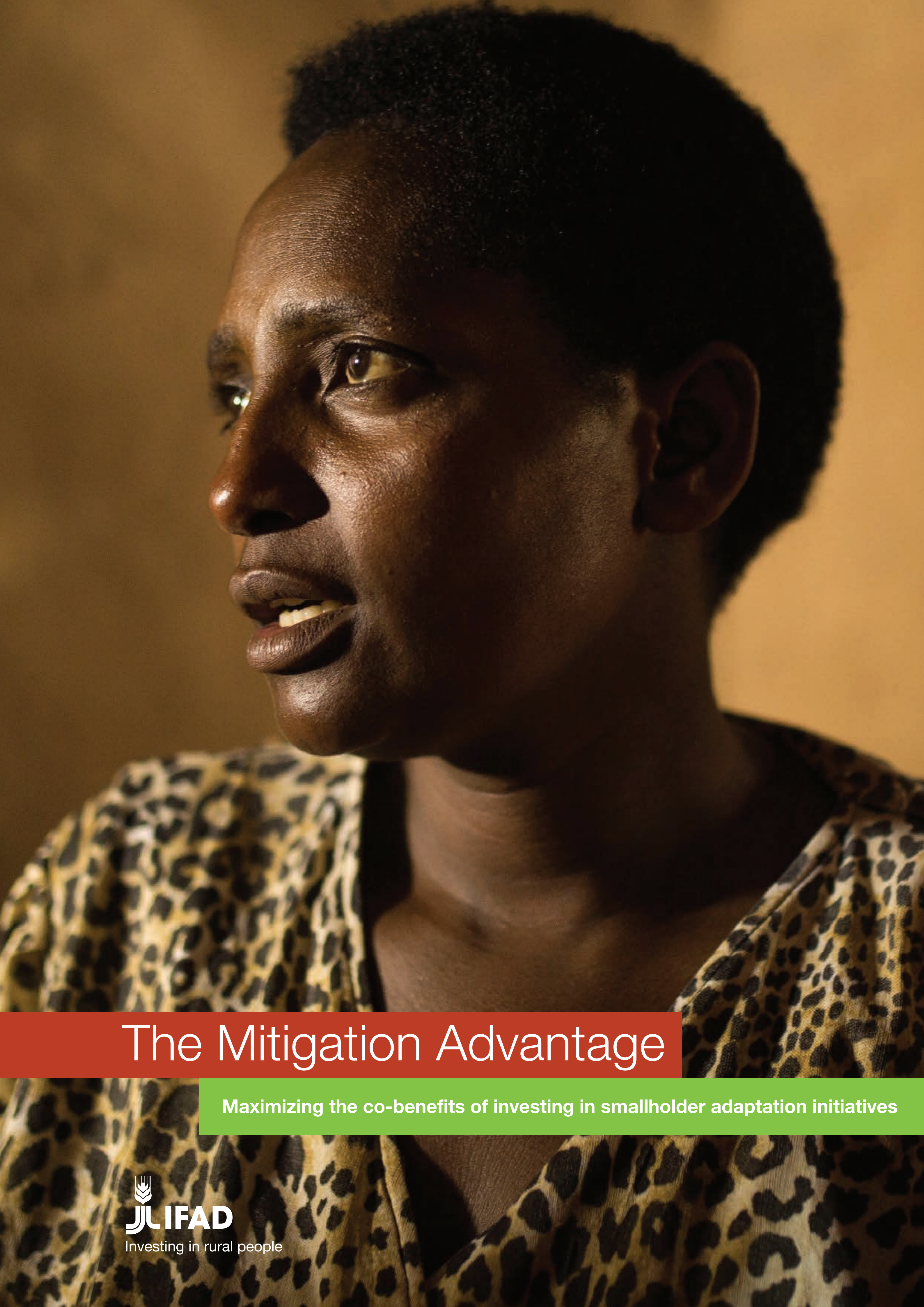

The Mitigation Advantage

Maximizing the co-benefits of investing in smallholder adaptation initiatives

IFAD
Investing in rural people

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Abbreviations and acronyms

AFOLU	agriculture, forestry and other kinds of land use
ASAP	Adaptation for Smallholder Agriculture Programme
CCAFS	CGIAR Research Program on Climate Change, Agriculture and Food Security
CSA	climate-smart agriculture
EX-ACT	EX-Ante Carbon-balance Tool
FAO	Food and Agriculture Organization
GEF	Global Environment Facility
GHG	greenhouse gas
IFAD	International Fund for Agricultural Development
IPCC	Intergovernmental Panel on Climate Change

Introduction

Smallholders' role in climate change adaptation and mitigation

The Intergovernmental Panel on Climate Change (IPCC) has highlighted a critical trade-off between agricultural development and climate change mitigation. On the one hand, agriculture, forestry and other kinds of land use (AFOLU) account for about a quarter of net human-induced greenhouse gas (GHG) emissions. These emissions are mainly caused by deforestation, as well as soil and nutrient management practices, and livestock. For example, in the ten years since 2001, agricultural emissions from crop and livestock production – mainly in developing countries – grew from 4.7 billion tons of carbon dioxide equivalents (CO_2e) to over 5.3 billion tons – a 14 per cent increase (IPCC, 2014). However, agriculture is central to global food and nutrition security, in particular for millions of smallholders for whom it is the main source of livelihood. Smallholders are, therefore, both dependent on agriculture and contributors to related emissions – but they also hold the key to reducing these emissions if supported through innovative and holistic programming.

IFAD's mitigation commitments

The International Fund for Agricultural Development (IFAD) is aware of the need to support smallholders in the development of farming systems with a low carbon footprint. In 2009, IFAD began developing its climate change mitigation portfolio; in 2010, IFAD's Climate Change Strategy committed it to helping smallholder farmers take advantage of available mitigation incentives and funding.[1]

As IFAD steps up its efforts to support rural smallholders to adapt to climate change, it places centre stage the need to promote climate-smart agriculture (CSA) and to address the interlinked challenges of food security and climate change by:

- Sustainably increasing agricultural productivity to support equitable increases in farm incomes, food security and development
- Building resilience of agricultural and food security systems to climate change at multiple levels and
- Reducing greenhouse gas emissions from agriculture (including crops, livestock, and fisheries).[2]

IFAD's innovative climate financing mechanism, the Adaptation for Smallholder Agriculture Programme (ASAP), is primarily focused on boosting smallholders' resilience to the impacts of climate change.[3] While the focus is on adaptation, ASAP

1 For example, projects in Mexico and the Bolivarian Republic of Venezuela promote climate-friendly rural development by increasing the carbon sequestration potential of land use, land-use change, and forestry activities. See *The GEF Advantage: Partnering for a sustainable word* (IFAD, 2014) for further examples.

2 http://www.fao.org/climatechange/climatesmart/en/

3 Launched in 2012 and operating in over 40 countries, ASAP has become the largest global financing source dedicated to supporting the adaptation of poor smallholder farmers to climate change.

also sets targets for climate change mitigation, in keeping with IFAD's commitment to CSA and a 'multiple benefits' approach to adaptation. One of ASAP's ten indicators is to avoid or sequester 80 million tons of GHG emissions by the year 2020.

Smart investments in smallholder adaptation can also deliver important mitigation co-benefits

A new study, conducted by the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) in collaboration with the Food and Agriculture Organization of the United Nations (FAO) and IFAD, confirms that smart investments in smallholder adaptation can deliver mitigation co-benefits (CCAFS, FAO, IFAD, 2015). The study undertook an analysis of 13 projects supported by ASAP using an approach developed by the FAO.

The EX-Ante Carbon-balance Tool (EX-ACT) is an appraisal system that provides ex-ante estimates of the impact of agriculture and forestry development projects, programmes and policies on the carbon balance. The carbon balance is defined as the net balance from all GHGs that were emitted or sequestered due to project implementation, expressed in tons of CO_2e. In other words, it refers to the difference that a project makes compared with a 'business as usual' situation, where 'project' refers to an IFAD investment that includes ASAP and other financing. EX-ACT helps project designers to assess and prioritize project activities with benefits in economic and climate change mitigation terms.

According to the aforementioned study, the 13 analysed projects could provide mitigation co-benefits of up to 30 million tons of CO_2e via emission reductions and carbon sequestration resulting from project implementation.[4] This corresponds to approximately 38 per cent of the ASAP target of 80 million tons of CO_2e.

The study also finds that scaling up a number of project actions could significantly increase GHG mitigation. Given that ASAP's portfolio is expanding, and today includes 43 projects under design or implementation, the potential mitigation co-benefits are likely to be significant.

Different contexts, different pathways

The study analysed IFAD investments supported by ASAP in Bangladesh, the Plurinational State of Bolivia, Chad, Djibouti, Ghana, Kyrgyzstan, Mali, Mozambique, Nicaragua, Nigeria, Rwanda, Viet Nam and Yemen.[5] It found that these projects, which have adopted different, context-specific approaches and adaptation priorities based on vulnerability analyses, contribute to mitigation goals in different ways.

Figure 1 shows the GHG carbon balance by project.[6] It can be seen that the extent and nature of mitigation co-benefits vary significantly among projects. For example, the projects in Nigeria and Kyrgyzstan have the highest overall project mitigation benefits of around 8 million tons of CO_2e, despite a low carbon balance per hectare (see figure 2), partly because of their vast geographical scale. In Kyrgyzstan, the

4 These benefits would occur over the 20 years between 2013 and 2034; a 20-year time frame is the basis of the EX-ACT tool calculations.

5 See http://www.ifad.org/climate/asap/factsheets/ for information on these and other projects.

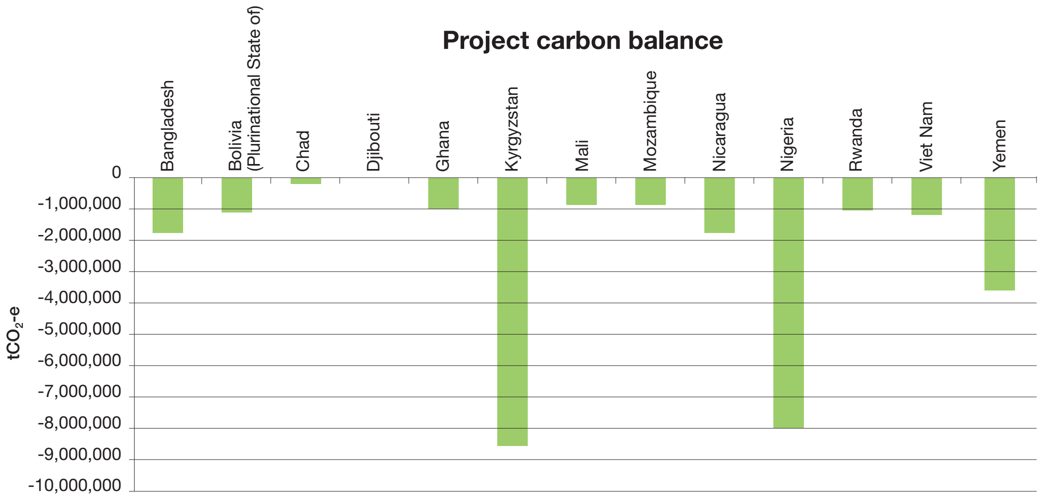
6 Here and throughout this publication, the word 'project' refers to IFAD investments that include ASAP and other cofinancing.

mitigation benefits come mainly from grassland rehabilitation (11 million tons of CO_2e) and better fodder crop management (47 million tons of CO_2e). In Nigeria, increasing soil carbon in the annual cropland through better water management, increased use of animal manure and organic matter inputs from crop residues, and crop rotation with legumes provide the greatest benefits (4 million tons of CO_2e).

In contrast, the project in Nicaragua – which covers areas of 100,000 hectares or less – promotes actions that provide strong mitigation benefits per unit area of land and thus contributes a significant total carbon balance of around 2 million tons of CO_2e or more. The projects in the Plurinational State of Bolivia, Ghana, Mali, Mozambique, Rwanda, and Viet Nam could all provide mitigation benefits of around 1 million tons of CO_2e; the study therefore characterizes them as having a moderate impact on mitigation. The projects in Chad and Djibouti, in contrast, are projected to have a relatively modest total carbon balance.

Figure 1
Total carbon balance by project

Wide variations: Kyrgyzstan and Nigeria leading with 8 million tons of CO_2e and more mitigated compared with 'without project' scenario



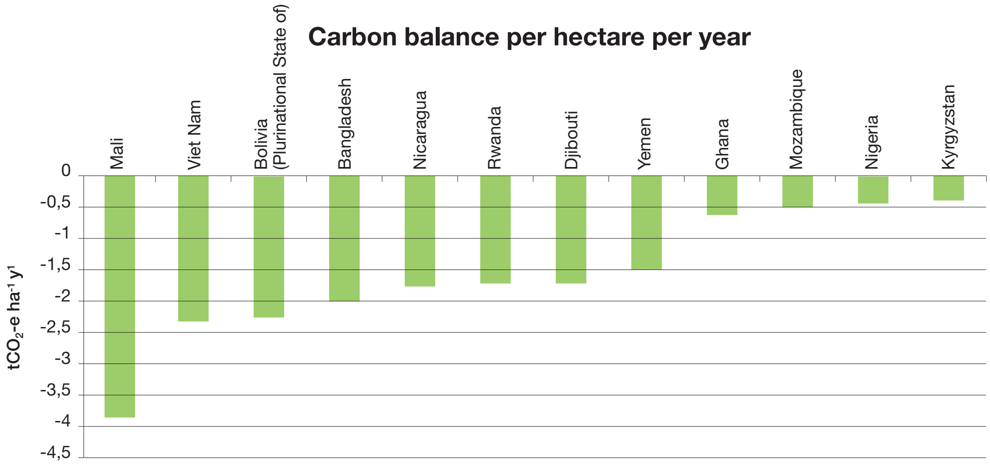
Source
Total project Carbon Balance. CCAFS, FAO and IFAD. 2015.

Figure 2 compares project carbon balance in terms of impact per hectare per year. Some projects appear to have a higher mitigation potential. For example, Mali's afforestation efforts and the introduction of perennial crops give it the highest impact density potential of over 3.5 tons of CO_2e per hectare per year.[7] In Djibouti, the rehabilitation of even a limited mangrove area yields strong benefits per hectare, even though the overall project carbon balance is low due to its modest scale and an increase in the fishing fleet, which is expected to increase consumption of fossil fuels. Similarly, Viet Nam's modest overall project carbon balance needs to be seen alongside a higher per hectare mitigation potential, largely due to improved rice varieties and a greater mix of crops.

7 In Mali, afforestation and cultivation of perennial crops contribute a carbon balance of 466,312 and 303,600 tons of CO_2e, respectively.

Figure 2
Carbon balance per hectare per year by project

A different picture: Mali leads with almost 4 million tons of mitigated of CO_2e per hectare per year as compared with 'without project' scenario

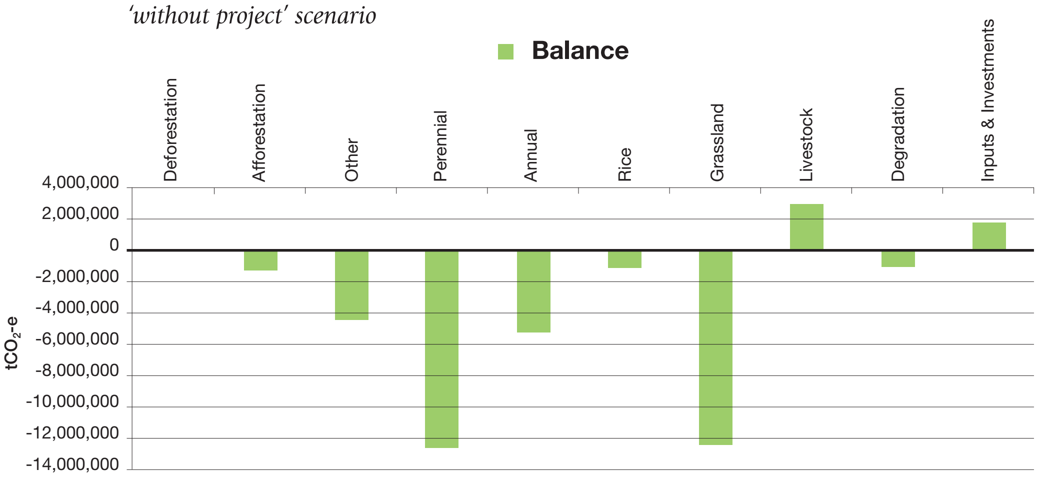


Source
Carbon balance by hectare per year. CCAFS, FAO and IFAD. 2015.

When considering the carbon balance of the 13 projects by activity type, the study found that most of the mitigation benefits lie mainly in grassland management and annual crop management, whereas livestock development is responsible for the highest level of emissions (see figure 3).

Figure 3
Carbon balance of 13 projects by activity

Main mitigation benefits from grassland and annual crop management compared with 'without project' scenario



Source
GHG balance. CCAFS, FAO and IFAD. 2015.

Tackling trade-offs between agriculture and climate change mitigation

The following pages present three case studies which highlight some of the ways in which IFAD is working to strengthen smallholders' resilience to climate change, as well as to achieve mitigation objectives. They illustrate the trade-offs between climate-resilient agriculture and mitigation gains, but also affirm that adaptation investments for smallholders can indeed deliver important mitigation co-benefits for everyone.

Two of the projects in the following case studies – in Kyrgyzstan and Mali – have the potential to achieve a significantly higher project-level carbon balance as a result of scaling up efforts. While the project in Kyrgyzstan can be classified as a source of net emissions, these emissions are projected to decrease as a result of the project. On the other hand, the projects in the Plurinational State of Bolivia and Mali transform agricultural interventions into a carbon sink, while the 'without project' scenario would have been an emissions source.

In summary, smallholders emerge as part of the solution to climate change through their willingness to adopt new agricultural practices that bring multiple benefits in the short term, as well as over the longer term. The final section draws some conclusions about priorities and suggests the next steps for IFAD.

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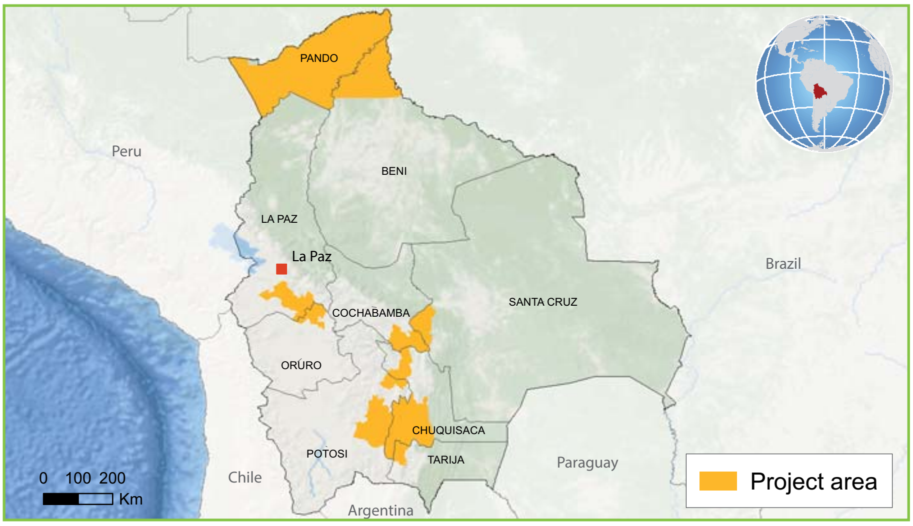
Case Study 1: the Plurinational State of Bolivia



Overview

In the Plurinational State of Bolivia, improved agronomic practices and land rehabilitation are two key strategies for increasing resilience to climate change impacts on the livelihoods of rural communities. This is the main objective of the Economic Inclusion Programme for Rural Families and Communities in the Territory of the Plurinational State of Bolivia, funded by the Adaptation for Smallholder Agriculture Programme (ACCESOS-ASAP). The programme demonstrates how a participatory approach to developing resilience can yield mitigation co-benefits. It also illustrates the trade-offs between a top-down and rigid project management approach and a more flexible, bottom-up one.

Quick facts

Project name	Economic Inclusion Programme for Rural Families and Communities in the Territory of the Plurinational State of Bolivia, funded by the Adaptation for Smallholder Agriculture Programme (ACCESOS-ASAP)
ASAP project duration	2014 - 2017
Projected project carbon balance (the net change in emissions as a result of the project, as indicated by the FAO EX-ACT tool)	- 1.1 million tons of CO_2e over 20 years or - 2.2 tons of CO_2e per hectare per year The negative value indicates that the project results in a net reduction of emissions.

Development and adaptation dimensions

A participatory methodology developed by CARE, the Climate Vulnerability and Capacity Analysis (CVCA),[8] was used to understand the vulnerabilities, capacities and needs of rural communities in 20 priority municipalities of ACCESOS. Community members were found to be concerned with climate variability, drought, frost, hail and floods, which badly affect crops and livestock – but also interested in the opportunities created by increasing temperatures in the highlands, such as the possibility to grow fruit trees, which have a higher market value than traditional crops. The poorest and most populated regions of the highlands and valleys are also subject to deforestation resulting from firewood use, because fuels such as kerosene and butane gas are not readily available. This exacerbates the impact on livelihoods, leading to the loss of crops, livestock, infrastructure, and increased conflict over scarce resources. Deforestation is also contributing to the emission of GHGs.

Project solutions

ACCESSOS-ASAP aims to promote greater resilience of target communities and their productive activities to the impacts of climate change. ASAP resources complement the first component of ACCESSOS, which focuses on natural resource management, as well as investment in assets and enterprise development. Additional actions contributing to climate change mitigation include:

- **Capacity development of local communities to promote awareness of climate change issues and experience-sharing in endogenous adaptation strategies.** This will be followed by the development of 'talking maps'," an effective visual and inclusive form of natural resource mapping, especially suitable in areas with low literacy. This method brings together science and traditional community knowledge to identify key issues and adaptation priorities, and facilitates sensitization of communities to adaptation issues that have mitigation co-benefits.

8 See http://www.careclimatechange.org/index.php?option=com_content&view=article&id=25&Itemid=30

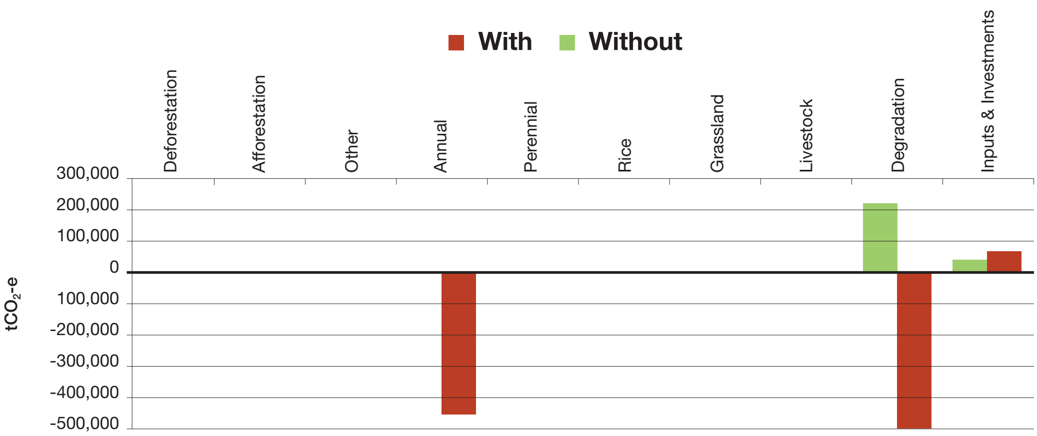
- **Development of a menu of priority adaptation options for funding through community-based small grants called *concursos*.**[9] The sensitization measures are expected to lead to the rollout of land management options that will result in 6,000 hectares of degraded land being restored and rehabilitated.

Mitigation potential

Figure 4 shows the expected benefits of the 'with project' scenario (in red) compared with a 'without project' scenario (in green). These benefits stem mainly from carbon sequestration that could be achieved through the rehabilitation of forested areas, resulting in a reduction of around -478,000 tons of CO_2e. In comparison, the 'without project' scenario that envisages an increase in forest degradation would results in emissions of over 200,000 tons of CO_2e. Benefits are also generated by the improved management of annual crops, such as onion, beans and groundnut, as well as better water management (estimated at -430,000 tons of CO_2e). However, the use of fertilizer in the fields and fuel for vehicles, as well as the construction of infrastructure are dampening some of this effect, resulting in moderate GHG emissions in both scenarios.

Figure 4
GHG fluxes with and without project in the Plurinational State of Bolivia

Forest rehabilitation has the highest mitigation potential in the Plurinational State of Bolivia



Source
Project GHG fluxes and GHG balance (table 20). CCAFS, FAO and IFAD. 2015.

9 A system of local competitions, which has been tested in other IFAD-funded projects and found to be a successful mechanism for releasing funding while encouraging communities to engage in natural resource management.

Nevertheless, this kind of participatory and flexible approach does mean that some uncertainty is inevitable. If communities make very different choices from those expected, the carbon balance of the project will also be different. This requires IFAD and the Government of the Plurinational State of Bolivia to work closely with the local communities, monitoring and screening their adaptation investments through a mitigation lens. The approach in the Plurinational State of Bolivia shows the importance of capacity-building in achieving longer-term mitigation and adaptation gains, while ensuring that smallholders actively take part in making farming choices that have mitigation benefits.

Overall, the project in the Plurinational State of Bolivia represents a carbon sink, resulting in a potential reduction of -830,052 tons of CO_2e. On the other hand, the 'without project' scenario would have been an emissions source, generating an estimated 280,216 tons of CO_2e.

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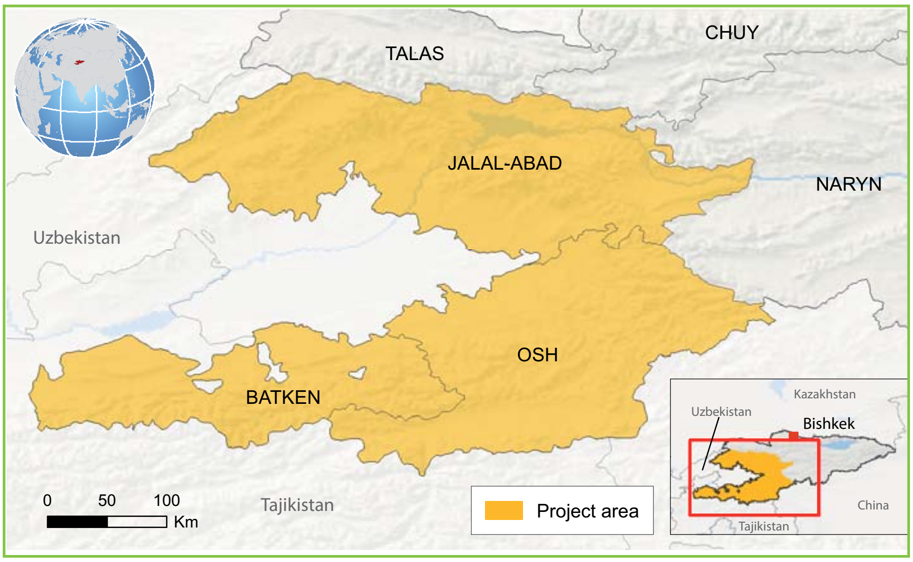
Case Study 2: Kyrgyzstan



Overview

Livestock's carbon footprint is acknowledged as a comparatively significant one, but it is also increasingly recognized that effective livestock management can contribute to climate change mitigation (FAO, 2006). The Livestock and Market Development Programme II (LMDP II) in Kyrgyzstan is an example of an IFAD intervention that delivers adaptation and nutrition benefits, while achieving a relatively strong carbon balance with good scaling-up potential.

Quick facts

Project name	Livestock and Market Development Programme (LMDP II)
Project duration	2013 - 2020
Projected carbon balance (the net change in emissions as a result of the project, as indicated by the FAO EX-ACT tool)	-8.6 million tons of CO_2e over 20 years or -0.4 tons of CO_2e per hectare per year The negative value indicates that the project results in a net reduction of emissions.

Development and adaptation dimensions

Kyrgyzstan has limited arable land; livestock and pastures constitute the main livelihood system for many rural people.[10] Livestock is affected by increased disease and mortality, partly as a result of climate change impacts. A vulnerability assessment has found that many of the pastures are severely degraded, with climate change further accelerating their degradation.

The aforementioned vulnerability assessment, conducted to inform project design, identified how climate change is reducing the productivity of pastures, as well as how temperature increases are creating new summer pastures at higher altitudes that were not accessible before. It made a number of recommendations, including to restore degraded pastures and prevent soil degradation, as well as to install an early warning system.

Project solutions

The ASAP-supported IFAD programme aims to tackle animal health and mortality, as well as to rehabilitate degraded pastures as part of a multi-pronged adaptation strategy. Relevant actions include:

- **Supporting community-based pasture management and reducing vulnerability** by assisting pasture users' unions and pasture committees to develop and implement community-based pasture management plans that integrate climate change and disaster risk management concerns, including animal health issues.
- **Improving livestock health and production services** by promoting effective private veterinary services from community vets, building the capacity of community vets through training, supporting community-level animal health sub-committees of pasture committees, and providing scholarships and incentives to entice young people to work with communities in programme areas. The programme will also strengthen the institutional framework concerned with developing animal health in Kyrgyzstan and address related capacity-building needs, which should enhance the longer-term potential for climate change mitigation.

10 http://www.new-ag.info/en/country/profile.php?a=1740

- **Establishing a functional early warning system** for extreme weather events, including more frequent heat waves and more intense rains and snowfall.

A further expected benefit of the project will be improved nutritional outcomes at the national level, resulting from the production, processing and marketing of improved quality milk.

Mitigation potential

The project is embedded in extensive livestock production systems, which offer good opportunities for decreasing GHG intensity through improved animal health. Improved animal health allows herd sizes to be reduced (meaning fewer, more productive animals). However, GHG impacts of these measures are relatively modest in magnitude.

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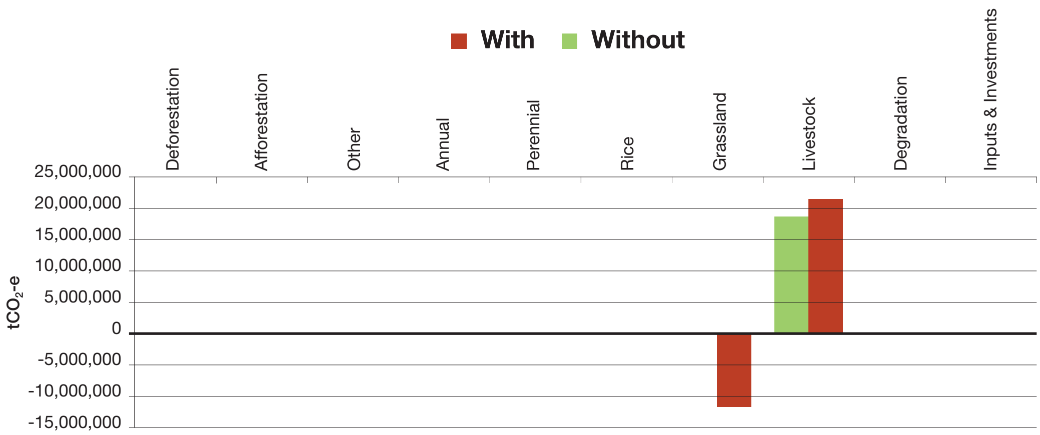
Figure 5
GHG fluxes with and without project in Kyrgyzstan

Grassland rehabilitation has the highest mitigation potential in Kyrgyzstan



Source
Table 14: Project GHG fluxes & GHG balance. CCAFS, FAO and IFAD. 2015.

On the other hand, as shown in figure 5, grassland rehabilitation and improved pasture management promise strong mitigation outcomes – about 11 million tons of CO2e.[11] This high mitigation potential of pasture rehabilitation not only compensates for the increased livestock-related GHG emissions of the project, but actually transforms the project as a whole into one with a relatively high carbon balance, with mitigation impacts mainly due to the scale of planned grassland improvements.

In Kyrgyzstan, the mitigation gains from the adaptation project actions are not insignificant. Although overall the 'with project' scenario is a net emitter of GHGs, as may be expected with livestock development projects, these emissions are likely to be significantly reduced as a result of the project.

11 Source: Table 14. EX-ACT results: GHG fluxes. CCAFS, FAO, IFAD. 2015.

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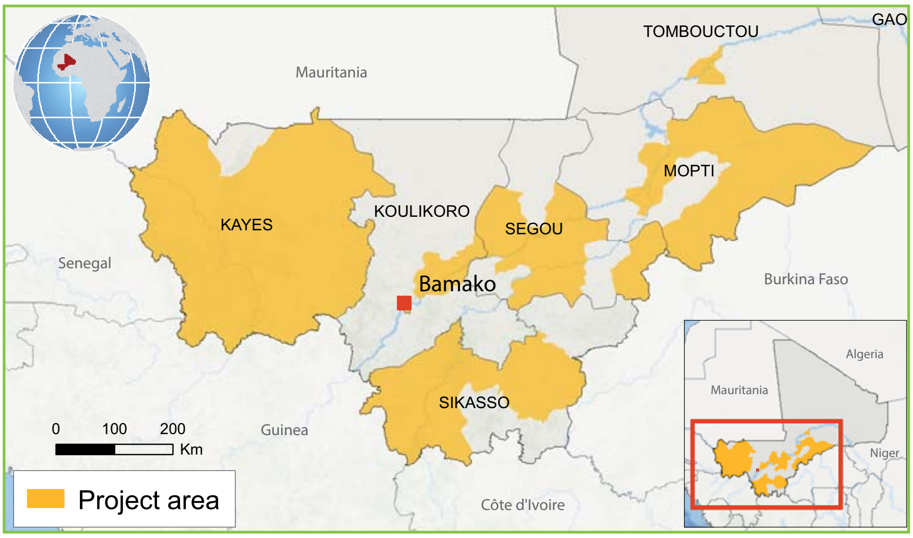
Case Study 3: Mali



Overview

Despite offering a modest overall carbon balance of less than 1 million tons of mitigated CO_2e, the project in Mali emerges as having by far the strongest mitigation density potential per hectare out of the 13 analysed IFAD projects. This is the result of the project design, which promotes climate-resilient agriculture based on an ecosystems approach beyond the farm-plot level, and the adoption of agroforestry as a three-pronged climate resilience, mitigation and food security strategy.

Quick facts

Project name	Fostering Agricultural Productivity Project, with financing from the Adaptation for Smallholder Agriculture Programme (PAPAM/ASAP)[12]
Project duration	2012-2017 (ASAP funding 2014-2017)
Projected carbon balance (the net change in emissions as a result of the project, as indicated by the FAO EX-ACT tool)	-0.8 million tons of CO_2e over 20 years or -3.9 tons of CO_2e per hectare per year The negative value indicates that the project results in a net reduction of emissions.

Development and adaptation dimensions

Climate trends in Mali show an increase in the average temperature across the country, a gradual decrease in mean annual rainfall, and an increase in the frequency and magnitude of extreme weather events, such as droughts, floods and strong winds. More specific impacts on rain-fed farming systems, especially cotton and maize in the Sikasso and Kayes regions, include late rains and shortened growing seasons. Even though average annual rainfall is decreasing overall, episodes of heavier rains following longer dry periods cause floods, soil erosion, and destruction of rural infrastructure, including irrigation schemes and roads.

Droughts in the north intensify the migration of people and animals to the south, increasing pressure on natural resources and deforestation, clearing of land for agriculture, overuse of soil, and loss of biodiversity. All this contributes to lower crop yields and less availability of wild food, the disruption of agricultural production, and an overall increase in household poverty and food insecurity.

Although the programme focuses on irrigation, water management, and sustainable land management at plot level in order to increase the yield per hectare, it recognized from the outset that climate-resilient agriculture requires an ecosystems approach. An approach focused on irrigated plots alone can be ineffective if the deforestation surrounding the watershed causes soil degradation, siltation and flooding during exceptional rainfall events.

Project solutions

ASAP will support the following main areas from a mitigation perspective:

- **Transfer of technologies and producer services.** Innovative renewable energy technologies, such as various types of biogas digesters, with or without solar equipment, will be piloted in order to alleviate pressure on forests, with the best-performing technologies to be scaled up.

12 *Programme d'amélioration de la productivité agricole au Mali* (PAPAM).

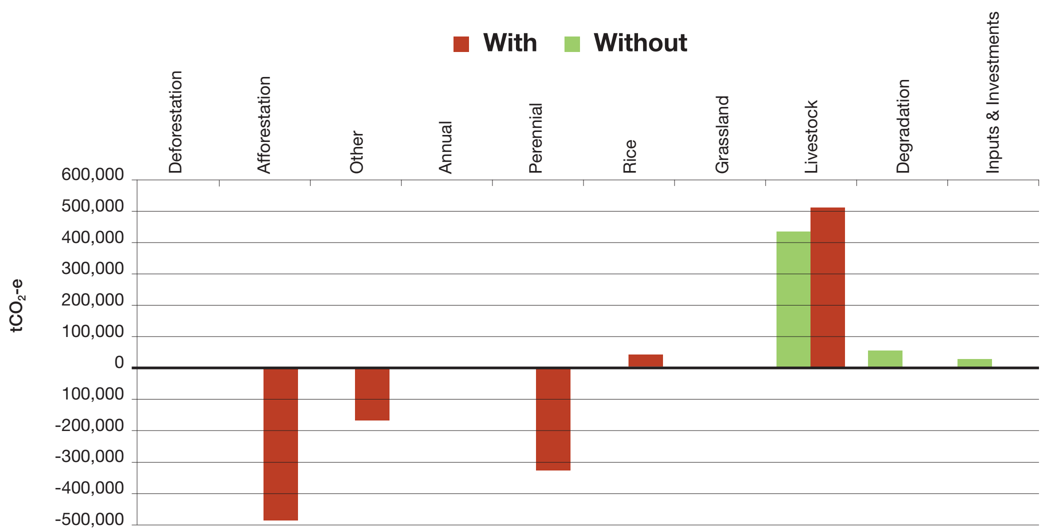
- **Community-based climate change adaptation projects.** These projects will employ participatory processes to prioritize collective investments financed by ASAP. They are expected to help reforest degraded watersheds, increase areas covered by agroforestry, protect irrigated areas from flooding, and regenerate low groundwater tables.
- **Better access to weather information.** The project will enable farmers to source climate data and benefit from improved weather information services. The farmers will also benefit from training and provision of basic meteorological equipment.

Mitigation potential

As figure 6 shows, the main benefits of PAPAM/ASAP are expected to come from afforestation, better cropping systems, land rehabilitation and renewable energy technologies. On the whole, the benefits of the 'with project' scenario far outweigh the emissions from livestock development supported by the original investment.

Figure 6
GHG balance with and without project in Mali

Afforestation has highest mitigation potential in Mali



Source
Figure 10. EX-ACT results: GHG balance. CCAFS, FAO and IFAD. 2015.

Thus the project in Mali is a net carbon sink, resulting in an overall reduction of -349,068 tons of CO_2e. The 'without project' scenario would have been a source of emissions estimated at 533,069 tons of CO_2e.

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Conclusions and looking ahead

As the case studies show, adaptation-focused projects offer important entry points for tackling the negative impacts of agriculture on global GHG emissions. Mitigation co-benefits can vary significantly, depending on the type of interventions, the geographical scale of investments, and the agroecological conditions. However, holistic design can make it possible to avoid emissions and sequester carbon while helping smallholder farmers adapt to climate change and provide food for a growing population.

Project activities with the biggest mitigation co-benefits

The mitigation potential of the 13 projects analysed by the study comes mainly from land rehabilitation, improved cropland management practices, and the establishment of agroforestry systems. Land rehabilitation has strong positive impacts on soil carbon sequestration per hectare. In contrast, improved cropland management has a relatively lower impact per hectare, but offers multiple other benefits, such as better soil fertility, nitrogen use efficiency, and improved water holding capacity. Significantly, the main sources of mitigation co-benefits in the analysed projects broadly correspond to IPCC findings on the most cost-effective mitigation options (see box).

Box: Cost-effective climate smart strategies

The most cost-effective mitigation options in forestry are afforestation, sustainable forest management and reducing deforestation, with large differences in their relative importance across regions. In agriculture, the most cost-effective mitigation options are cropland management, grazing land management, and restoration of organic soils.

Source: Summary for Policymakers. In: Climate Change 2014: Mitigation of Climate Change. Contribution of Work-ing Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. IPCC. 2014.

No room for complacency…

By setting a target for GHG emission reductions and assessing progress against this target, IFAD is putting mitigation co-benefits in the spotlight. While the outlook is encouraging, there is no room for complacency if IFAD is to achieve its target of 80 million tons of GHGs avoided or sequestered by 2020. The study therefore also identifies key priorities and possible measures to scale up mitigation co-benefits for projects. These mostly focus on more investment to improve family farming systems and landscape resources for enhanced agricultural productivity and resilience to climate shocks, including through:

- Watershed management; reforestation and agroforestry to reduce the risk of floods, erosion and drought; land rehabilitation and pasture rehabilitation
- Investment in public infrastructure and private assets to reduce production losses and improve efficiency of water and input use through access to post-harvest facilities, dams, terracing, water harvesting and bioenergy
- Improved agronomic practices, composting, better integration of livestock resources and enhanced natural capital (soil organic carbon).

Modest investments could more than double initial mitigation advantage

The study identified some projects as having a particularly strong potential for achieving a better project-level carbon balance, including those in Kyrgyzstan and Mali. It proposed scaling up options for five of the projects. These options, which are estimated to cost less than 15 per cent of total project costs, could potentially enable the 13 projects to achieve a combined reduction of 22 million tons of CO_2e by 2020, or just over 27 per cent of the ASAP target. Put another way, the study has enabled IFAD to realize that investing in a few effective upgrading options could allow its projects to more than double initial mitigation benefits. These benefits typically come from scaling up the area and number of people covered by the project.

Win-win-win: helping smallholders be part of the solution

IFAD's ASAP is critical in helping smallholders learn about and adopt new agricultural practices that lead to increased productivity and resilience, as well as climate change mitigation, and make appropriate investments that would otherwise be out of their reach.

However, if smallholders are really going to be a part of the global solution to climate change, it is important to take into account not only long-term but also immediate benefits to rural men and women, who often lead a precarious existence. There is a need, therefore, for incentives that would help engage smallholders in the solution and encourage the behavioural change necessary to bring about more sustainable and environmentally sound improvements in agriculture. Accordingly, *IFAD's Climate Change Strategy (2010) aims to "help smallholder farmers take advantage of available mitigation incentives and funding."*

Partnerships a success factor in promoting mitigation benefits

A study carried out by IFAD in Latin America highlights the important role of innovative cofinancing, such as ASAP and the Global Environment Facility (GEF), in generating global mitigation benefits. Although projects can generate mitigation co-benefits even without an explicit mitigation objective or climate/environment finance, this study found that all projects benefiting from climate or environmental cofinancing demonstrate mitigation co-benefits overall, as well as greater mitigation gains per hectare. IFAD has promoted 'multiple-benefits' climate change action from the start – an approach that climate financing mechanisms, such as ASAP, GEF, and the Green Climate Fund increasingly reward, which can only be good news for smallholders in vulnerable countries trying to respond to the challenges of climate change and food security.

Smallholders are still part of the solution

In conclusion, holistically designed adaptation investments for rural smallholders can generate significant mitigation co-benefits. While there is considerable variation in the extent and nature of potential benefits, as well as many options for achieving them, it is critical to keep assessing the carbon footprint of adaptation activities.

Although many agricultural investment programmes use different parameters to measure their success – including crop yields, productivity increases, and market revenues – it is critical to assess global environmental benefits. This, eventually, will enable smallholder farmers and the organizations they work with to benefit from payment systems associated with ecosystem services and global carbon markets.

It is clear that there is a considerable degree of uncertainty attached to expected mitigation benefits, sometimes due to the very nature of flexible and adaptive programming. However, IFAD remains committed to ensuring that rural smallholders not only benefit from more resilient livelihoods in the face of climate change, but also contribute to reducing the carbon footprint of agricultural activities and contribute to mitigation efforts.

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ASAP Donors and Partners

IFAD's Adaptation for Smallholder Agriculture Programme (ASAP) is a multi-donor programme that helps smallholder farmers cope with the impacts of climate change so they can increase their resilience.

As of 1 October 2015, the total commitments from nine donor countries (Belgium, Canada, Finland, Netherlands, Norway, Republic of Korea, Sweden, Switzerland, and United Kingdom) amounts to US$366,498,858.

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