me since nearly 30 years is sustainable maintenance. There are hardly any cases where this has actually been achieved, specifically not for roads."*

24. The same review cited an ILO study in Cambodia which found that: "*In Batambang Province, 34 percent of the usable rural road network was lost over a little more than two years from late 1998 to early 2001 ... the loss of these road assets had resulted directly from the lack of systematic maintenance*". The review, however, refers to successful experiences from IFAD programmes in Bangladesh, Democratic Republic of the Congo, Uganda and Viet Nam. Yet, it disappointingly fails to cite any reports on these apparent successes. An Internet search indicates that they remain undocumented.

25. Other sources provide abundant problem statements, but not much in the way of solutions. Two exceptions are Salomonsen and Diachok (2015), and Baril, Chamorro and Chrispino (2013).

26. As alluded to in paragraph 6, this statement must deal with at least two types of road ownership or use, namely: (i) tertiary classified roads under the local authority; and (ii) unclassified public roads used by communities. The available evidence does not indicate which of these two subsectors presents the greater problem: it probably varies greatly from country to country and region to region, and the project design must be prepared to deal with either or both.

27. In the case of classified tertiary roads, a lack of maintenance is generally the result of underfunding by the central government, or a failure to raise sufficient revenue from local rates and taxes, or allocated funds being inefficiently spent (for example, on uncompetitive force account approaches and overstaffing), or funds haemorrhaging to other priorities. Political will is sometimes lacking, as other alternative uses of the funds (e.g. for new roads) may appear more attractive than maintenance.

28. In the case of unclassified roads, the problem is that, except for very local farm-to-village tracks, they are seen as a public good, used by everyone and belonging to no one. Hence, no one takes responsibility for their upkeep.

29. However, it is also possible that inappropriate engineering design and poor construction has exacerbated the maintenance problem, even on local authority roads, by increasing the frequency and nature of defects that arise during normal operations.

Requirements

30. Three types of maintenance are required for rural roads:

- Preventive, or routine, maintenance, which is usually required on a regular basis, one or more times a year, to maintain and keep the road in good working condition. Frequency of activities varies, but may be as much as once a week. Typical activities include roadside verge clearing and grass cutting, cleaning of silted drains, turnouts (Figure 0.1) and culverts, and patching and pothole repair. For gravel roads, it may include regrading every six months.

[5] IFAD. 2008. *Comprehensive Review of IFAD Rural Roads, Travel and Transport (RTT) Experiences, 1994-2007.* Rome.

- Periodic maintenance, which covers more significant activities that are carried out once every few years to ensure the smooth operation of the road. The operations tend to require machinery, transport and skilled labour. They involve greater costs than routine maintenance and require planning for implementation, and even redesign in some cases. Activities can include resealing or repaving.[6]
- Emergency maintenance, which involves urgently needed and generally significant repairs in response to disastrous events such as floods, earthquakes, cyclones and conflict. The works required cannot be foreseen, but require immediate attention, such as clearing collapsed culverts or landslides that block a road.

31. If performed correctly and regularly, routine maintenance reduces the need for periodic maintenance and rehabilitation. Maintenance does not include rehabilitation, building shoulders or widening roads.

Lessons emerging for successful maintenance of unclassified rural roads

32. Despite the somewhat bleak assessment presented earlier, there are a few emerging examples of successful rural road maintenance from around the world.[7] The main lessons may be summarized as follows:[8]

- Institutional arrangements: The establishment of a road committee, formed by the prospective users, at inception of the road project or subproject can be key. The involvement of such a committee can be beneficial in selecting the best alignment, as well as preparing a schedule of routine and periodic activities and accompanying financing plans. At the same time, it is important to establish formal links with the local authorities and line agencies, with their roles and contributions to road maintenance signed for and included in the maintenance plan.
- Capacity-building: Maintenance training, often provided exclusively to community groups, should be extended to other stakeholders, including local authorities, and, where appropriate, small-scale contractors or private companies likely to be involved in the maintenance. Distribution of simple pictorial manuals or guides to help communities in carrying out maintenance activities has also been very useful. Finally, the frequency and timing of the capacity-building activities are important, and post-construction training and technical support to maintenance groups should, if possible, also be allocated for within the project budget. Capacity-building activities should include communication materials to inform communities on organizational issues and behaviours in maintenance.
- Financing: Most (or many) user groups are willing and able to cope with routine, periodic and even emergency maintenance of “last mile” roads that the group derives more or less exclusive benefits from. Most (or many) user groups are also willing and able to meet the cost of routine maintenance for higher order roads that they are the main users of and upon which they are heavily dependent, up to and including tertiary roads in some cases. However, financing for periodic maintenance and repairs appears to be a challenge when the benefits are non-exclusive. Successful maintenance in these cases generally involves formal

[6] For a paved road, repaving is needed about every eight years; for a gravel road, regravelling is needed about every three years.
[7] See, for example, World Road Association. (2013). *Best Practice for the Sustainable Maintenance of Rural Roads in Developing Countries.* Paris.
[8] These lessons are adapted from the World Bank (2015), which refer to community-driven development infrastructure projects in general. (available here: http://documents.worldbank.org/curated/en/632671468180228943/pdf/100435-WP-P148285-PUBLIC-Box393231B.pdf

cost-sharing arrangements with local government units or line ministries. But such arrangements are the exception rather than the rule and in most cases maintenance is neglected, hence the need to involve all stakeholders from the earliest possible date.

- Technical issues: Evidence indicates that when designs are appropriate, using local technologies (such as drifts rather than culverts and bridges) and locally available materials of required quality, and when supervision is provided to ensure construction is according to specifications, maintenance is more effective and roads are kept in a better operational state than they would otherwise be. "Appropriate" design and construction is smart engineering and its importance should not be underestimated.

Way forward for IFAD projects

33. Although the evidence of success may not be entirely convincing, there is some experience from IFAD-assisted and World Bank community-driven development projects that both local authorities and communities have been able to maintain their roads satisfactorily.[9] In other words, if the conditions are right, sustainable maintenance is achievable. Although there may be no magic solutions, the following common sense approaches should be tried:

- Draft Road Maintenance Framework (RMF): The borrower should prepare a draft RMF, in the same way that it prepares an Environmental and Social Management Framework (ESMF) before the quality enhancement review, to support the project design report.[10] This should provide an outline of the likely road component and details of the proposed institutional arrangements, including the establishment of a project/subproject stand-alone road maintenance committee and the preliminary costs for maintaining the project road component, including training and equipment costs, both for the local authority road(s) and community road(s). It should specify the legal agreements and understandings: (i) between the local authority and line agency for continued budget support; and (ii) between the local authority and community road maintenance committee, confirming that it understands and will meet its maintenance obligations.
- Road Maintenance Framework: The draft RMF should be upgraded to final in time for submission, with the project design report to the quality assurance panel. Since it is well known that it is pointless to invest in roads without sustainable maintenance, **no RMF at quality assurance should mean no project road component/subcomponent**. However, assuming that a satisfactory RMF is provided at that stage, a suitable covenant should then be included in the loan agreement to the effect that sustainable maintenance is guaranteed by the borrower. The RMF should include costed proposals for institutional development, training and capacity-building for road maintenance, as well as details of the financing plan for these activities.
- Maintenance results indicator: If this does not already happen, the results-based logical framework should include at least one indicator for road maintenance, not only to measure maintenance effectiveness, but also to help keep project implementation teams focused on the obligation to make it effective.
- Road Maintenance Plan: The RMF should then be developed into a Road Maintenance Plan (RMP) at least one year prior to project completion at the latest. The plan should specify the roles and responsibilities for the parties involved and contain schedules of the tasks to be carried out in respect of as well as routine, periodic and emergency maintenance for each of the roads and sections of roads supported by the project, with details of how the work is to be organized and financed by the institution. Bearing in mind that a road component could

[9] Lema, de Veen and Abukari, 2008.
[10] The RMF could form a chapter of the ESMF.

absorb a large proportion of total project costs, it should also provide for an ex post audit on the same lines as that proposed for Environmental and Social Impact Assessments (ESIAs) in category A projects.

- Finance for maintenance of classified roads: The finance required by the local authority to enable it to carry out maintenance of the tertiary roads under its responsibility should either come from a subvention from the central government or from the authority's own revenue base – whether that be derived from local rates and/or taxes or from tolls. Whatever the case, provided there is political will and the authority has agreed to participate in the project, that on its own should be good enough to guarantee that it happens. Otherwise, the authority would need to engage in some creative thinking of its own and consider innovative alternative arrangements, such as public-private partnerships for operation and maintenance. The onus would be on the authority to come up with a workable solution for complying with the RMP.
- Maintenance of classified roads: The use of force account or direct labour methods for implementing works on local authority roads should be avoided owing to inherent inefficiencies. The work should, as far as possible, be contracted out in small lots to local contractors and artisans, along the lines adopted on the World Bank-assisted Peru Decentralized Rural Transport Project (box 10.1).

Box 10.1. Use of microenterprises in routine maintenance of rural roads in Peru

One of the innovative design features of the Peru Rural Roads Programme was to create, train and support microenterprises at the community level to carry out routine maintenance activities on rehabilitated roads, such as filling potholes, clearing vegetation, cleaning drainage, removing small obstacles and doing general emergency work, particularly during the rainy season. These microenterprises are legally registered entities consisting of 10–25 people from neighbouring rural communities who are responsible for the maintenance of a 10–25 km road segment. The microenterprises consist of a core group of permanent members (selected by local authorities after a lengthy consultation process with the communities) and seasonal workers from the community who live near the road sections to be maintained and are contracted on a three-month basis (to allow jobs and wage benefits to be shared). On-the-job training in technical and business administration skills is provided to the microenterprises by "road monitors" (young university graduate engineers, economists or social scientists), contracted for one year. During the first ten years of programme implementation, these microenterprises were directly contracted (single source) by the local governments to handle routine maintenance of roads at a fixed price. After this period, contracting was made competitive with local construction firms. In most cases, the project-formed microenterprises have been successful in winning the maintenance contracts.* An additional benefit of this approach is that members of the microenterprises live close to the target roads and directly benefit from the roads being well maintained. These enterprises have also become contact points for extension services and have helped to mobilize untapped local resources for local community ventures.

*By the end of the third phase (Peru – Decentralized Rural Transport Project), there were 857 microenterprises maintaining 16,867 km of roads (an average of 20 km per microenterprise) in 143 provinces.

Source: Salomonsen and Diachok, 2015.

- Maintenance of "community" roads and financing: Responsibility for all maintenance (i.e. routine, periodic and emergency maintenance) of project-assisted unclassified "community" roads should be assigned to the project beneficiaries as a *quid pro quo* for the other types of project assistance provided to them, regardless of whether they consider that their roads are a public good and that they are not the exclusive users of the roads. The rationale for this approach is that, if the main beneficiaries of the road will not take care of them, then nobody will; the beneficiaries will then become losers and they will be under no illusion that the government will step in where they have not. This concept would need to be communicated to the communities concerned during the participatory planning of the roads component of the project, particularly when the RMF is being prepared. How contributions would be collected and how the work would be organized would be a matter for the community themselves to decide, but experience suggests that it would be unrealistic to

expect the work to be carried out on an unpaid voluntary basis. Rather, it would be better to break the work down into geographic lots and employ community contractors who, eventually, would compete for the work with each other. Manuals showing good and bad maintenance practice would also be most beneficial. Experience also suggests that the routine maintenance would best be funded from an annual subscription contribution from the beneficiaries, while the periodic and emergency work would be funded from collections as and when required rather than trying to create and administer savings funds. Whatever approach is adopted, there would clearly need to be a very substantial training subcomponent for all concerned, including in governance, civic responsibility and the like.

- Road engineering and appropriate technology: It cannot be overemphasized how important the quality of engineering in any rehabilitation or upgrading work is – if roads are badly designed to begin with, no amount of subsequent maintenance can improve them. The employment of suitably qualified engineers and technicians, experienced in appropriate technology for rural roads will be key.
- Design standards: As already mentioned, roads should be designed for reliability and sustainability, rather than speed, making optimum use of locally available naturally occurring materials, and thinking in terms of drifts rather than bridges and culverts.

ROADS, THE IFAD PROJECT CYCLE AND SECAP

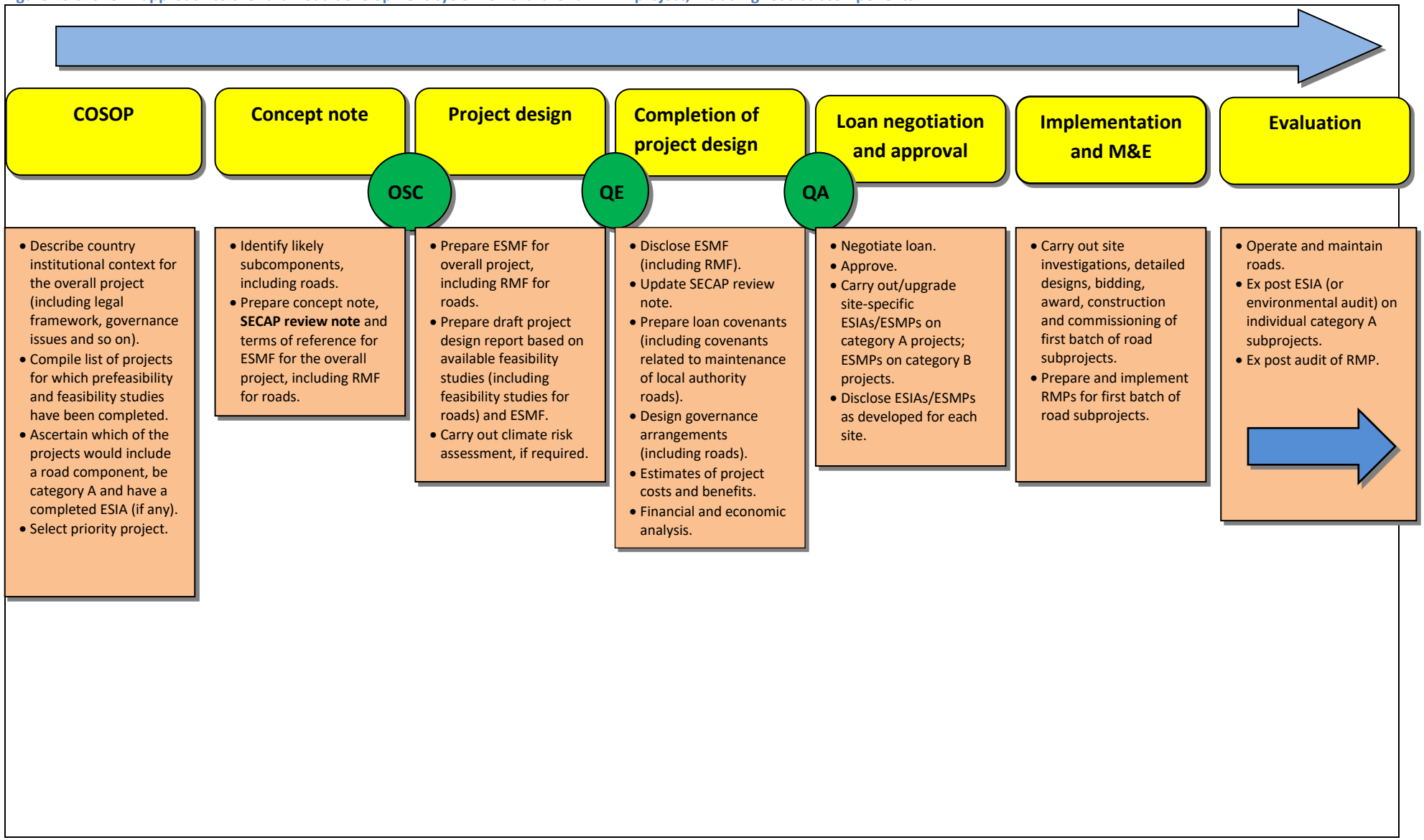
34. Drawing from the previous section, the process required by SECAP is depicted in figure 10.3. There are two key additional steps in the process for a project that includes a road component. The first is to take the proposed roads into account in the environmental screening and categorization of the overall project. They must also be screened separately as stand-alone projects for the same purpose (i.e. environmental and social categorization). Should a particular road, considered on its own, be categorized as “A”, either because it involves physical displacement and resettlement or because it passes through a sensitive area, then it would require its own ESIA and ESMP.

35. The second key step is that roads, as a potential environmental hazard if they are not properly maintained, should now be the subject of a new Road Maintenance Framework, to be submitted together with the ESMF, at the quality assurance stage. In principle, no RMF at the quality assurance stage would mean no road component.

36. The purpose of the RMF is to establish, through consultation with and participation by all stakeholders, a framework for sustainable maintenance of project-assisted roads. During implementation of the project, it should be developed into a fully-fledged Road Maintenance Plan that clearly specifies the who, what, how and with which funds the project road would be kept in good condition, to avoid losing it and having to replace it.

37. The RMP will be subjected to an ex post audit in the same way, and as a part of, the ex post ESIA audit.

Figure 10.3. SECAP approach to the rural road development cycle: flowchart for an IFAD project, including road subcomponents



Note: ESIA: Environmental and Social Impact Assessment; ESMF: Environmental and Social Management Framework; ESMP: Environmental and Social Management Plan; M&E: monitoring and evaluation; OSC: Operational Strategy and Policy Guidance Committee; QA: Quality Assurance; QE: Quality Enhancement; RMF: Road Maintance Framework; RMP: Road Maintenance Plan.

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Guidance statement 11 – Development of value chains, microenterprises and small enterprises

INTRODUCTION

1. At least half of all new IFAD projects are either value chain projects or involve a value chain component. Therefore, it is critical to understand and manage social, environmental and climatic risks involved in value chain development. IFAD's Environment and Natural Resource Management Policy notes that value chain projects have the potential to generate positive environmental impacts, so promoting these positive outcomes is as important as managing downside risks (IFADa, 2011).

2. A value chain is a vertical alliance of enterprises that collaborate, to a greater or lesser extent, to bring a product from the initial input supply stage, through the various phases of production, processing and distribution, to the final marketing to consumers (IFAD, 2014). Rapid urbanization in recent decades has led to new markets, with higher buying power for rural producers. Agrifood value chains have tended to become geographically longer, but more vertically integrated, involving fewer stages and participants. The features of modernizing value chains include: (i) direct relationships between small-scale farmers and downstream processors and retailers; (ii) diversification of food markets beyond staple grains; (iii) a greater focus on consistent food quality and safety, including standards; and (iv) development of processing facilities (small and medium enterprises) in rural areas (Reardon et al., 2009, 2012, 2015). All of these features create new opportunities both for small producers' livelihoods and for environmental sustainability.

3. The main goal of IFAD's value chain projects is to integrate target groups (small rural producers) into viable value chains to improve their access to secure markets and to raise their incomes sustainably. These projects finance activities to address constraints to small producers' participation in, and their benefits from, value chains. In general, value chain projects include one or more of three categories of intervention: (i) process/product upgrading; (ii) functional upgrading; and (iii) upgrading of coordination and business models (IFAD, 2014). In practice, these interventions can entail a wide variety of approaches, depending on local challenges and opportunities. Examples include improving input supply via collective purchase, market-oriented technology development and its transfer, promoting value-adding activities among farmers, development of infrastructure and transport links, provision of credit, capacity-building and training, and building contractual or other partnership arrangements between producers and downstream value chain participants. Most of these approaches combine value chain development with development of microenterprises and small enterprises (MSEs), and support small producers' organizations and their capacity for collective action.

4. In recognition of the potential for positive environmental and social impacts from value chains, one of the ten principles of IFAD's Environment and Natural Resource Management Policy is to invest in value chain development to drive green growth. IFAD aims to avoid the downside risks and maximize the positive environmental impacts of value chain projects, while promoting green

growth through the incorporation of improved natural resource management practices. Over time, this approach can generate economic activities that are more sustainable, more resilient to the effects of natural, climatic or economic shocks, and less risky. For instance, the prices for good-quality certified products (e.g. organic or fair trade) may be less susceptible to market fluctuations than those of other products, ensuring investment and sustainability.

ENVIRONMENTAL, SOCIAL AND CLIMATE ISSUES

5. Environmental issues associated with value chains fall into two categories: (i) green issues, i.e. enhancement or depletion of natural resources including water, soils and biodiversity; and (ii) brown issues, i.e. pollution of air, water and land through the waste generated by production processes. The full range of impacts is well presented in documents and websites listed in the reference section (GTZ, 2006; ENCAPAFRICA, 2013; Klemeš, 2015; Srinivas, 2015). A key issue is the capacity for value chain segments to drive positive and negative environmental outcomes in other geographies or for other stakeholders through a cascade along the value chain. One negative example is how rural-urban value chains for both crop and livestock products are increasingly associated with depletion of soil nutrients on farms, coupled with poisonous levels of nitrogen deposition in freshwater and coastal areas around the towns and cities where consumers are concentrated. Improved resource use efficiency throughout the value chain will, in most cases, deliver environmental benefits throughout the value chain. For example, water is often a limiting resource and competition between resource use in agriculture and in processing facilities sited in the same watershed can arise. Integrated approaches to resource use efficiency across the value chain and the landscape have the potential – in the case of water but also energy, materials and chemicals/nutrients – to reduce the overall environmental footprint of agrifood products and to drive a green growth agenda. Modern approaches to resource use efficiency combine a chain-wide analysis of service output per unit of input (where services can include decent jobs and other social outputs) with identification of impact hotspots through the chain, which can be prioritized for action (von Geibler et al., 2016).

6. From a social perspective, well-designed value chain projects can improve social inclusion as well as improve average incomes. However, achieving positive outcomes for the least well-off producers (rather than only those at the top of the pyramid) requires that they overcome poverty traps and meet the investment thresholds in financial capital, skills and productive assets to capture the opportunities of modernizing value chains and growing urban markets (Reardon et al., 2015). Social inclusion in value chain projects can be improved by, for example, positive discrimination towards landless or other marginalized groups in value-addition employment opportunities that arise from the project (i.e. green jobs), or financial support to help less well-off producers overcome barriers to entry. However, desired levels of social inclusion cannot always be guaranteed in value chain projects, especially where there are trade-offs with business viability requiring high levels of traceable product quality and reliable supply that depend in turn on high capacity among small producers. In some circumstances (see IFAD, 2014, for details), territorial, livelihoods, asset-building or natural resource management projects may perform better than value chain projects in addressing rural poverty. Furthermore, two key issues to manage in all value chain projects are gender and food security (IFAD, 2014). Different stages and functions of any value chain will be associated with gender-specific knowledge, assets, decision-making powers and responsibilities. Household food security and nutrition may be at risk in value chain designs that

emphasize monocropping and commercial sales at the cost of local food access or labour demands. Finally, inclusion of youth is also a growing issue in value chains (UNIDO, 2011).

7. Climate risks are relevant at all stages of the value chain. Historically, climatic events such as floods, droughts and storms have disrupted agricultural production, processing and logistics, with small producers facing the most severe impacts on incomes, consumption and health. Climate variability is currently responsible for 30-40 per cent of volatility in the availability of major staple foods (Ray et al., 2015), and climate extremes are projected to increase in frequency and severity. However, precise impacts at the local level, such as the future risks of flooding at proposed sites for processing facilities, are difficult to predict. Thus, it may be more appropriate to assess value chain strategies against a range of possible climate futures rather than to tailor interventions to specific anticipated climate risks. Agriculture and food systems also impact climate change, being responsible for as much as a third of global greenhouse gas emissions, which can be mitigated by value chain approaches that integrate actions on diets, food waste and agricultural production (Vermeulen, Campbell and Ingram, 2012). These actions are appropriate among IFAD target groups where they deliver co-benefits to livelihoods and nutrition.

MEASURES IN PROJECT DESIGN AND IMPLEMENTATION

8. While value chain and/or MSE initiatives may not themselves generate negative environmental, social or climatic impacts, planners should be aware of environmental, social and climate concerns relating to the types of farming and businesses they support, and should incorporate appropriate mitigation measures into project services. Well-designed value chain projects can drive improved natural resource management, climate resilience, gender equality, decent labour and working conditions, community health and safety, and poverty alleviation. IFAD's SECAP recommends an initial characterization of environmental, social and climate risks, leading to a categorization into environmental/social category A, B and C and climate risk classification of high, moderate and low. While many value chain projects may be category B or C, those that involve infrastructural elements, specifically roads or industrial plants, may fall into the A category, calling for more detailed screening. The SECAP guidelines specify that all MSE projects are at least a B category, and could be A depending on their specific characteristics. Climate change risk classification is largely dependent on historical vulnerability of the agricultural product or infrastructure to climatic hazards, and thus value chain and MSE projects may be high, moderate or low.

9. Multiple guides exist to support the development of value chain projects that include small rural producers (Donovan et al., 2015). Key features and success factors in these guides include: (i) a participatory approach to planning and implementation, involving both the target beneficiaries and relevant downstream value chain participants; (ii) careful analysis of the value chain and the business opportunities it offers for small producers and MSEs; and (iii) a strong focus on the institutions, both formal and informal, that shape inclusion and benefit-sharing in value chains. However, the review of these guides shows that more work is needed on several of the environmental and social dimensions of value chain project development, specifically: (i) analysing and targeting the heterogeneous groups within any population of small producers, including poorer producers, women and youth; (ii) understanding the pathways from project design through to positive social and environmental impacts; and (iii) maximizing environmental sustainability. To help fill these gaps, several guidelines that deal specifically with environmental issues in projects

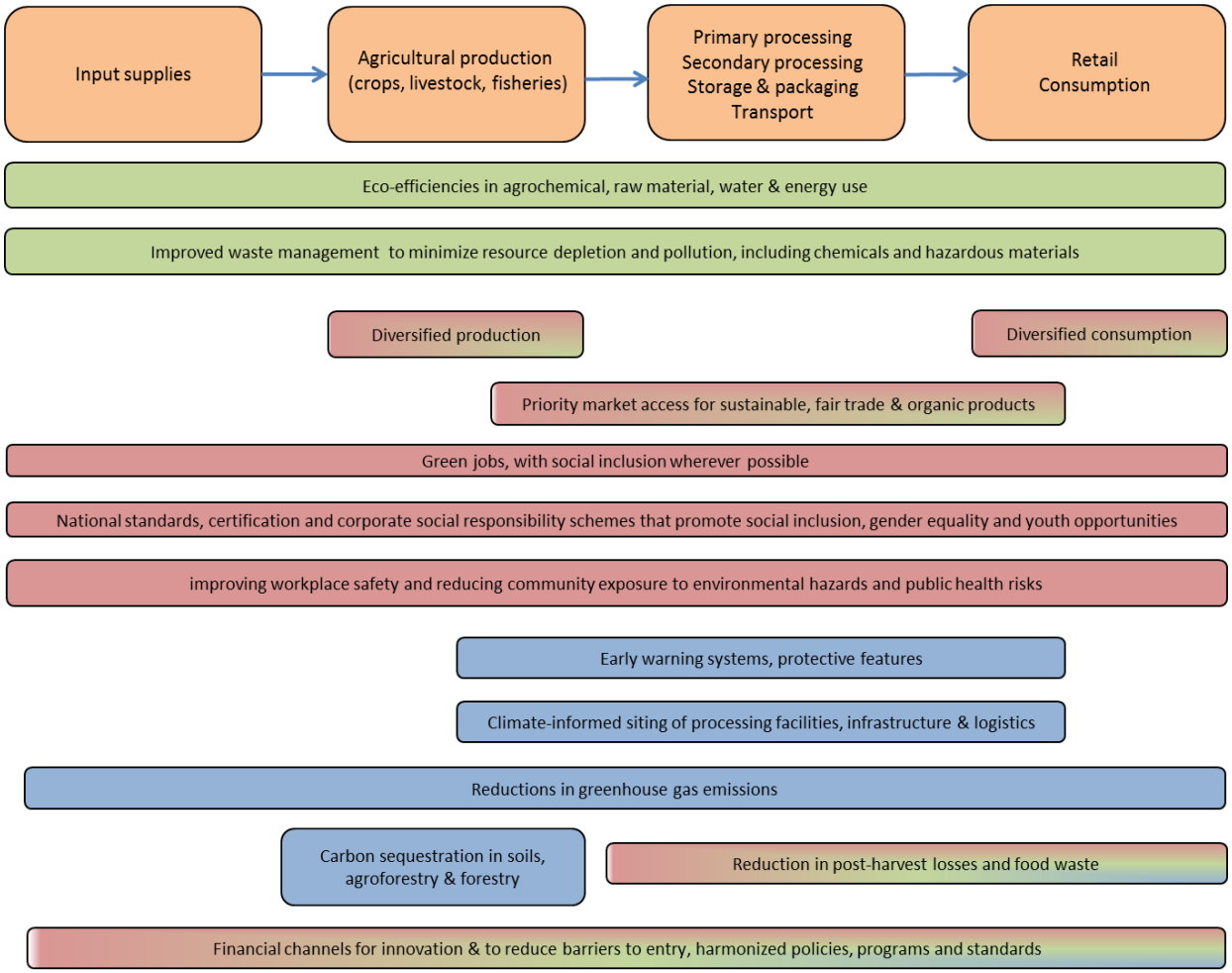
aimed at small producers are listed in the references below (GTZ, 2006; ENCAP, 2007; Farnworth, 2009; UNIDO, 2011; IFC, 2014; Srinivas, 2015; Schneemann and Vredeveld, 2015; Grow Africa, 2016).

10. IFAD's climate change strategy specifies how IFAD projects, including those with value chain and MSE development components, should address the potential adverse impacts of climate change on project outcomes. IFAD projects should incorporate appropriate climate adaptation measures into project design, and IFAD also seeks opportunities to combine climate mitigation measures where these do not create disbenefits for IFAD's target groups. Since environmental and climatic factors are closely linked, project designers should integrate the two dimensions as thoroughly as possible by:

    - taking climate and environmental criteria into account when selecting value chains (when the value chains have not been preselected);
    - identifying the major risks and opportunities from climate change in the value chain, and the most effective interventions for addressing them;
    - focusing climate-related interventions on building resilience in the value chain, targeting poorer and more vulnerable people, and including consideration of gender; and
    - ensuring that value chain interventions help enhance and sustain a healthy natural resource base over the long term and increase equitable climate change resilience benefits among project participants.

11. The next three paragraphs summarize a range of related actions that may be appropriate to address interconnected environmental, social and climatic risks, respectively. Figure 11.1 provides a visualization of some examples across the value chain.

Figure 11.1. Examples of environmental (green), social (red) and climate (blue) measures in value chain projects



12. From an environmental perspective, good practices for IFAD's support to and promotion of value chain and MSE development might include: (i) eco-efficiencies in agricultural value chains, including in agrochemical, raw material, water and energy use, particularly taking an integrated approach across the value chain and the landscape, as outlined in paragraph 6; (ii) improved waste management to minimize resource depletion and pollution, including chemicals and hazardous materials; (iii) diversified production within a given landscape; (iv) where possible, priority market access for purchasers of organic and sustainable products; (v) creation of green jobs throughout the value chain, including in local food systems; (vi) facilitation of local and regional market access for sustainable production systems through public-private partnerships and initiatives from local civil society and the private sector to link poor rural people to payments for environmental services schemes; (vii) harmonization with national and international standards and certification systems for sustainable agriculture and consumption; and (viii) strengthened capacity for good practices, including waste management and environmental auditing (IFAD, 2011a).

13. From a social perspective, additional good practices for IFAD's support to and promotion of value chain and MSE development might include: (i) gender-sensitive approaches to vocational training, business skills development, small-scale processing infrastructure, contract development and other value chain innovations; (ii) corporate social responsibility strategies that improve women's economic and decision-making position within value chains; (iii) certification schemes that set both

fair buying terms and sustainable offtake levels for projects that purchase natural resource commodities and niche products from primary suppliers; (iv) diversification of both on-farm and off-farm income-generation opportunities, avoiding market-based single commodity development that compromises household food security; (v) where possible, priority market access for purchasers of fair trade products; (vi) favourable working conditions within newly created green jobs throughout the value chain, including in local food systems; (vii) improving workplace safety and reducing community exposure to environmental hazards and public health risks; (viii) creation of specific employment and entrepreneurial opportunities for youth, for example, in supply of information or support services to the value chain; (ix) harmonization with national and international labour standards; and (x) strengthened capacity for good practices, including employment opportunities for landless and other marginalized groups.

14. From a climate perspective, additional good practices for IFAD's support to and promotion of value chain and MSE development might include: (i) development of early warning systems and contingency plans for climate shocks and extreme events across the full value chain, including transport and storage; (ii) introduction of protective features and reinforcements into the design of critical infrastructure to handle higher maximum water run-off and higher temperatures; (iii) inclusion of climate criteria in corporate standards and protocols; (iv) financial channels to reduce risks associated with innovation (e.g. microfinance, small grants programmes, index-based weather insurance); (v) renewable energy sources to cover changing requirements for grain processing, fish drying and other value-adding activities; (vi) use of hazard exposure and crop suitability maps to inform siting of processing facilities; (vii) harmonization with national climate change policies and international commitments; (viii) strengthened capacity for good practices, including building stronger knowledge systems and institutions for ongoing adaptation to progressive climate change; and (ix) incorporation of measurable climate change mitigation practices, where relevant, that reduce greenhouse gas emissions, such as agroforestry, measures to increase soil carbon, and efficiency measures in the value chain that reduce output to input ratios for materials, energy and water (IFAD, 2015). Reductions in greenhouse gas emissions should be measured where technically and financially feasible. The FAO EX-ACT tool is a good example already being used in some IFAD projects.

15. Building environmental, social and climate performance into value chain projects will require diverse approaches to working with the private sector. Among MSEs, simplified procedures that provide near-term economic benefits may be more appropriate. MSEs' capacity in meeting national standards (for food safety and quality as well as for environmental, social and climate performance) can be built through training and support services, with greater likelihood of success if accompanied by investments in upgrading of quality assurance systems, inspection and auditing services, quality of research and laboratories, and public awareness (Ouaouich, 2007). With large private agribusinesses, IFAD project design teams and project implementers can refer to IFAD's principles of engagement found in box 6 of IFAD's Private Sector Strategy (IFAD, 2011b). These principles include ensuring that large and international companies that partner with IFAD comply with social and environmental standards and are regularly assessed through due diligence during project preparation and implementation.

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See full list of IFAD value chain resources at www.ifad.org/topic/value_chain/overview

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Guidance statement 12 – Rural finance (under revision)

INTRODUCTION

1. Developing inclusive rural financial systems and fostering innovations to increase the access of poor people in rural areas to a wide range of financial services and sound financial institutions is central to IFAD's mandate and key to agricultural and rural livelihoods development. IFAD concentrates on rural microfinance, which refers to the provision of financial services to people with low incomes in rural areas for both on- and off-farm activities.

2. Rural microfinance encompasses the full range of financial services that smallholder farmers and rural households require, not just credit but including savings, remittances and risk management services, which, to achieve requires support to strengthening the whole sector at the micro, meso and macro levels.

3. The financial sector of a partner country comprises all individual and institutional actors, on both the demand and supply sides, along with the financial sector's legislative, regulatory and supervisory framework and its support infrastructure. IFAD's strategy is to support its partners at each level to build the sustainability of institutions and models, and increase outreach to remote rural areas and marginalized poor people. IFAD's support in rural finance therefore has a unique social focus different to that of other donors, but at the same time has to ensure sustainable access to finance. The Fund is therefore dedicated to responsible approaches, which lead to the financial and operational sustainability of the actors within the sector.

4. IFAD works with a range of financial service providers (FSPs), including commercial and development banks, non-bank financial institutions, cooperatives, microfinance institutions, and semi-formal or non-formal organizations such as self-help groups or village savings and loans associations.

5. The provision of financial services to poor rural households faces many challenges, including weak infrastructure and low population density located in marginal areas, inherent risks of serving low-income clients living and working in ecologically fragile environments and areas with demarcated natural resources, lack of typical client collateral, the limited capacity of FSPs, and low levels of client education. The overall financial market may be stunted and distorted from subsidized, targeted lending. Taken together, these challenges increase the transaction costs and risks of serving rural areas and require continual attention and innovation. The contemporary approach to rural finance focuses on building the sustainability of FSPs, thinking beyond the short life cycle of donor-driven projects.

6. To foster financial inclusion for poor people in rural areas, IFAD's Rural Finance Policy[1] requires compliance with six guiding principles in IFAD-financed rural finance interventions: (i) support access to a variety of financial services; (ii) promote a wide range of financial institutions,

[1] IFAD Rural Finance Policy: www.ifad.org/pub/basic/finance/eng.pdf.

models and delivery channels; (iii) support demand driven and innovative approaches, including providing a full range of financial services to poor families who live in degraded areas, which may, for example, support natural resource management practices and alternative livelihoods that are less harmful to the ecosystem; (iv) encourage, in collaboration with private sector partners, market-based approaches that strengthen rural financial markets, avoid distortions in the financial sector and leverage IFAD's resources; (v) develop and support long-term strategies focusing on sustainability and poverty outreach; and (vi) participate in policy dialogues that promote an enabling environment for rural finance. Any deviation from these principles requires clear justification and approval by management.

7. IFAD's support to building stable, inclusive financial systems that work for poor people over the long-term is applied to all levels of the financial sector: at the micro level working with retail FSPs and beneficiaries; at the meso level, including developing second-tier institutions such as industry associations and apexes, encouraging good governance and transparency in the sector; and at the macro level, assisting partner governments in promoting an enabling policy, legal and regulatory environment for market-oriented rural finance.

APPLYING SOCIAL, ENVIRONMENTAL AND CLIMATE STANDARDS TO RURAL FINANCE

8. IFAD-financed operations in rural finance focus on developing inclusive financial systems, working with and building capacity of its partners at each level of the sector (see paragraph 7) to build the sustainability of institutions and models and increase outreach to remote rural areas and marginalized poor people. Examples of this type of support are outlined in IFAD's Rural Finance Policy and can include promotion of financial literacy training and capacity-building support to FSPs; support to savings-based approaches; development of second-tier institutions such as industry associations and apexes; and promotion of an enabling policy, legal, regulatory and supervisory environment. Rural finance programmes, projects and components could have the objective of strengthening the financial sector overall and/or improving financial services targeted towards another sector, such as value chain development related to a specific agricultural commodity.

9. IFAD's approach to building inclusive rural financial systems for its target group and the differing characteristics of its supported interventions in rural finance mean that sometimes it can be complicated to have direct oversight or strong leverage over the end uses of the loan portfolio of an FSP partnering with an IFAD-financed programme or project. On-lending by the FSP is not always a focus of support, and if it is, the average size of the loan may often be minimal and intended for varied and marginal end uses.

10. Only when there is a proven clear lack of liquidity in a given market, as shown by a rigorous market assessment, IFAD would consider offering a line of credit to FSPs through its projects and programmes. IFAD's experience has shown that, in most cases, credit lines fail to trigger

the development of sustainable financial services. Any proposed line of credit has to be justified on the principles stipulated in IFAD's Rural Finance Policy.[2]

11. IFAD-financed programmes and projects which include rural finance as the main focus or as a component will be assessed according to the guidelines in IFAD's Social, Environmental and Climate Assessment Procedures (SECAP) in order to determine if the focus of the programme or project will have a significant and direct effect on the country's environment and natural resources and therefore under which category it should fall.

12. Any programmes or projects initiated by IFAD which support FSPs through the provision of a line of credit that are classified as category A or implementing credit operations specified in category B should meet IFAD's social environmental and climate standards and requirements, including information disclosure and consultation. For subprojects classified as category A, the borrower will submit an Environmental and Social Impact Assessment (ESIA), resettlement plan and/or an Indigenous Peoples Plan to IFAD for clearance before the subproject approval. The following measures should be carried out before establishing a relationship with an FSP:

    12.1. The national government through the established programme management unit for the project should conduct due diligence on the FSP and its portfolio to assess: (i) the FSP's existing environmental and social policies and procedures and its capacity to implement them – if gaps exist, highlighting an operational plan to address these (see 12.4); and (ii) environmental and social issues associated with the FSP's existing and likely future portfolio. Given that different processes related to the assessment and selection of project implementation partners can take place on a continuous basis in a project's development and implementation, the project design team should make every effort to include the project implementation partners in its identification and initial assessment of partner FSPs.[3]

    12.2. Ensure activities being financed through loans by the FSP in the framework of the IFAD-financed programme or project meet IFAD's safeguard policy guidance, comply with applicable national laws and regulations (labour, health, safety, etc.), and the prohibited investment activities list produced by the International Finance Corporation is adhered to.[4]

    12.3. FSPs should have in place or establish an appropriate environmental and social management system (ESMS) commensurate with the nature, scale and risks of the FSP's

[2] IFAD only authorizes the inclusion of lines of credit to retail or wholesale financial institutions in its financed programmes and projects if all of the following prerequisites are in place, which must be supported by a thorough market assessment: (i) the market demonstrates a clear lack of liquidity; (ii) private, professional fund managers or institutions, and not the recipient government, manage the line of credit; (iii) loans to retail financial institutions are priced at commercial or near-commercial rates to avoid undermining their incentive to mobilize deposits or access other sources of capital; (iv) partner retail financial institutions are financially sound, independent from political interference and free to charge interest rates that allow cost recovery; (v) partner financial institutions have the capacity to efficiently and transparently absorb and manage the financial resources; (vi) opportunities exist to create linkages with other sources of refinancing that will continue after the project ends; and (vii) accountable reporting and supervision arrangements can be put in place until the line of credit is repaid.

[3] IFAD Decision Tools for Rural Finance: www.ifad.org/ruralfinance/dt/full/dt_e_web.pdf.

[4] IFC exclusion list: www.ifc.org/exclusionlist.

current and likely future loan portfolio to be maintained as part of the FSP's overall management system, recognizing that the type and operations of FSPs vary considerably and in some cases may pose minimal social, environmental and climate risks. An ESMS in a formal FSP should aim to incorporate the following elements: (i) environmental and social policies; (ii) loan screening, categorization and review procedure; (iii) organizational structure and staffing, including skills and competencies in environmental and social areas; (iv) training guidance; and (v) monitoring and reporting.

12.4. The government through its programme management unit and IFAD will assess the adequacy of the FSP's capacity to manage environment and social impacts and risks related to its loan portfolio. If the FSP is capable, the ESMS will be agreed upon between IFAD/government and the FSP on a case-by-case basis in line with what is appropriate and feasible in terms of: (i) the scope of application within FSP's loan portfolio; (ii) the average loan size; (iii) intended loan use; (iv) the nature of standards required by the activities financed by the loan; (v) the FSP's environmental and social due diligence procedures; (vi) FSP disclosure and reporting guidance; and (vii) the guidance of the monitoring activities put in place by the programme or project (e.g. the use of performance-based agreements). Where there are gaps in the FSP's capacity that needs to be addressed, the government through its programme management unit, IFAD and the FSP will establish a time-bound plan.

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Guidance statement 13 – Physical and economic resettlement (under revision)

INTRODUCTION

1. The purpose of this Note on Physical and Economic Resettlement is to provide guidance to country programme managers (CPMs) and country programme management teams (CPMTs) who are envisaging or dealing with activities or interventions that could imply physical relocation or any change in land use and livelihoods options resulting from an investment supported by IFAD that could negatively impact on some elements of IFAD's target groups and the wider communities where they are found. The document identifies key principles and measures that the Fund should follow in order to minimize potential risks and avoid any possible negative impacts of physical resettlement or economic displacement.

PHYSICAL AND ECONOMIC DISPLACEMENT AND IFAD SUPPORTED INTERVENTIONS

2. Drawing on IFAD policies and on international guidelines and best practices referring to safeguards against involuntary resettlement[91], this Note considers resettlement not only as the physical relocation of people but also as restrictions on or loss of access to means of livelihoods.
3. Specifically, **physical displacement** refers to relocation, loss of residential land, or loss of shelter, while **economic displacement** implies the loss of land, assets, access to assets, income sources, or means of livelihoods[92].
4. Physical and economic resettlement could be either agreed/negotiated or involuntary: the two settings have very different implications for IFAD. For the purpose of this Note, we consider the following definitions:
    - **INVOLUNTARY RESETTLEMENT:** Resettlement is considered **involuntary** when affected people or communities do not have the capacity to refuse it – because the free, prior and informed consent (FPIC) principle is not properly implemented and they do not have power of choice – or their rights to refuse it are over-ridden by national law or are simply denied.
    - **AGREED/NEGOTIATED RESETTLEMENT:** There is **agreed/negotiated** resettlement when, in the respect of the do-no-harm principle and after having properly informed people and gone through the FPIC process, people potentially involved in the resettlement agree on being relocated and/or selling or relinquishing access to assets, against fair and timely compensations for their losses.

[91] Such as: the International Finance Corporation's Policy on Environmental and Social Sustainability and its Performance Standard 5: Land Acquisition and Involuntary Resettlement, the Safeguard Policy Statement of the Asian Development Bank; the Draft Environmental and Social Policy, of the European Bank for Reconstruction and Development; the African Development Bank's Integrated Safeguards System – Policy Statement and Operational Safeguards; and the World Bank's Operational Policy on Involuntary Resettlement.
[92] Asian Development Bank, 2009, Safeguard Policy Statement.

Free, Prior and Informed Consent Principle[93]

- **FREE** implies no coercion, intimidation or manipulation.
- **PRIOR** implies consent is sought far enough in advance of any authorization or commencement of activities, and the time requirements of consultation and consensus processes are respected.
- **INFORMED** implies that all information relating to the activity is provided to concerned people and that the information is objective, accurate and presented in a manner or form that is understandable to these people.
- **CONSENT** implies that the concerned people have agreed to the activity that is the subject of the consultation. These people also have the prerogative to withhold consent or to offer it with conditions. Consultation and participation are key elements of a consent-seeking process.

5. **The typology of investment projects and/or situations** in which the Fund could be facing cases of potential resettlement is mostly related to irrigation systems development (construction of canals, small dams and reservoirs) and to rural road, tracks and feeder roads construction[94]. Activities can also be part of agricultural water management projects, irrigation projects – in terms of equitable land sharing – protected land, common property resource activities, and forestry and rangeland projects. These types of projects always aim at benefiting IFAD target groups in the area but some of them may entail the loss of existing land and natural resource rights or livelihoods opportunities of some households or individuals.
6. While IFAD never allocates funds for land acquisition by actors external to its target groups, and does not fund the construction of large infrastructure such as dams or roads, projects and programmes co-funded by IFAD may finance these aspects. In these cases, IFAD needs to ensure that issues of physical resettlement or economic displacement are addressed properly. Hence, situations that may lead to physical resettlement or economic displacement may be found in a range of projects and programmes supported by the Fund. However, these cases may affect a **limited number of people** and they are usually predictable at early design stage and therefore can be addressed during the design process when IFAD has the proper tools and principles to minimize risk, ensure FPIC and avoid being involved in any cases of involuntary resettlement.

IFAD PRINCIPLES, POLICIES AND TOOLS AND THEIR IMPLICATIONS FOR RESETTLEMENT OR ECONOMIC DISPLACEMENT

7. IFAD's core mandate is to support the social and economic empowerment of poor rural women and men. As such, it is opposed to any investment that will have a negative impact on its target groups.[95]
8. Should resettlement or economic displacement be envisaged, the **FPIC** and the **do- no-harm principles** – which are two pillars of IFAD's Policy *"Improving Access to Land Tenure Security Policy"*

[93] Adapted from UN Permanent Forum on Indigenous Issues (UNPFII), 2005, Report on the International Workshop on Methodologies Regarding Free, Prior and Informed Consent and Indigenous People
[94] IFAD's interventions mainly focus on rehabilitation and construction of tertiary roads.
[95] IFAD has been supporting the formulation and implementation of the CFS Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (VGs), the Principle for Responsible Agricultural Investment (PRAI), the African Land Policy Framework and Guidelines, including the Guiding Principles on Large Scale Land-based Investments, along with other frameworks and guidelines aimed at the social and economic empowerment of poor rural women and men and social and economic equity more generally.

– will be followed at all times and for all its beneficiaries for *"any development intervention that might affect the land access and use rights of communities."*

> Adherence to the "**do-no-harm principle"** at all times. A broad range of development interventions, particularly those concerned with agricultural intensification, such as irrigation or technology-based agricultural production, and those focused on afforestation or rangeland management, effectively add value to land. Under such circumstances, there may be the risk that the rural poor, especially women, may lose out to more powerful groups. Projects in these areas must be designed, therefore, in such a way they 'do no harm' to the land tenure interests of the rural poor, especially those of women, indigenous and tribal peoples and other vulnerable groups. Careful measures must always be considered to avoid elite capture or forced displacement of people, and to address conflicting claims. Adherence to the principle of **free, prior and informed consent**. Before supporting any development intervention that might affect the land access and use rights of communities, IFAD will ensure that their free, prior and informed consent has been solicited through inclusive consultations based on full disclosure of the intent and scope of the activities planned and their implications.
>
> Source: IFAD's Policy *"Improving Access to Land Tenure Security Policy"*

9. Other **IFAD's policies** support and complement these principles, such as the *"Targeting Policy: Reaching the Poor",* for which *"targeting" refers to a set of purposefully designed, demand-driven and mutually agreed upon actions and measures that ensure, or at least significantly increase the likelihood, that specific groups of people will take advantage of a development initiative. At the same time, these actions and measures aim at preventing disproportionate benefit capture by other groups."* In the *"Engagement with Indigenous Peoples Policy",* the FPIC principle is also a pillar, and in the *"Gender Equality and Women's Empowerment Policy",* women and men should have equal opportunity to participate in, and benefit from, profitable economic activities and equal voice and influence in rural institutions and organizations.
10. 10. During the formulation of COSOPs/CSNs and the design of projects or programmes, IFAD undertakes to adhere to its policies, strategies and, above all, its core mandate. COSOP/CSN formulation and project/programme design is done in a participatory manner involving all key stakeholders. Where relevant, impacts on land and natural resource rights and livelihoods options are carefully considered and activities are identified for strengthening these and mitigating against potential negative impacts. This includes addressing issues pertaining to physical resettlement and economic displacement.
11. IFAD's internal mechanisms of **Quality Enhancement and Quality Assurance processes** guarantee that physical and economic resettlement issues – as any other issue linked to the design of a project with potential negative impact on the project target group – are dealt with and solutions are explored and agreed upon.
12. Conditions and terms for IFAD's financial investment, including mitigation measures are included in loan and grant agreements. Through direct joint supervision and implementation support with project/programme implementers, the Fund ensures that these conditions and terms and the overall objectives of its support are adhered to.
13. In this scenario, the **principles** that IFAD will follow are:
    - IFAD will avoid or minimize wherever possible any physical or economic resettlement that could negatively impact the affected people; in any case this should be only for a common interest (such as in an irrigation scheme benefitting IFAD's target groups) and based on positive outcomes of FPIC.

- All land and natural resource users with a legitimate claim will be recognized–including people having informal/customary rights.
- No affected person will be left worse off, and preferably should be left in a better position than before, through proper and timely compensation or any other mitigation measures agreed upon.

How to deal with resettlement and economic displacement in IFADs project cycle

14. The implications in terms of resources and time needed will be developed in a plan, regardless of the number of people affected. In fact, while the FPIC and do-no-harm principles are fundamental for any IFAD interventions, different arrangements and procedures may be needed depending on the probability of the resettlement.
15. As indicated in the SECAP, projects and programmes dealing with resettlement or economic displacement could be part of category A or B. Projects envisaging resettlement or economic displacement will be categorized as follows:
    - Category A: The probability is high that the programme/project may lead to physical and economic displacement and that such displacement may have significant adverse impacts in terms of resettlement or economic displacement. In these cases a Resettlement Action Plan will be required.
    - Category B: The probability is low that the programme/project may lead to physical resettlement and economic displacement.[96] In these cases, the ESMP and Project Design Document will indicate the consultation processes leading to Free Prior and Informed Consent for reaching agreement with those affected and mitigation and monitoring measures required to ensure that those affected will not be negatively impacted.
16. Decisions over mitigation measures related to resettlement or economic displacement need to be taken at different stages of the IFAD project cycle in order to ensure that the principles are respected, and that no resettlement or economic displacement occurs without being properly addressed. The following section (3.1) indicates, step by step, which actions and decisions should be taken, while section 3.2 presents the key elements to be taken into consideration when formulating a Resettlement Action Plan.

Concept note stage

17. Two situations may be considered: a first one in which a land and natural resource use and tenure assessment, including socio-economic aspects, has been carried out at COSOP/CSN level and a second one where there is no such land assessment (figure 13.1).
18. If the assessment was done in the COSOP/CSN, there may elements about risks of resettlement or economic displacement that could be included in the Concept Note (CN). However, this preliminary assessment may not be specific enough to have highlighted this aspect, and therefore some

[96] See paragraph 38.

preliminary information should be collected[97], as it is in the case where an assessment has not been done at COSOP/CSN stage.[98]

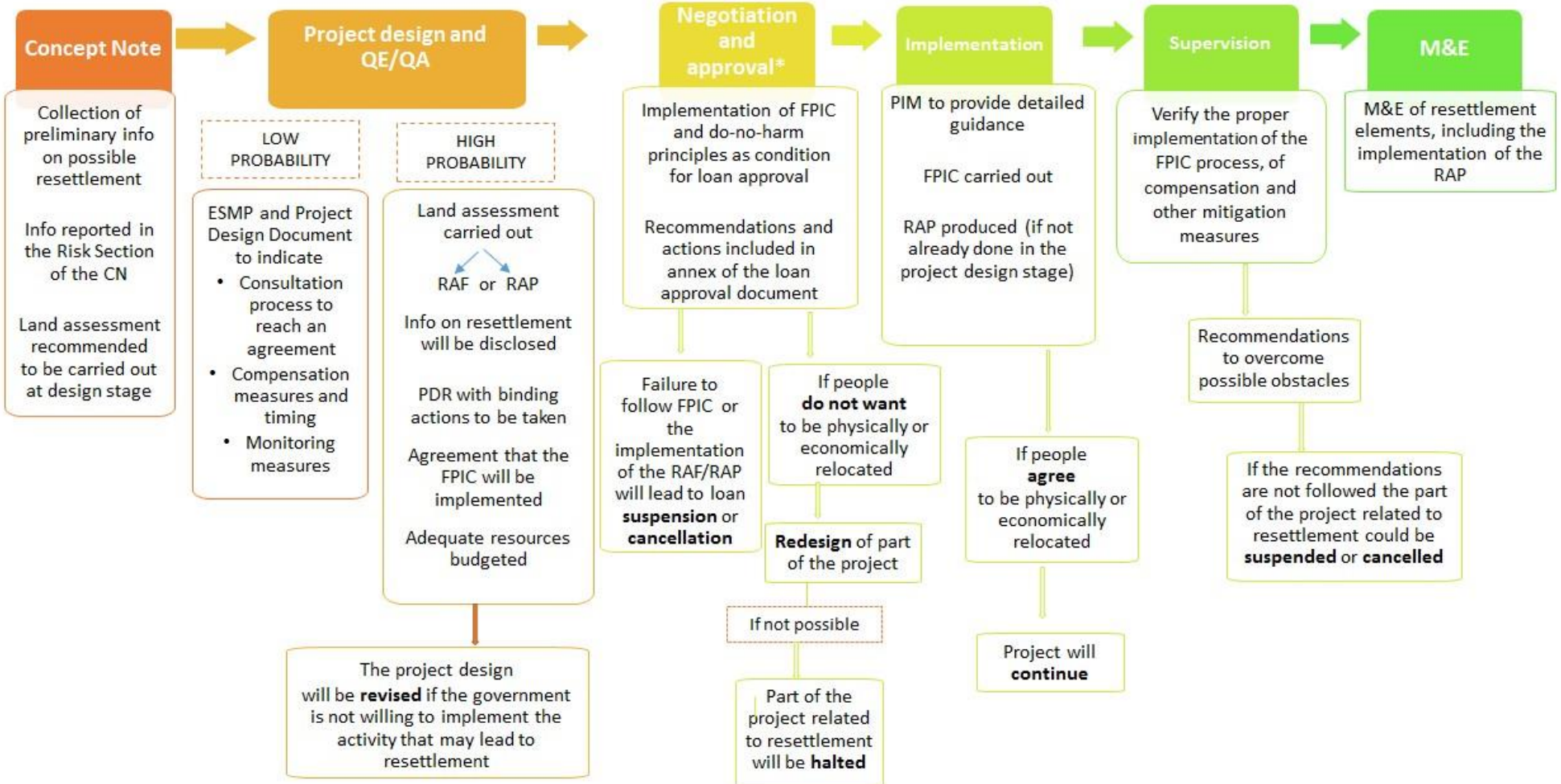
19. Based on the information collected, the CPMT is able to point out the risk of possible resettlement or economic displacement in the risk section of the CN document, and consequently, recommend a more focused assessment to be carried out in the next step of the project design.

Project design and quality enhancement/quality assurance processes

20. At this stage, the assessment needs to be carried out under the supervision of the CPMT in charge of the design. Based on the analysis, the project / programme could be categorized either as A or B. If categorized as "B" the Project Design Document and associated ESMP will indicate the consultation processes to be followed for reaching agreement with those affected and mitigation and monitoring measures required to ensure that those affected will not be negatively impacted. If categorized as "A", two different documents could be developed, depending on the knowledge of the exact location of resettlement or economic displacement and the specific people expected to be affected. If this information is not available, a Resettlement Action Framework (RAF) will be developed, which will include the key aspects and actions that will be taken into consideration in the resettlement process. In the event this information is available, a Resettlement Action Plan (RAP) will be produced, with more detailed information on the potential relocation and the compensation measures agreed upon with full and effective participation of affected people through FPIC process. In both cases, the content of these documents will be disclosed.
21. The Resettlement Action Plan or Framework will have a level of details and comprehensiveness commensurate with the magnitude of potential resettlement impacts and risks. The Project Design Report will contain the Resettlement Action Plan or Framework – with the set of binding actions to be taken in order to avoid, mitigate and compensate the affected people as needed. The analysis and the binding actions will be based on the principle that resettlement or economic displacement should be avoided or minimized as much as possible, and that the design should explore all options to do so – including all possibilities of agreements with proper compensation.
22. The suggested binding actions will be tailored to the magnitude of the expected impacts and will be based on the main principles guaranteeing that the targeted people have secure and fair access to land and/or alternative livelihoods. At this project design stage, there will be an agreement that FPIC will be followed[99].

[97] See "How to address land tenure in IFAD project design", which provides information on how to carry out a land assessment at project design level and a template for Terms of Reference to conduct such assessment. These two tools are part of the Toolkit on Land Tenure, developed by PTA IFAD.
[98] Ibid.
[99] FPIC should be seen as an ongoing process that carries on after the resettlement action plan is implemented.

Figure 13.1: Actions to be taken during the project cycle



* These conditions will be valid also for grants dealing with physical and economic resettlement

23. Adequate financial resources will be allocated (either as part of IFAD contribution or as government contribution) for the required consultation, sensitization, FPIC, and empowerment process, as well as for the development of a proper compensation and other mitigation plans of the affected people.
24. IFAD will modify the design of the specific activities related to the resettlement if the government refuses to tackle the issues related to such resettlement.

Loan negotiation and approval

25. Agreements that the proper[100] and timely implementation of the RAP or RAF and the FPIC and do-no-harm principles and the establishment of a grievance mechanism will be included in the loan or grant agreement and will be a condition for the loan/grant approval. This condition will be applied to possible resettlement or economic displacement envisaged at design level or that may emerge during implementation. A clear provision will be therefore included in the financing agreement that failure to follow FPIC procedure could lead to loan/grant suspension or cancelation, subject to IFAD's normal suspension and cancelation procedures.
26. The recommendations and actions to be taken in relation to the resettlement or economic displacement (e.g. fair and prompt compensation) will be included as an annex in the loan approval document.
27. All these provisions will be valid and implemented also in the case of grants dealing with physical and economic resettlement.

Implementation

28. The Project Implementation Manual (PIM) will provide detailed guidance on how to proceed to implement the binding recommendations contained in the project design report .
29. The FPIC process will be carried out by the project/programme implementing agency or a suitable service provider identified by the implementing agency.
30. If not produced at design level – e.g. if the programme/project is proceeding on the basis of a Resettlement Action Framework -- the Resettlement Action Plan (including a section on the FPIC process and how the FPIC will be documented) will need to be developed – somewhere between inception and before IFAD's investment becomes effective – based on the more detailed information available at this stage on the exact project sites and the involved communities.
31. In the event that a private sector company is involved in the activity leading to physical resettlement or economic displacement, it may be legally required to pre-finance an Environmental and Social Impact Assessment (ESIA) and associated RAP and may be expected to contribute to the implementation of the plan. The design of the RAP (and the calculation of the compensation) should be done by an independent service provider appointed by the company.
32. No physical activity will begin until resettlement and compensation have been accomplished. In the case where, after a thorough sensitization and consultation process, the affected people with a legitimate grievance do not agree to the compensation and other mitigation measures associated with their resettlement or economic displacement, the project implementers, in consultation with IFAD, will modify the activities of project or programme specifically related to

[100] Following PTA How-to-do Note on FPIC

the resettlement, in line with its overall objectives, in order to explore alternative options and solutions. In case no agreement is reached, the project implementers will halt the specific interventions associated with the affected people.

33. If the project is co-funded by other donors, it is expected that there will be an agreement on the compensation and mitigation measures in line with IFAD's policies and guidelines and that the compensation and other mitigation measures should be addressed in concert with them. This collaboration should be transparent in sticking to agreed criteria that must be established at the beginning of the collaboration and formally agreed by the government and the other (private) partners. If these criteria are not meet, IFAD will stop disbursing as a mean to support its beneficiaries whose agreed rights and needs are not respected. In this light, IFAD can use the 'go-and-then-stop manoeuvre'.
34. Where a situation of resettlement or economic displacement arises during the implementation of the project/programme that was not anticipated during design, the implementers and IFAD will ensure that a consultation and negotiation process is undertaken with the potentially affected people, according to the FPIC and do-no-harm principles. In case no agreement is reached, the project implementers will modify the specific interventions associated with the affected people, or halt them if changes are not possible. In the case where project/programme implementers fail to undertake a consultation and negotiation process with the affected people, according to the FPIC and do-no-harm principles, the conditions and terms of the loan or grant agreement could be considered to be breached and the loan could be suspended, following IFAD's normal procedures for loan suspension.

Supervision

35. IFAD, through its direct supervision and mid-term review of the activities, will verify the proper implementation of the FPIC process and implementation of compensation and other mitigation actions called for in the RAP. Recommendations should be made on how to proceed if obstacles impede such implementation. If these are not followed, IFAD could initiate processes for loan/grant suspension or cancelation. IFAD will also verify progress in the implementation of the binding actions (their status, progress, etc.) and actions/recommendations should be made on how to proceed if obstacles impede them.

Monitoring and evaluation

36. . Elements of the resettlement will be included in the monitoring and evaluation process, such as compensation and livelihood restoration mechanisms that should be monitored and properly documented. Grievance mechanisms should also be evaluated. A programme or project is not considered completed until the RAP has been fully and successfully implemented. The ex post facto environmental and social impact assessment to be done at completion of programmes and projects will confirm that the RAP has been fully and successfully implemented.

KEY ELEMENTS OF PHYSICAL AND ECONOMIC RESETTLEMENT TO BE CONSIDERED IN RESETTLEMENT ACTION PLAN

37. In following its principles and implementing its activities, IFAD should take into considerations several key elements related to potential physical or economic displacement as resettlement is complex and sensitive issues, which, if not properly managed, can lead **to several of risks for the affected people**[101]. These elements need to be part of a compensation and mitigation plan – **a Resettlement Action Plan (RAP)**[102] – and associated project programme activities, as outcome of the FPIC process. Affected people are given the opportunity to participate in the preparation, implementation, and monitoring of RAPs.
38. Key is the **identification of the potentially affected people** and to identify at what stage of the project this identification can be done (at design or implementation level). Assessment studies and baseline surveys need to be carried out prior to any major investment in order to identify potentially displaced people's entitlements and eligibility. A well-defined cut**-off date** needs to be set and respected. In this identification, all the various relevant actors will be involved (e.g. implementing agencies, local government units, traditional authorities, communities). All land and natural resource users will be recognized - holders of formal title, people having informal/customary or traditional use rights, and occupants or users with no recognized rights and **an assessment of the losses** by the various users will be done. Groups that may be particularly vulnerable to adverse impacts of resettlement, such as female-headed households, the elderly, or persons with physical or mental disabilities, must be identified and given appropriate special consideration.
39. Based on such an assessment, **a fair and timely compensation plan and other mitigation measures** will be defined and agreed upon with the affected people and put in place – to respect the do-no-harm and FPIC principle. Different types of compensation and mitigation measures will be taken into consideration (cash, land, jobs, houses, in kind compensation, alternative livelihoods options, land and natural resource conservation measures, etc.) depending on the context, the nature of the right or use or occupancy, the type of losses and the purpose of the resettlement or economic displacement. Following international best practice, in-kind compensation should be preferred. Where possible, the affected people should be given a priority opportunity to participate in project/programme being implemented or in another project or programme.
40. Compensation measures will need a careful assessment of the socio-economic and cultural characteristics of the affected people and potential receiving or **"host" communities** that may be expected to provide a resettlement site or access to alternative land, natural resources or livelihood options, in order to avoid negative impacts on them and conflicts with resettled or economically displaced people.

[101] Specifically landlessness, joblessness, homelessness, marginalization, food insecurity, increased morbidity and mortality, loss of access to common property and services and social disarticulation (The Economics of Involuntary Resettlement – Questions and Challenges, Michael M. Cernea, World Bank, 1999).
[102] See annex 13.1 for an outline of the RAP.

41. To define a fair compensation, two aspects will need to be considered: how the compensation will be calculated (e.g. the formula used) and how the different parts of the formula (e.g. loss of houses, loss of access to land, tangible and intangible heritage - cultural, spiritual etc.) will be **evaluated** (considering not only the quantity, but also the quality of the losses). The evaluation should be done by an external and independent entity. The definition of the compensation will take into consideration the legislative norms of the country, but where IFAD's and national principles differ, the one more favourable to the affected people will take precedence[103]. However, IFAD will ensure at the design stage, and verify during implementation, that such compensation and other mitigation measures are fair, based on the principle that no one should be left worse off. In other words, compensation must allow for replacement of the lost assets. Issues of under-compensation, inflation and speculation will be monitored and avoided.
42. All the **affected people** will be compensated, based on the loss they face. Even if IFAD will endeavour not to move people from one community to another one, should the case arise, the hosting community will receive support in order to include the new comers within its socio-economic and cultural structure. This support could take the form of new infrastructures (e.g. schools, roads, clinics, etc.), new job opportunities, cash, etc.
43. Compensation and other mitigation measures will be provided in **a timely manner** to all those concerned. Depending on the form of compensation selected, the compensation could be done in one instalment, or in more than one, spread during the resettlement process and/or the life of the project.
44. In case of compensation in cash, attention will be paid to the **involvement of the whole community and household** in the acceptance and investment decisions of such agreed upon compensation. Complementary capacity-building and empowerment measures regarding cash management should be included to enable community and household members to be involved in the decision-making process.
45. When the compensation cannot be tackled within the community with its own resources will be provided by the State and/or local bodies. However, complementary **resources** could be provided by the private sector or other actors, when these directly benefit from the project.
46. In addition to compensation, relocation **assistance** will be provided by the State, and if appropriate and agreed upon, by IFAD.
47. **Grievance mechanisms** will need to be put in place by the State – and IFAD will verify their existence, appropriateness, accessibility and proper functioning – in order to support and respond to the needs and requests of those involved in the resettlement process (resettled people and hosting communities). Where the national grievance process has gaps, additional grievance provisions will be included in the RAP, which should describe the process to be followed by affected communities.
48. The Resettlement Action Plan will set a clear time **frame** for the compensation to take place, and the roles **and responsibilities** of the State and all the actors involved in the resettlement, including IFAD.
49. The project/programme implementers and IFAD will establish a clear, consistent and transparent **communication with external actors**, such as the media, farmers' Organizations,

[103] IFAD will follow the practice of the other multilateral financial institutions s in making sure that valuation is at replacement costs

indigenous peoples' organizations, and other civil society organizations. It is important to carefully explain the purpose of IFAD's participation, role and perspective in the project/programme. IFAD and its cofinancing institutions will need to be consistent and transparent in making joint statements to the press.

50. Throughout the process of identification, planning, implementation and evaluation of the various elements of resettlement or economic displacement and their impacts, adequate attention will be paid to **gender concerns:** specific measures addressing the needs of female headed households, gender-inclusive consultation, information disclosure, and grievance mechanisms will be put in place in order to ensure that women and men will receive adequate and appropriate compensation for their losses and to restore and possibly improve their living standards.

REFERENCES

Guidelines

International Finance Corporation. 2012. *Performance Standard 5: Land Acquisition and Involuntary Resettlement.* Washington DC: IFC. Available at: www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/publications/publications_handbook_pps

Annex 13.1 Outline of the Resettlement Action Plan

Terms and definitions

Executive summary

1. Description of the project
2. Potential impacts of the resettlement and minimization mechanisms
3. Objectives of the resettlement plan
4. Census and socio-economic studies
5. Legal and institutional frameworks - including mechanisms for conflicts resolution and appeals
6. Eligibility determination
7. Implementation of the FPIC process
8. Valuation of and compensation for losses for livelihoods restoration and improvements
9. Resettlement measures
    a. Site selection, site preparation and relocation
    b. Housing, infrastructure and social services
    c. Integration with host population
    d. Community participation
10. Environmental protection and management
11. Organizational responsibilities
12. Implementation schedule
13. Costs and budget
14. Monitoring, evaluation and reporting

Guidance statement 14 – Community health

INTRODUCTION

1. In many countries, the agricultural sector has undergone immense changes over the past three decades owing to an improved understanding of the health and safety risks associated with agriculture, as well as the use of improved technology and personal protective equipment (PPE) – but not everywhere. There are still many areas of the world, particularly low- to middle-income countries, where there is a lack of knowledge about how farmers are affected by their exposures to the variety of health risks that they are confronted with every day. Even in more developed countries, the strides made in improving health and safety in the workplace and the implementation of the International Labour Organization policies and procedures have not found their way into the agricultural sector. Furthermore, there is little medical surveillance in this sector, resulting in a lack of credible research data and evidence.

2. Agricultural, forestry and fisheries workers are at greater risk of traumatic death and disabling injury than workers in all industries except mining. Risks of acute pesticide poisoning and long-term effects of pesticide exposure, such as lymphoid malignant neoplasms, are present in a variety of settings where crops are grown. Respiratory disorders develop from the inhalation of grain dust, other types of organic dusts, and work in animal confinement facilities. Hearing loss is an important problem in settings where machinery is in use. Skin cancers caused by sun exposure are a serious problem, and irritant and allergic dermatoses occur from exposures to plants and farm chemicals. Zoonotic infections can cause life-threatening illness, and heat and cold stress occur from exposure to the elements.

3. This guidance statement aims to identify the main health issues arising from agricultural projects, the causative factors and potential mitigation measures.

HEALTH ISSUES IN IFAD PROJECTS

4. According to the World Health Organization (WHO) definition, health is a multidimensional concept which "encompasses a complete state of physical, mental, and social well-being and not merely the absence of disease or infirmity".[1] A health impact resulting from an IFAD-funded project, plan or programme is a measurable change on the health status of an individual, group or population, which may be attributable to the direct or indirect effects of an agricultural development. The impacts may be intended or unintended and may not become apparent for many years after prolonged exposure, or due to long-term latency in the human body.

[1] The preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100), and entered into force on 7 April 1948. The definition has not been amended since 1948.

5. The main health impacts related to agricultural projects are:

    - occupational diseases, disorders and injuries;
    - waterborne diseases spread to humans through pathogens in water and on irrigated crops;
    - vector-borne diseases caused by habitat change;
    - non-communicable diseases;
    - nutritional disorders; and
    - communicable diseases from interaction between people.

Occupational diseases and disorders

6. There are a number of occupational health issues associated with agriculture, fishing, aquaculture and forestry projects:

    - traumatic injury;
    - respiratory illnesses;
    - noise-induced hearing loss;
    - cancer and other disorders from exposure to chemicals;
    - zoonoses;
    - dermatoses;
    - heat and cold stress; and
    - musculoskeletal disorders.

7. **Traumatic injury.** A large number of deaths and disabilities are caused each year by accidents involving farm vehicles and machinery. The more mechanized the farm, the greater the risk of accidents, especially if vehicles and equipment are not properly maintained and basic training and safety measures are not put in place. Falls from heights and ladders are also a major cause of death and injury, either directly from the trauma of the fall or indirectly if the fall occurs in grain silos or into animal manure pits, where the cause of death would be suffocation or inhalation of toxic gases, respectively.

8. A further cause of traumatic injury is from upgrading rural roads. While the aims of these road improvement projects are to facilitate access to markets and provide quicker and easier modes of transport, the reality is that the new roads typically do not cater for the large numbers of pedestrians and cyclists who use them and who are placed at much greater risk of personal injury due to speeding traffic.

9. **Respiratory illnesses.** Agricultural workers are exposed to a number of dusts and gases in the workplace that can cause acute and chronic respiratory diseases. Exposures that play an important role in causing respiratory disorders include grain dust, fibres, dust and gases in animal confinement units, mould (e.g. aflatoxins[2]), and thermophilic bacteria in hay and grain,

[2] Aflatoxins are poisonous and cancer-causing chemicals that are produced by certain moulds (*Aspergillus flavus* and *A. parasiticus*) which grow in soil, decaying vegetation, hay and grains. They are regularly found in improperly stored staple commodities such as cassava, chilli peppers, corn, cotton seed, millet, peanuts, rice,

and silo gas. Many of the bioaerosols inhaled by agricultural workers are rich in endotoxin, which has been associated with both acute and chronic illness.

10. Workers in biofuels and oil crop processing facilities may be exposed to ethanol vapours, vegetable oil mists, hexane and other solvents, acids and bases.

11. Specific respiratory problems in sugar cane production are linked to combustion gases and particulates during cane burning activities, while sugar processing workers may develop bagassosis and interstitial lung disease from processing bagasse without adequate PPE.

12. Inorganic dust inhalation can also cause respiratory ailments, particularly if the dust is rich in silica. Farm worker are most at risk of inhaling respirable particulates when working in the fields in dry, hot conditions without any protective equipment.

13. Approximately 3 billion people, many of whom are farmers, cook and heat their homes using open fires and simple biomass burning stoves. Respiratory illnesses attributable to indoor air pollution such as pneumonia, cardiovascular diseases and cancer kill more than 4 million people per year, more than half of whom are children under 5. The highest burden occurs in low-income countries where people are often most vulnerable due to existing diseases, such as tuberculosis (TB) or HIV, and who have little access to effective health care or alternative sources of cheap energy. The use of wood and fossil fuels for cooking and heating has other indirect impacts on the social and biophysical environments: gathering fuelwood takes time and energy, thus removing (mostly) women and children from other productive tasks and school, respectively; black carbon and methane emitted by inefficient combustion contribute to climate change and the lack of access to safe forms of power can lead to injuries, fires, poisoning and burns, among others.

14. **Noise-induced hearing loss.** Agricultural and forestry workers are frequently exposed to high levels of noise from tractors, machinery and power tools, which can affect hearing to a greater or lesser extent.

15. **Cancer and other disorders from exposure to pesticides.** The term “pesticide” is used to refer to a range of chemicals used to kill, control or repel animal pests, weeds, fungi, bacteria and other pathogens. Pesticides pose risks of short- and long-term illness to farm workers and their families. Workers who mix, load or apply pesticides (known as pesticide handlers) can be exposed to toxic pesticides because of spills and splashes, defective, missing or inadequate protective equipment, direct spray, or drift. Farm workers may be exposed to pesticides in a variety of ways, including: working in a field where pesticides have recently been applied; breathing in pesticide “drift” from adjoining or nearby fields; working in a pesticide-treated field

sorghum, sunflower seeds, tree nuts, wheat, and a variety of spices. When contaminated food is processed, aflatoxins enter the general food supply where they have been found in both pet and human foods, as well as in feedstocks for agricultural animals. Animals fed contaminated food can pass aflatoxin transformation products into eggs, milk products and meat. Children are particularly affected by aflatoxin exposure, which leads to stunted growth, delayed development, liver damage and liver cancer. Adults have a higher tolerance to exposure, but are also at risk.

without appropriate PPE; eating with pesticide-contaminated hands; eating contaminated fruits and vegetables; and eating in a pesticide-contaminated field. Workers may also be exposed to pesticides if they drink from, wash their hands, or bathe in irrigation canals or holding ponds, where pesticides can accumulate. Pesticides can enter the human body through inhalation, ingestion or by dermal penetration through the skin.

16. The World Health Organization estimates that there are 3 million cases of pesticide poisoning each year and up to 220,000 deaths, mostly in developing countries. Pesticide exposure can cause a range of neurological health effects such as memory loss, loss of coordination, reduced stimulus response, impacts on vision, altered or uncontrollable mood and behaviour, and reduced motor skills. Pesticides have also been linked to cancer, hormone disruption, and problems with reproductive and foetal development (table 14.1). Workers in orchards and fruit farms, vegetable production, and cotton pickers as well as children, are particularly susceptible to pesticide poisoning. Guidance on the safe use of pesticides is provided in guidance statement 2.

Table 14.1. Common pesticides and their health effects

Pesticide group	Documented health effects
Organochlorines, such as dichloropropene	Loss of sensation around the mouth, hypersensitivity to light, sound and touch, dizziness, tremors, nausea and vomiting, nervousness and confusion, and also affects the reproductive system.
Organophosphates, such as chlorpyrifos, and carbamates such as aldicarb and carbaryl	Increased salivation and perspiration, narrowing of pupils, nausea, diarrhoea, decrease in blood pressure, muscle weakness and fatigue. Also affects the brain, reproductive system and is linked to cancer.
Pyrethroids	Hyperexcitation, aggressiveness, loss of coordination, tremors and seizures, allergic skin response. Some pyrethroids can cause cancer, reproductive or developmental effects or endocrine system disruption.
2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD, dioxins) (e.g. 2,4-D and 2,4,5-T)	Birth defects, cancers, liver disease and other illnesses.
Phenoxyacetic acid (2,4-D)	Non-Hodgkin's lymphoma.
Methyl bromide	Affects skin, eyes, brain and respiratory system. May cause fluid in lungs, headaches, tremors, paralysis and convulsions.

17. **Zoonotic diseases.** Diseases that can be transmitted between animals and humans are known as zoonotic diseases, or zoonoses. About 60 per cent of all human diseases and 75 per cent of all emerging infectious diseases are zoonotic, largely from pigs, poultry, cattle, sheep, goats and camels. A study by Grace et al. (2012) categorized zoonoses based on their prevalence and occurrence:

    - Endemic zoonoses, such as brucellosis, leptospirosis and salmonella, which are globally prevalent and persistent;
    - Outbreak or epidemic zoonoses, which are unpredictable and occur periodically, such as anthrax, rabies, Rift Valley fever and leishmaniosis;

- Emerging zoonoses, such as Ebola.

18. Zoonotic diseases, such as bird flu and bovine TB, can have a significant effect on both the affected animals and humans in terms of health and economic impact. There is a strong association between poverty, hunger, livestock-keeping and zoonoses, but actual data about notifiable diseases are poor to non-existent in most low- to middle-income countries. An extensive literature survey by Grace et al. (2012) indicated that the most affected countries in the world are:
    - South Asia: India > Bangladesh > Pakistan
    - East and Central Africa: Ethiopia > Democratic Republic of the Congo > United Republic of Tanzania > Sudan
    - South-east Asia: China > Indonesia > Myanmar > Viet Nam
    - West Africa: Nigeria > Burkina Faso > Mali > Ghana

19. Thirteen zoonoses[3] have been found to be responsible for 2.2 million human deaths per year, mostly in five countries (China, India, Ethiopia, Nigeria and Bangladesh), where 44 per cent of the world's poorest livestock-keepers live. The impact of these diseases is compounded by the severity of the disease and its amenability (or not) to agricultural controls. The livestock types, main zoonoses, causes and pathways to humans are presented in table 14.2, together with some specific mitigation measures. In addition to the specific measures listed, there are three basic means of controlling the spread of zoonoses:
    - **Personal protective actions and equipment**, such as hand hygiene, the use of appropriate gloves and outer protection, facial and respiratory protection, and the tracking of aggressive animals so that restraints are used when necessary.
    - **Environmental infection control**, such as cleaning and disinfecting surfaces and equipment, early diagnosis and treatment, vaccinating healthy animals, isolating diseased animals, disposing of infected tissues or dead animals appropriately, and controlling the infestation of pests, which can be a carrier of these infections.
    - **Worker health**, such as vaccinating workers, health surveillance, providing good nutrition to workers, early diagnosis and treatment, and providing proper awareness training and education.

20. **Dermatoses.** All outdoor agricultural workers are exposed to the sun, and as a result an increased risk of skin cancer. Basal cell carcinoma and lip cancer are two of the most common types of cancer in agricultural workers. Contact with a range of materials, e.g. fertilizers, pesticides, other farm chemicals, fibres, thorns and leaves, can also cause dermatological reactions such as eczema, rashes, itching and urticaria.

[3] Zoonotic gastrointestinal disease, leptospirosis, cysticercosis, bovine TB, rabies, leishmaniosis, brucellosis, echinococcosis, Toxoplasmosis, Q fever, zoonotic trypanosomiasis, hepatitis E and anthrax.

21. **Heat and cold stress.** Extreme heat or cold can be both stressful and bring on adverse health reactions, such as heat stroke and hypothermia, respectively. The recommended measures to combat heat stroke are to provide sufficient shade, water and rest breaks, as well as adequate head covering. The risks of hypothermia can be reduced by providing warm shelter, hot drinks and food, adequate rest breaks, and warm clothing including hats, boots and gloves.

22. **Musculoskeletal disorders.** All activities associated with agriculture, forestry, fisheries and aquaculture involve hard manual labour such as bending, picking, lifting, carrying, as well as repetitive movements such as cutting or pruning. Back pain is common for field workers, while arm and shoulder problems are more evident in fruit pickers.

Table 14.2. Causes and pathways of the most common zoonotic diseases and possible mitigation measures

Livestock type (Primary in bold)	Zoonoses	Agent/cause	Pathway to humans	Possible specific mitigation options (in addition to the general measures listed)
Cattle, llamas and pigs	Bovine TB	*Mycobacterium bovis* bacteria	Consumption of untreated milk; close contact with infected animals, especially in confined livestock systems; presence of wildlife (disease reservoirs)	Drink treated milk; reduce contact between wildlife carriers and cattle
Cattle, sheep, goats and pigs	Human brucellosis	*Brucella* spp.	Consumption of untreated milk and milk products	Milk pasteurization
Pigs	Cysticercosis	Larvae of the parasite *Taenia solium* (pork tapeworm)	Where pigs consume human faeces containing tapeworm eggs, i.e. free-ranging pigs; any food or water containing tapeworm eggs	Improved personal sanitation and hygiene; prevent access by pigs to human excreta (confine pigs to piggeries); access to clean (unpolluted) water; pork to be well cooked
Sheep, goats and cattle	Q fever Endocarditis	*Coxiella burnetii* bacteria	Inhalation of spores; contact with milk, meat, wool, faeces, mucus and semen of infected animals	Use of personal protective equipment when handling wool, skins, meat, animal birthing and insemination
Cattle, sheep, pigs, rabbits (secondary hosts) via rodents (primary hosts)	Leptospirosis	*Leptospira* spp. bacteria	Contact with water and soil containing infected animal urine, especially in free-ranging animal systems	Elimination or control of rodents, especially rats; avoidance of contaminated water
Poultry	Avian influenza, or bird flu	A(H5N1) and A(H7N9) viruses infect humans	Direct or indirect contact with infected live or dead poultry	Control disease in birds; eat well-cooked poultry meat and avoid consumption of all uncooked poultry products;

Livestock type (Primary in bold)	Zoonoses	Agent/cause	Pathway to humans	Possible specific mitigation options (in addition to the general measures listed)
				implement containment measures to control spread of disease, e.g. close live bird markets and prohibit movement of infected birds
Sheep, goats, cattle, camels, pigs (secondary hosts)	Echinococcosis (hydatid disease)	Larval stage of *Echinococcus granulosus, E. intermedius* and *E. canadensis*	Ingestion of tapeworm eggs through faeces of hosts (carnivorous predators) and contaminated food and water	Deworming of dogs; public education campaigns; improved food inspection and slaughterhouse hygiene
Cattle, sheep	Anthrax	*Bacillus anthracis* bacteria	Endospores in soil persist for decades; inhalation of spores; exposure to infected animals or products (skins, wool, meat) via inhalation, ingestion and dermal contact	Incineration or deep burial of infected animal carcasses; use of extreme personal protective equipment, including breathing apparatus and protective bodysuits; clean up of infected sites (where stock have died) using strong biocides to destroy bacterial spores

23. **Waterborne diseases.** One of the most common pathways for pathogens to enter the human body is from ingestion of, or contact with, water polluted with human and/or animal excreta. The use of treated sewage effluent to irrigate crops and landscaped installations (parks, gardens, golf courses, etc.) has been practised for decades, and there are strict controls over the quality of this water in most developed countries. However, the main pathways for waterborne diseases in low- to middle-income countries are via the use of partially treated or untreated sewage effluent: (i) where sewage effluent is deliberately used for irrigation in an attempt to conserve freshwater resources, while at the same time adding "cheap" nutrient and organic matter to the soil or growth medium; and (ii) where untreated sewage effluent and excreta wash into reservoirs, dams, rivers or canals and the contaminated water is unintentionally used for irrigation, drinking or washing. The exposure pathways for humans from both these paradigms are via: (i) direct consumption and handling of polluted water; and (ii) indirect consumption through food irrigated or washed with polluted water and contaminated animal products.

24. There are four groups of pathogens implicated in waterborne diseases in humans:

    - **Bacteria.** The faeces from an infected person allows the spread of that infection to others. Diarrhoea is the most prevalent type of infection, with cholera the worst form. Typhoid, paratyphoid and other salmonella-type diseases are also caused by bacterial pathogens.
    - **Viruses.** The five most important groups of pathogenic-excreted viruses are: adenoviruses, enteroviruses, hepatitis A virus, reoviruses and diarrhoea-causing viruses such as rotavirus.
    - **Protozoa.** Many species of protozoa can infect humans and cause diarrhoea and dysentery. Infective forms of these protozoa are often passed as cysts in the faeces. The three most common pathogenic species are: *Giardia lamblia*, *Balantidium coli* and *Entamoeba histolytica*.
    - **Helminths or parasitic worms.** Many of these species have humans as the host, but most do not multiply within the human host. These species often have complex life cycles with different developmental stages occurring in different intermediate hosts, which could be soil, water, plant life or animals. These complex interactions need to be understood when designing and planning irrigation schemes to prevent the cycle of infection and re-infection. Roundworms (nematodes) and flatworms (tapeworms and flukes) form the two main groups of helminths in wastewater.

25. All of the above pathogens have the potential to reach fields and crops, but their survival time outside of the human body is highly dependent on water temperature. At temperatures between 20° and 30° C, the average survival time for viruses can be up to two months, but this may be prolonged in cooler temperatures and in the presence of pollution. Bacteria on the other hand have a shorter average survival time (20-30 days) and survive for longer in clean water.

26. Pathogens tend to be able to survive for a long period in soil, but longevity is much reduced on soil and crop surfaces, which are exposed to greater heat, solar radiation and aridity. Understanding the survival time is important when cropping cycles are shorter than the pathogen's life cycle, e.g. fast-growing vegetables. Thus, the timing of the last application of irrigation water is critical in determining the degree of risk from infection.

27. Whether a person actually becomes infected depends on a number of additional factors, such as:
    - volume of excreta in the wastewater (containing pathogens);
    - latency (period of time from excretion to infection of a new host);
    - persistence (viability of the organism outside the human body);
    - multiplication (whether the organism can multiply outside the human body);
    - infective dose (amount needed to cause infection);
    - host response (immunity of the person); and
    - presence of non-human hosts such as schistosomes.

28. The highest risks to human health are posed by helminths, followed by bacterial infections (e.g. cholera, typhoid, shigellosis) and protozoan infections such as amoebiasis and giardiasis. The lowest risk is from viruses such as viral gastroenteritis and infectious hepatitis A.

29. In terms of crop risk, the lowest risk to the consumer is when contaminated water is used on:
    - crops that are not for human consumption, e.g. cotton, sisal;
    - crops that are normally processed using heat or sun drying before consumption, e.g. grains;
    - vegetables and fruit grown for canning or other processing that destroys pathogens;
    - fodder crops that are sun dried before consumption by livestock;
    - landscaped irrigation that is not open to the public.

30. Increased risks are where polluted water is used on:
    - pasture and green fodder crops;
    - crops for human consumption (grapes, fruit) that do not come into direct contact with the irrigation water (i.e. where drip, micro-sprays and root-directed irrigation is used);
    - crops for human consumption which are not usually eaten raw, such as potatoes, aubergine and beetroot;
    - crops for human consumption where the peel or skins are not usually eaten, such as melons, citrus fruits, bananas, nuts and groundnuts.

31. The highest risks occur when water contaminated with excreta is used to irrigate crops that are often eaten uncooked, or that come into close contact with water such as lettuce, carrots, spray-irrigated fruit.

32. Farm workers are also at a high risk if they have to handle irrigation pipes and pumps without adequate personal protective equipment and awareness of risks. Crop pickers who use hand harvesting techniques may also be more exposed to risks, especially if they are migrant or seasonal workers who are not provided with adequate personal protective equipment. Farm

workers may also be more at risk in dry areas where inhalation of respirable dust containing pathogens is likely.

33. Wastewater and excreta are also present in the aquaculture industry. This industry has seen a massive growth in the past two to three decades, from 16.8 million tonnes in 1990 to 73.8 million tonnes in 2014. The industry is dominated by a few Asian countries – the majority of total global production is from Asia, primarily China, but India, Viet Nam, Bangladesh and Egypt are all major producers. Waterborne pathogens may enter the food chain via the use of contaminated water as a culture medium, or through the direct input of animal excreta as a source of nutrients, e.g. chicken manure. The pathogens which typically bioaccumulate in finfish and shellfish are: *Campylobacter jejuni*, *Vibrio cholera*, *Salmonella* spp., *Shigella* spp., *Escherichia coli* and *Enterococcus* spp. Helminthic, parasitic and viral pathogens have been documented in wastewater-fed aquaculture environments such as *Schistoma marisoni*, *Cryptosporidium parvum*, *Giardia intestinalis*, novoviruses, rotaviruses and hepatitis A. These pathogens cause health risks for workers at aquaculture farms and processing plants that come into daily contact with contaminated water, as well as for those who consume such products.

34. The use of wastewater in aquaculture can also result in the accumulation of heavy metals and organic chemicals from pesticides, fungicides and general run-off from agricultural or industrial land. The most infamous example of this occurred in the city of Minamata in Kumamoto Prefecture, Japan, in 1956. The disease, which became known as Minamata disease, was caused by the release of methyl mercury in the industrial effluent from the chemical factory belonging to Chisso Corporation, which operated from 1932 to 1968. This highly toxic chemical bioaccumulated in shellfish and fish in Minamata Bay and the Shiranui Sea, which, when eaten by the local populace, resulted in mercury poisoning causing neurological damage. Cadmium and lead have also been found in elevated levels in fish; cadmium can cause kidney and bone damage, while lead has neurotoxic effects and affects brain development in children. The main exposure pathway for these metals is through the direct consumption of contaminated finfish and shellfish.

35. The other health threat from aquaculture operations is the use of antibiotics in fish ponds to kill bacteria or to inhibit the growth of bacteria in the species being farmed. The most commonly used drugs are oxytetracycline, chloramphenicol and oxolinic acid; however, there is little information disclosed about the types and amounts of antibiotics used and there are inadequate government controls in place in many countries. There is also little information made available to the aquaculture farmers about the safe and efficient use of these drugs and what the side-effects may be for both those handling these drugs and those who consume the aquaculture products.

36. **Vector-borne diseases.** Vectors are living organisms that can transmit infectious diseases between humans or from animals to humans. Every year there are more than 1 billion cases and over 1 million deaths globally from vector-borne diseases, such as malaria, dengue, schistosomiasis, human African trypanosomiasis, leishmaniasis, Chagas disease, yellow fever, Japanese encephalitis and onchocerciasis. Vector-borne diseases account for over 17 per cent of

all infectious diseases. Distribution of these diseases is determined by a complex dynamic of environmental and social factors.

37. Many of these vectors are bloodsucking insects, which ingest disease-producing micro-organisms during a blood meal from an infected host (human or animal) and later inject it into a new host during their subsequent blood meal. Mosquitoes are the best known disease vector. Others include ticks, flies, sandflies, fleas, triatomine bugs, and some freshwater aquatic snails (table 14.3). The risks of vector-borne diseases can be increased by creating suitable habitats for vector growth and reproduction and where an existing disease burden already exists, e.g. from communicable or zoonotic diseases.

Table 14.3. Disease vectors, diseases and environmental drivers

Primary vector	Diseases	Environmental driver
Mosquitoes: *Aedes* spp.	• Chikungunya • Dengue fever • Rift Valley fever • Yellow fever • Zika	Standing, stagnant water in pools, puddles and containers provide suitable breeding habitats for mosquitoes; dams and irrigation schemes
Mosquitoes: *Anopheles* spp.	• Malaria	Standing, stagnant water in pools, puddles, containers, dams and rivers; dams and irrigation schemes
Mosquitoes: *Culex* spp.	• Japanese encephalitis • Lymphatic filariasis • West Nile fever	Standing, stagnant water in pools, puddles and containers; dams and irrigation schemes; pigs
Sandflies	• Leishmaniasis • Sandfly fever (phelebotomus fever)	Deforestation, construction of dams and irrigation schemes; domestic dogs are an important reservoir
Ticks	• Relapsing fever (borreliosis, or tick bite fever)	Presence of cattle and wildlife, especially rodents
Triatomine bugs	• Chagas disease (American trypanosomiasis)	Deforestation
Tsetse flies	• Sleeping sickness (African trypanosomiasis)	Contact between wildlife and cattle
Fleas	• Plague (transmitted by fleas from rats to humans) • Rickettsiosis	Presence of rodents
Black flies	• Onchocerciasis (river blindness)	Fast-flowing rivers and streams provide suitable habitat for *Simulium* spp.
Aquatic snails	• Schistosomiasis (bilharziasis)	Pools and slow-moving rivers and streams; dams and irrigation schemes
Fruit bats (Pteropodidae)	• Ebola virus • Marburg haemorrhagic fever	Presence of fruiting trees

Non-communicable diseases. Non-communicable diseases (NCDs) kill approximately 38 million people per year, 75 per cent of whom (28 million) live in low- to middle-income countries. Four conditions: cardiovascular disease (heat attack, stroke), cancer, respiratory diseases and diabetes account for 82 per cent of all deaths, with cardiovascular diseases accounting for 46 per cent, or 17.5 million deaths per year.

NCDs usually have a long duration and slow progression. The main drivers are ageing, rapid and unplanned urbanization, and unhealthy lifestyles. The latter includes use of tobacco, unhealthy diet, lack of exercise and the harmful use of alcohol, which individually or together can cause:

- raised blood pressure;
- high body mass and obesity (see below);
- hyperglycaemia (high blood glucose); and
- hyperlipidemia (high blood fat).

Poverty is closely linked to NCDs due to increased vulnerability, greater risks of exposure to harmful substances, and limited access to preventative health-care services. The WHO has thus identified the rise in NCDs in low- and middle-income countries as a major threat to the achievement of the Millennium Development Goals (MDGs) and the post-2015 Sustainable Development Goals (SDGs) (WHO, 2013).

38. **Nutritional disorders.** One of the main aims of IFAD projects is to improve nutrition in rural areas by improving crop yields, controlling diseases and improving food quality. One of the main goals of the Environmental and Social Impact Assessment (ESIA) is to identify project benefits, such as improved nutrition, and make sure that these are not just enhanced, but realized during project execution through careful management and monitoring. However, some agricultural projects could have unintended negative consequences on nutrition, for example, as a result of involuntary resettlement, or through the advent of fast foods to a previously remote area because of improved road access (an induced impact). As with all other health issues identified in this guidance statement, the sociocultural context (including the existing health status of the population) of the given project area needs to be taken into account when identifying risks to the nutritional status of a project-affected community.

39. Malnutrition occurs when a person is not getting enough, or too much food, or not getting the right kind of food. Even if people get enough to eat, they will become malnourished if the food they eat does not provide the proper amounts of micronutrients – vitamins and minerals – to meet the daily nutritional requirements. This affects childhood growth and development, disease resistance, work productivity, and foetal development in malnourished mothers.

40. Disease and malnutrition are closely linked. Sometimes disease is the result of malnutrition, sometimes it is a contributing cause. In fact, malnutrition is the largest single contributor to disease in the world, according to the United Nations Standing Committee on Nutrition.

41. Undernourishment is usually caused by insufficient intake of high-quality food. This is often related to high food prices and poverty and may be aggravated by the presence of disease,

which increases the body's nutrient requirements. Giardiasis, for example, which is commonly transmitted through water or food contamination, leads to malabsorption of nutrients causing undernourishment or malnutrition in extreme cases. Persistent diarrhoeal diseases caused by water contamination are also implicated in nutritional disorders. Undernutrition affects school performance and studies have shown it often leads to a lower income as an adult, thus perpetuating the poverty cycle. It also causes women to give birth to low birthweight babies (World Food Programme).

42. Overeating, especially of foods with high carbohydrate and saturated fats, can lead to obesity, diabetes and cardiovascular diseases. Diabetes is a chronic disease in which the pancreas does not produce enough insulin, or where the body cannot effectively use all the insulin produced. Since insulin regulates the blood sugar levels in the body, an impaired system can lead to damage to the heart, blood vessels, eyes, kidneys and nerves. Blindness, kidney failure and limb amputation are common outcomes for people suffering from diabetes.

43. Type 2 diabetes can affect anyone who has excess body weight, is inactive and has a poor diet. In 2014, the global prevalence rate of diabetes was estimated by the WHO to be 9 per cent of adults and it caused 1.5 million deaths in 2012. A large proportion (> 80 per cent) of diabetes deaths occur in low- to middle-income countries, and it is estimated that this will increase to become the seventh leading cause of death by 2030 (WHO, 2017).

44. As with other NCDs, the main ways to prevent diabetes from occurring and to remedy it once present are to maintain a healthy body weight, have regular exercise, keep to a healthy diet that is high in fibre and low in sugar and saturated fats, and avoiding the use of tobacco.

45. The WHO's global nutrition targets for 2025 are:

    - 40 per cent reduction in the number of children under 5 who are stunted;
    - 50 per cent reduction of anaemia in women of reproductive age;
    - 30 per cent reduction in low birthweight;
    - No increase in children being overweight;
    - Increase the rate of exclusive breastfeeding in the first six months, up to at least 50 per cent;
    - Reduce and maintain childhood wasting to less than 5 per cent.

46. These targets are supported by SDG2, which aims to end hunger, achieve food security and improved nutrition, and promote sustainable agriculture by 2030.

47. **Communicable diseases.** While subsistence farming is mainly carried out by a family unit, most larger-scale agricultural projects employ migrant or seasonal workers at some or all stages of the cropping, livestock or production cycle. Construction of agricultural infrastructure such as access roads, small dams and irrigation schemes, processing plants, etc., also often involve migrant workers. Many studies have shown that migrant farm workers are particularly at risk from contracting communicable diseases and causing the spread of these diseases for a number of

reasons: migrant worker health and safety standards on farms is often substandard, with workers living in cramped and unhygienic accommodation facilities; personal protective equipment is usually inadequate or not provided at all; workers are transported in overcrowded vehicles; migrants are often illegal and therefore have no recourse to state medical health-care facilities; there may be language and cultural barriers; there is often a lack of knowledge about communicable diseases and how to prevent them, especially sexually transmitted infections such as HIV, and workers are not given time off to seek medical help.

48. The main communicable or infectious diseases associated with agricultural projects which typically employ migrant or seasonal workers are:

    - human immunodeficiency virus (HIV);
    - sexually transmitted infections (STIs);
    - tuberculosis (TB);
    - hepatitis; and
    - meningitis.

49. **HIV.** HIV is spread through direct contact of bodily fluids from an infected person to an uninfected person primarily as a result of unprotected sexual intercourse, and from blood contamination resulting from direct contact, blood transfusions and shared needles. The subsequent transmission of HIV has now been shown to have had significant long-term social and economic consequences at the local community level, as well as nationally. The vulnerability of at-risk populations is a complex issue, where the social status of women, cultural practices, poverty, poor nutrition, money, alcohol and power are key drivers of the disease, as well as biological factors, such as already weakened immune systems from other diseases including malaria, other STIs, TB and hepatitis. Thus, worldwide, women tend to be more at risk than men. Even though antiretrovirals are becoming more readily available, this may not be the case in remote rural communities and/or in those countries where health-care systems are inadequate.

50. **Sexually transmitted infections.** STIs are caused by more than 30 different bacteria, viruses and parasites and are spread predominantly by sexual contact, including vaginal, anal and oral sex. Eight of these pathogens have been linked to the greatest incidence of illness. Of these eight infections, four are currently curable: syphilis, gonorrhoea, chlamydia and trichomoniasis. The other four viral infections are currently incurable (hepatitis B, herpes, HIV and human papillomavirus), but can be mitigated or modulated through treatment and other mitigation measures. Of concern is that some STIs can increase the risk of HIV acquisition threefold or more, and can have serious consequences beyond the immediate impact of the infection itself, through mother-to-child transmission of infections, foetal and neonatal deaths, cervical cancer and other chronic diseases.

51. As with HIV, the spread of STIs is exacerbated in the communities surrounding agricultural projects due to risky sexual behaviour. Both men and women are vulnerable to STIs, but women are most affected due to the same complex drivers as those driving the HIV epidemic and the fact that they are more likely to have HIV.

52. **Tuberculosis.** Although different forms of TB have been identified, it is primarily a lung disease which has been present in the world for centuries. It is caused by bacteria (*Mycobacterium tuberculosis*) that most often affect the lungs.[4] Tuberculosis is curable and preventable. It is transmitted via direct contact with sputum and aerosol droplets from affected persons. The use of tobacco greatly increases the risk of TB, with more than 20 per cent of cases globally being attributable to tobacco smoking. The TB epidemic is aggravated not only by smoking tobacco, but also by malnutrition and weakened immune systems – people who are HIV positive are 26-31 times more likely to get TB than healthy counterparts. In a further complication, TB accelerates progression to AIDS.

53. TB is a significant workplace challenge because of the airborne nature of the disease. In the workplace, employees can contract TB directly from actively infected persons or from breathing in air that contains the bacteria or from contact with infected cattle. The risk of workers contracting TB is higher in situations where they are in congregated settings, such as dormitory accommodations and on overcrowded vehicles.

54. The spread of TB is exacerbated in livestock rearing and dairy operations due to the fact that bovine TB can be caught by humans through contact with infected livestock and untreated milk. Dairy workers have more than twice the risk of contracting latent and active TB than non-dairy workers.

55. **Hepatitis.** According to the director of the Department of HIV/AIDS and Hepatitis of WHO, global mortality due to viral hepatitis is now outstripping deaths from HIV, tuberculosis or malaria, and whereas deaths as a result of HIV and malaria have been declining for several years due to improvements in prevention and treatment coverage, mortality due to hepatitis A, B and C is still rising. Hepatitis is an infectious disease that causes inflammation of the liver. Acute hepatitis can be self-healing with time or it can progress to fibrosis (scarring), cirrhosis or even cancer of the liver.

56. Hepatitis A and hepatitis E are transmitted by faecal contamination of water or food. These two viruses particularly affect children (who may play in contaminated water), poor areas with no formal sanitation systems, and men having sex with men. They do not cause chronic liver disease and are rarely fatal.

57. Hepatitis B used to be the most common form of hepatitis globally until the introduction of effective vaccinations in the 1980s. Because the hepatitis B virus is transmitted via blood, semen or vaginal fluids, sex workers, men having sex with men, people who inject drugs and health-care workers are particularly at risk, especially if their immune system is already compromised, e.g. with HIV. Thus, as with HIV and STIs, risky sexual behaviour around project sites can result in an increase in hepatitis B in the male workforce and general population, with women in the latter being more vulnerable due to the likely presence of other communicable diseases.

[4] This guidance statement focuses on the most common form of TB relating to development scenarios, i.e. the form of TB that affects the lungs. However, it should be noted that there are other forms of TB, such as laryngeal TB and various forms of extrapulmonary TB.

Hepatitis D virus infections occur only in those who are infected with hepatitis B. The dual infection of hepatitis D and hepatitis B can result in a more serious disease and worse outcome. Hepatitis B vaccines provide protection from hepatitis D infection.

58. The causes of hepatitis C transmission are less well known compared to hepatitis B, but the virus is spread via blood, and thus health-care workers, people who inject drugs, and possibly those with multiple and concurrent partners are susceptible to the disease.

59. **Meningitis.** Meningococcal meningitis is a bacterial form of meningitis, a serious infection of the thin lining that surrounds the brain and spinal cord. The extended meningitis belt of sub-Saharan Africa, extending from Senegal in the west to Ethiopia in the east (26 countries), has the highest rates of the disease, but sporadic outbreaks of this disease occur throughout sub-Saharan Africa.

60. The bacteria are transmitted from person to person through droplets of respiratory or throat secretions from carriers. Close and prolonged contact – such as kissing, sneezing or coughing on someone, or living in close quarters (in hostels, sharing eating or drinking utensils, for example) with an infected person (a carrier) – facilitates the spread of the disease. Even when the disease is diagnosed early and adequate treatment is started, 5 to 10 per cent of patients die, typically within 24 to 48 hours after the onset of symptoms. Children are particularly at risk, but anyone (male or female) who may have an existing disease, e.g. HIV, will be more vulnerable to contracting meningitis.

HEALTH, AGRICULTURE AND CLIMATE CHANGE

61. Climate change will cause a number of environmental changes which could affect human health in one or more ways. Where rainfall and flooding are predicted to increase (southeast Asia, Asia, the Caribbean, northern South America and West Africa), there will be an increased risk associated with vector-borne diseases, especially those carried by mosquitoes and ticks. Outbreaks of Rift Valley fever have been linked to El Niño events. It will also heighten the risk of bacterial pathogens associated with stagnant water and flooding, such as leptospirosis, anthrax and cryptosporidiosis (see table 14.2). Climate stress (heat, inadequate water and fodder) can lower animal immunity and resistance to zoonoses, resulting in increased exposure risks for humans.

62. On the other hand, drought and increasing aridity are inimical to most pathogens, while some, such as cysticercosis, bovine TB, rabies, brucellosis and echinococcosis are unlikely to be sensitive to climate change.

63. Hotter, drier conditions will result in greater amounts of dust and respiratory illnesses, while these conditions will also increase the risks of heat stroke.

Key issues to consider at each stage of the Environmental and Social Impact Assessment process to prevent or minimize health impacts

64. Table 14.4 sets out some of the key issues that need to be considered at each stage of the Environmental and Social Impact Assessment (ESIA) process in order to identify potential health risks. Note that an ESIA would only be required for category A projects, i.e. those projects which by the nature, size, scope or location could have a significant impact on the environment (including human health). The point of this table is to ensure that all health issues are given consideration and that if they are not relevant to the particular project, they can be omitted from further study.

Table 14.4. Key issues to consider at each stage of the ESIA process

Question	Health impact	Possible mitigation
Design and planning		
Will the project use wastewater or water contaminated with human and animal excreta?	Waterborne diseases, e.g. diarrhoea, dysentery, cholera, typhoid, giardia	- Avoid the use of untreated sewage effluent as a source of irrigation water. - Monitor and analyse potential irrigation water source(s) for microbiological contaminants and pathogens. - Identify sources of potential pollution, e.g. livestock drinking spots, laundry washing areas, community bathing areas, long drop toilets. **(See guidance statement 7)**
Will the project create additional habitats suitable for disease vectors, e.g. borrow pits, sumps, ponding, deforestation?	Vector-borne diseases (see table 14.3)	- Design the project to avoid creating ponds or dams near human habitation. - Rehabilitate borrow pits once complete. - Minimize the amount of deforestation. - Avoid creating areas of shallow fast-flowing water in blackfly habitats. **(See guidance statements 7 and 8)**
Will the project require inputs of fertilizers and other modifying agents?	Exposure to chemicals and antibiotics	- Consider safer alternatives. **(See guidance statement 2)**
Will the project require use of pesticides?	Exposure to pesticides (see table 14.1)	- Consider safer alternatives. **(See guidance statement 2)**

Question	Health impact	Possible mitigation
Will the project include the upgrading of rural roads?	Traffic accidents and injuries	- Design road with a hard shoulder at least 2 m wide. - Install speed reduction devices before villages, busy intersections, bus stops, schools, clinics, etc. - Install road safety signs. - Appoint a subcontractor to carry out road safety and awareness campaigns. - Advise livestock owners about the dangers of allowing cattle to graze on road verges and make alternative arrangements. **(See guidance statement 10)**
Is the project located in an area which is being, or has been, polluted by an external source (e.g. a mine, smelter, industry)?	Respiratory diseases, cancer, developmental disorders	- Assess previous and current land use surrounding the proposed project site, especially within potential pollution plumes from a source (air, surface water and groundwater). - If a risk of potential contamination is identified, conduct detailed soil, water and vegetation pollution surveys in the project area to determine whether a significant health risk is present.
Construction		
Will the project require migrant workers to construct it?	Communicable diseases, e.g. HIV, STIs, TB, hepatitis	- Employ local labour as much as possible. - Avoid overcrowding in accommodation facilities. - Provide adequate ablution facilities at the construction camp and at work sites. - Allow time off for regular health screening and testing. - Provide education and training with workers and local communities about communicable diseases and effective prevention.
Will construction workers have to work with contaminated water?	Waterborne diseases	- Use of personal protective equipment (PPE). - Provision of adequate ablution facilities and field toilets. - Education and awareness training of workers. - Ongoing water quality monitoring. - Health surveillance.
Will the project require clearance of vegetation?	Vector-borne diseases, respiratory illnesses (inorganic dust)	- Use of PPE and insect repellents. - Dust suppression. - Minimize amount of clearance. **(See guidance statement 1)**

Question	Health impact	Possible mitigation
Will the construction of the project require large numbers of vehicles and machinery, deliveries etc.?	Traumatic injuries	- Driver and equipment operator education and awareness programmes. - Speed control and enforcement. - Road safety awareness campaigns for the local communities. - Erection of barriers and signage around all construction sites. - Provide alternative routes for pedestrians, cyclists and non-construction traffic.
Will the construction project require workers to work outside in extreme heat or cold?	Heat stroke, skin cancer, hypothermia	- Provide appropriate PPE. - Provide adequate shelter for resting. - Provide sufficient quantities of potable water.
Will the construction of project components cause hazardous waste (e.g. chemical containers, bitumen waste)?	Cancer, developmental disorders	- Dispose of all hazardous waste at a licenced hazardous waste disposal site. If such a site is not available, bury such wastes in a deep pit located away from a water course, boreholes used for water supply and agricultural land.
Operation of project		
Will the project require migrant or seasonal workers to plant or harvest produce	Communicable diseases, e.g. HIV, STIs, TB, hepatitis	- Employ local labour as much as possible. - Avoid overcrowding in accommodation facilities and farm transport. - Provide adequate ablution facilities at the farm and in the field. - Allow time off for regular health screening and testing. - Provide education and training with workers and local communities about communicable diseases and effective prevention.
Will the project rely on manual labour to plant, cultivate and harvest crops?	Musculoskeletal disorders; respiratory illnesses from inorganic dust; cancers and other disorders from contact with pesticides; skin cancer; heat stroke or hypothermia; water and soil-borne pathogens; dermatoses; traumatic injury	- Till and plant when soil is moist. - Provide adequate shelter, PPE, sunscreen. - Ensure that safe field re-entry times are observed after pesticide spraying. - Worker awareness training.
Will the project mostly use mechanical means to plant, cultivate and harvest crops?	Musculoskeletal disorders; hearing loss; traumatic injury; respiratory illnesses	- Plough when soil is moist. - Enclose cabs of farm equipment and vehicles and provide air conditioning. - Maintain all vehicles and equipment in good working order. - Provide education and training on the safe use of vehicles and equipment.

Question	Health impact	Possible mitigation
Will the project involve crop processing, such as threshing, milling, sorting, storing, canning, washing, packing, etc.?	Respiratory illnesses from organic dusts, endotoxins, moulds, bacteria, etc.; musculoskeletal disorders	- Use of PPE. - Education and training on occupational health and safety issues.
Will the project require the input of fertilizers and other modifying agents?	Disorders from exposure to chemicals and antibiotics; dermatoses	- Use of PPE. - Safe storage, handling and disposal of chemical containers. - Provide education and training on the safe use of agricultural chemicals. **(See guidance statements 2 and 4)**
Will the project require the use of pesticides?	Cancer, neurological and reproductive effects, etc., from exposure to pesticides; dermatoses	- Use of PPE. - Safe storage, handling and disposal of pesticide containers. - Provide education and training on the safe use of pesticides. **(See guidance statement 2)**
Will the project involve irrigation and/or the use of contaminated water?	Waterborne diseases; vector-borne diseases	- Use of PPE and insect repellents. - Provision of adequate ablution facilities and field toilets. - Provision of treated mosquito nets. - Education and awareness training of workers. - Ongoing water quality monitoring. - Health surveillance. - Water management to avoid ponding and pools of stagnant water. **(See guidance statements 7 and 8)**
Will the project involve livestock – extensive and intensive systems and animal products (dairy, skins, meat, etc.)?	Zoonoses (see table 14.2); respiratory illnesses	- Use of PPE. - Animal infection control, such as vaccination, health surveillance, disinfection of work areas, isolation of diseased animals, and proper disposal of infected tissues and carcasses, etc. - Human health surveillance. - Early diagnosis and treatment. - Provide education and training on zoonoses – their causes and effects. **(See table 14.2 and guidance statement 6)**
Will the project include sugar cane growing and processing?	Respiratory illnesses from sugar cane burning; bagassosis	- Use PPE
Will the project involve growing and processing biofuels?	Respiratory illnesses from ethanol vapours, organic dusts, endotoxins and fungi; hearing loss; dermatoses from contact with chemicals	- Use PPE

Question	Health impact	Possible mitigation
Will the project involve growing and processing plants for vegetable oils?	Respiratory illnesses from vegetable oil mist, organic mists, hexane and other solvents, organic dusts, endotoxins and fungi; hearing loss; dermatoses from contact with chemicals	- Use PPE
Will the project cause an increase in the amount of traffic on rural roads?	Traumatic injury; communicable diseases	- Driver training. - Speed enforcement and control. - HIV awareness training on causes and prevention of HIV.

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