

PRUN SAR

KNOWLEDGE DIRECTORY

Putting research into use for nutrition,
sustainability, and resilience



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About This Knowledge Directory

“Putting Research into Use for Nutrition, Sustainable Agriculture and Resilience” was an agricultural research for development (AR4D) programme that generated research on reducing food insecurity and poverty, addressing gender inequality, strengthening resilience, improving nutrition and enhancing the agricultural productivity and incomes of smallholder farmers.

Over the course of the PRUNSAR programme, many new innovative approaches to conducting agricultural research were generated. From 2015 to 2023, researchers from 13 different organizations developed new technologies, methods, and strategies for connecting research and development at scale.

All this knowledge on how to make agricultural research relevant for development practitioners and smallholder farmers has been made available via a wide range of knowledge products and media. However, these products are currently scattered across different databases, and can only be accessed through the different websites and platforms of the implementing organizations.

The purpose of this Directory is to consolidate PRUNSAR knowledge products and organize them into five themes so that researchers, extension agents, country directors, donors and other parties interested in conducting or funding agricultural research can learn the best, newest practices for putting agricultural research into use for nutrition, sustainable agriculture and resilience.

This Knowledge Directory is a tool that provides access to 50+ publications, videos, webtools and other knowledge products created under PRUNSAR which highlight some of the most important methodologies, technologies and strategies for conducting effective agricultural research for development. These knowledge products are organized into five key themes, which were carefully selected by Agrinatura researchers after an extensive 2022-2023 evaluation of all 13 PRUNSAR projects¹. They found that PRUNSAR projects excelled in these five areas, and that the lessons learned from each theme would be of high value to researchers and future AR4D initiatives.

[Theme 1: Participatory research](#)

[Theme 2: Partnerships](#)

[Theme 3: Tracking and monitoring impact](#)

[Theme 4: Scaling of agricultural innovations](#)

[Theme 5: Solutions for the future](#)

Each theme includes a main challenge faced by PRUNSAR and similar agricultural research initiatives, lessons learned from PRUNSAR concerning that challenge, background information about the knowledge available in that section and a link to the table of knowledge products, which starts on page 10.

¹ A description of each of the thirteen projects can be found in the annex.

What is PRUN SAR about?



The PRUN SAR programme generated **research** on reducing **food insecurity and poverty**, addressing **gender inequality**, strengthening resilience, improving nutrition and enhancing the agricultural **productivity and incomes** of small-scale farmers.



The **purpose** of PRUN SAR was to develop and test **innovative approaches** that positively impact the **livelihoods, nutrition and resilience** of pilot rural communities and small-scale farmers, and to generate lessons for **scaling up**.



From 2015 to 2023, PRUN SAR made significant strides, benefiting at least **319,000 households** across South-East Asia, Africa and Latin America, although the indirect impact is likely to be much higher.

PRUN SAR had the following **five outputs** that collectively supported the achievement its objectives:

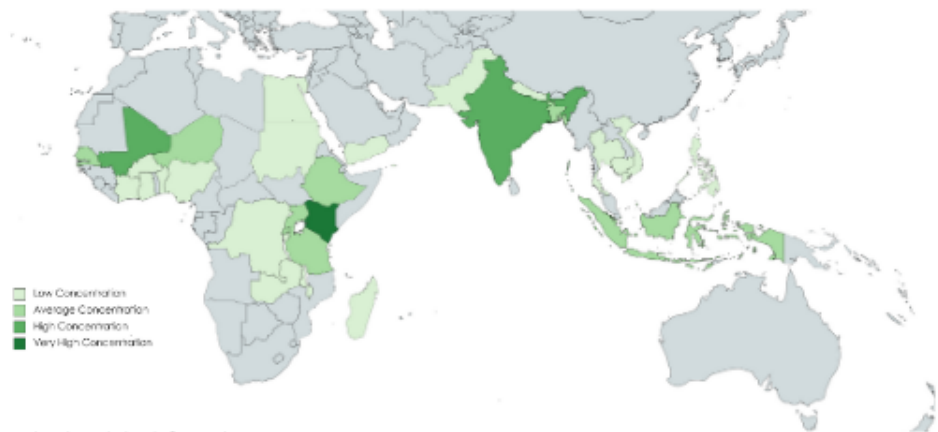
Pro-poor scientific, technological and institutional innovation and knowledge, with emphasis on the needs of low-income smallholder farmers.

Evidence of the comparative effectiveness of alternative approaches for food and nutrition security and resilience to guide policy decisions.

Enhanced capacity for pro-poor agricultural research and its uptake among researchers, non-research stakeholders and institutions.

Partnerships established between research and non-research development institutions for more effective uptake of research outputs

Improved complementarities and synergies with agriculture and food security programmes at country level.

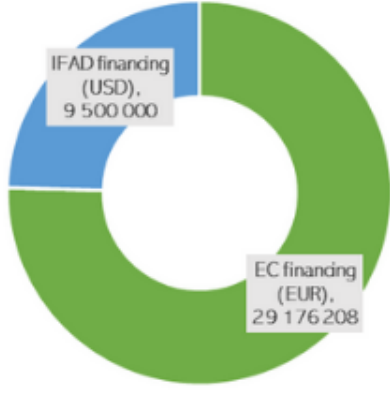


Geographic scope

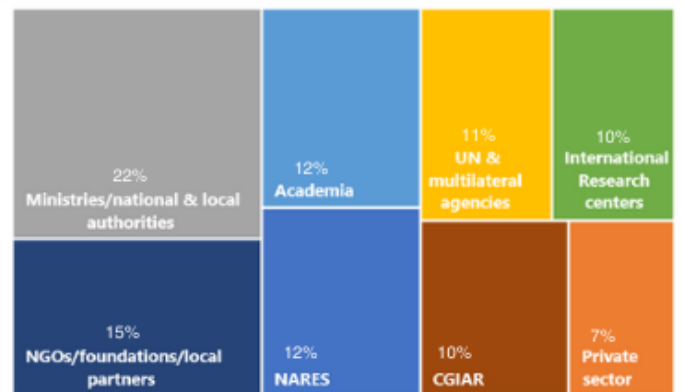
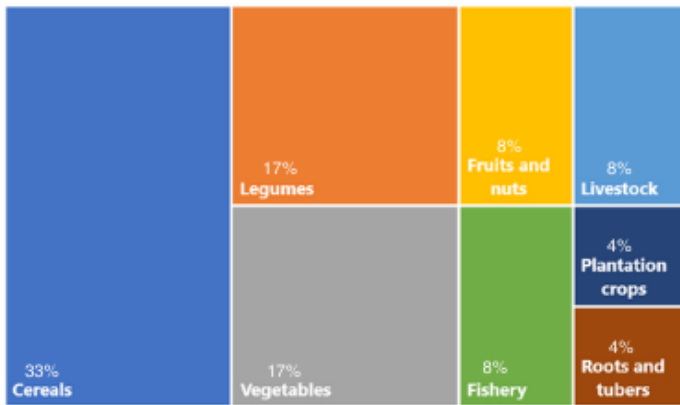
No. projects per country

*One project also took place in Guatemala.

The PRUN SAR programme in numbers



Value chains targeted (%)



Partners engaged (%)

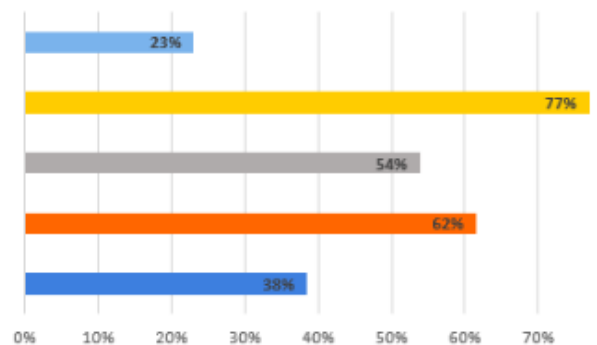
Innovations promoted

- Biofortified/shock resistant varieties (genetic breeding)
- Soil management/ amendments/ fertility/ weeding/mechanization
- Water management/ irrigation/ drainage/ solar pumps
- Improved agronomic and product management practices/ intercropping tests/ holistic farming/ sustainable intensification
- Improved livestock practices & disease mgmt

No. projects by type of innovation



Portfolio share by type of innovation



Main achievements



At least 319,000 households have adopted new approaches or technologies promoted by PRUNSAR (213% of the target)



At least 126 new innovations, approaches or technologies were developed and are being scaled up by national systems



At least 266 publications are being disseminated to researchers, extension agents, policy makers and other stakeholders

THEME 1

New approaches in **participatory research for development****CHALLENGE**

Agricultural research for development projects may not achieve their full potential when they **do not include farmers in the design process and do not adequately consider the differences in each farmer's social, economic and ecological context.**

**LESSONS FROM PRUNSAR**

Agricultural research projects which incorporate **co-creation of design** and leverage **new approaches in participatory research for development** are more effective at improving nutrition, sustainable agricultural production and resilience for farmers living in a wide variety of contexts.

**ABOUT THE DIRECTORY**

The directory below features knowledge products (briefs, tools, videos, manuals, reports) that showcase lessons of participatory approaches that can feed into and inform AR4D and other development initiatives.

The options by context approach is one such approach that lets farmers contribute to the development of technologies or approaches according to what works best for each of them. This abandons the classic 'one size fits all' approach to technology diffusion by acknowledging the complexity of each farmers' socio-economic-ecological context. It's application in a number of PRUNSAR projects has demonstrated that agricultural research projects are more successful when they are farmer-led and provide different options based on context.

The planned comparison approach (PCA) is another approach which integrates a field-based, experimental approach to learning into the technology adoption process. By empowering farmers to experiment with different options, the possible benefits and downsides of certain innovations are made increasingly more evidence-based. At the heart of the PCA are field trials where farmer volunteers set aside a part of their land plot to facilitate systematic comparisons of yields and other outcomes between the existing and the new technology or farming practice.

CLICK HERE FOR THE DIRECTORY



THEME 2

Best practices for building and managing AR4D partnerships



CHALLENGE

Research projects similar to PRUNSAR **depend on multi-stakeholder partnerships** that (i) build or galvanize trust that accelerates smallholder uptake and adoption, (ii) sustain impacts beyond the project closure date, (iii) improve the prospects for up- and out-scaling, and (iv) provide avenues for policy influence and change.

LESSONS FROM PRUNSAR

Partnerships with farmer organizations and community-based organizations can reliably accelerate uptake of a new technology or innovation.

Private sector partnerships, including with small and medium-sized enterprises, are a credible route towards achieving impacts that sustain and continue to grow after the project closes.

Government partnerships are critical for creating the proper enabling environment for new agricultural innovations are widely adopted.



ABOUT THE DIRECTORY

The knowledge directory below provides examples and practical guidance about the pre-planning, **developing and managing of partnerships in AR4D initiatives** and more broadly. It includes a number of products on the widely successful International Potato Center's FOODSTART+ project which **partnered with IFAD development projects** in Indonesia to validate and take innovations to scale.

CLICK HERE FOR THE DIRECTORY



THEME 3

Main methodological innovations for monitoring and tracking adoption and impact



CHALLENGE

A common administrative requirement of AR4D or development initiatives is that evaluations and assessments of impact need to be undertaken either before or just after a project ends, which means that **real impacts of agricultural research initiatives – on key outcomes like poverty and nutritional status – are at high risk of being missed** because farmers, especially risk-averse smallholder farmers, take time to adopt an innovation.



LESSONS FROM PRUNSAR

With AR4D initiatives that have short-term (three to four year) life-cycles, the **transformative potential is often not fully realized right at project closure**.

Projects need to adopt **new methodologies for tracking adoption and impact** when a rigorous impact evaluation is not an option, as is often the case with AR4D initiatives.

It is necessary to invest in **monitoring that can continue several years after the project closure date**.

Duration of monitoring is likely to be adjusted once **more evidence on longer term AR4D impacts is assembled**.



ABOUT THE DIRECTORY

The directory below highlights **methodological innovations for monitoring and tracking adoption and impact**, including the **planned comparison approach** (see ICRAF brief in the table) which integrates a field-based experimental approach to learning in the technology adoption process and offers an attractive solution: if carefully implemented, this farmer-centred methodology provides credible differences in yields and other outcomes that can be attributed to the innovation.

CLICK HERE FOR THE DIRECTORY



THEME 4

Key approaches and models for **scaling of agricultural innovations****CHALLENGE**

While a new agricultural technology or innovation may work well in the context it was piloted, the scaling **up** (locally) or **out** (to other areas or countries) of agricultural innovations is difficult and faces challenges which vary across institutional, agroecological and socioeconomic contexts.

**LESSONS FROM PRUNSAR**

New approaches and models for scaling of agricultural innovations are needed to achieve truly transformative change with development or AR4D initiatives that face unique challenges.

**ABOUT THE DIRECTORY**

To disseminate learning from PRUNSAR, this directory includes knowledge products (briefs, tools, videos, manuals, reports, etc.) that showcase lessons that can feed into and inform AR4D and development initiatives that aspire to scale agricultural innovations. These selected knowledge products discuss models and approaches that are **farmer-centred**, highlight the need for careful assessment of the viability of scaling (e.g. for Neglected and Underutilized Species), acknowledge uptake challenges for climate-smart agriculture that **business and private sector partnerships** can help mitigate, and illustrate how **the options by context approach** has helped scale innovation, such as the land restoration initiatives in East Africa and the Sahel.

CLICK HERE FOR THE DIRECTORY



THEME 5

Understanding AR4D challenges and finding solutions for the future



CHALLENGE

Climate change, biodiversity loss and rising rates of malnutrition are some of the main, overarching challenges which the PRUNSAR projects sought to address.



LESSONS FROM PRUNSAR

PRUNSAR uncovered a number of new ways forward for understanding challenges and finding solutions for smallholder farmers and the future of AR4D.



ABOUT THE DIRECTORY

The knowledge directory below includes an assortment of products that relate to smallholder adaptation to climate change, as well as other solutions for the future of AR4D related to project approaches, nutrition, to the use of natural disasters as a resource, agrobiodiverse livelihood development and more.

One example is how the AfricaRice project built a **network to facilitate knowledge flows to smallholder farmers** as well as access to local seed supply in remote areas. Another example from the Bioversity International project was to focus on different stress-tolerant nutritious yet neglected crop species in different countries. This project produced **new scientific evidence on the role of agrobiodiversity in nutrition**, income and adaptation to climate change. A final example is the valuable new knowledge uncovered by the International Potato Centre (CIP) about the **future climate suitability of key crops**, specifically root and tuber crops (RTC) in Asia.

CLICK HERE FOR THE DIRECTORY



THEME 1: NEW APPROACHES IN PARTICIPATORY RESEARCH FOR DEVELOPMENT

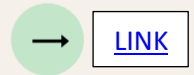
TITLE	LEAD PARTNER	DESCRIPTION	TYPE	FIND HERE
“The Options by Context Approach: A Paradigm Shift in Agronomy”	ICRAF	Traditional agricultural research and extension relies on large scale recommendations for large numbers of farmers and has a limited impact because of how greatly each farmer’s social, economic and ecological context differs. This article establishes a new, more effective way of putting agricultural research into use: The Options by Context (OxC) Approach.	Journal article (open access, 13 pages)	 LINK
“Restoration of Degraded Land for Food Security and Poverty Reduction in East Africa and Sahel – employing a farmer-centered approach in Ethiopia, Kenya, Mali and Niger”	ICRAF	This brief describes how farmers in Ethiopia, Kenya, Mali and Niger implemented on-farm planned comparisons to test and innovate land management practices that restore agricultural productivity and ecosystem health. Radically different than past development approaches, planned comparisons embed research into the development and scaling process, while centering farmers’ experiences.	Brief (19 pages)	 LINK
“From buffet to best-fits: co-identifying and prioritizing best-bet CSA practices for targeting and scaling in Central Highlands of Ethiopia”	CIAT	This report highlights the key steps and processes followed to select and prioritize key Climate-Smart Agricultural (CSA) practices in two contrasting sites of Ethiopia. The CIAT project used participatory approaches to ensure that restoration of degraded land was maintained post-project.	Training material (18 pages)	 LINK
“Diversification for climate change resilience: A participatory assessment of opportunities for diversifying agroecosystems”	Bioversity International	This guidebook lays out a unique assessment method for identifying opportunities to diversify agroecosystems. The assessment method is simple by design to be accessible to farmers and “non-experts”.	Manual (21 pages)	 LINK
“Mali, Niger and Senegal: local stakeholders discuss scaling up climate-smart value chains”	CIAT	This blog describes how inclusion and collaboration with local stakeholders was crucial for the success of a CIAT project in West Africa.	Blog	 LINK
“Gender differentiated perception of climate-smart agricultural practices in contrasting landscapes of the Ethiopian highlands”	CIAT	This study is one of the first that investigates how perception and uptake of CSA practices differs based on gender. Findings demonstrate the significance of gender equality in climate change adaptation for smallholder farmers.	Report (28 pages)	 LINK
“Chaya in Guatemala: Participatory consultation on needs, challenges and opportunities for use enhancement”	Bioversity International	Chaya is a perennial vegetable native to Guatemala that is severely under-invested in despite its “superfood” status. This document shares results of a conference held in Guatemala City on 13 March, 2018 on the Chaya value chain.	Conference proceeding (38 pages)	 LINK

“Assessment of farmers’ perceptions and land management preferences using the participatory tool for evaluating land management options”

CIAT

Land degradation is a central issue that rural people in Eastern Ethiopia face. This study uses **the Evaluating Land Management Options (ELMO) tool** to identify and prioritize local needs for ecosystem services.

Report (23 pages)

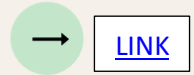


“Scaling climate-smart agriculture: Co-creating business models in the supply and finance chains in Nyando, Western Kenya”

CIAT

Upscaling investment in CSA in rural areas is difficult for a number of reasons. This study explores the potential for **scaling CSA through partnerships between smallholder farmers and private sector actors**.

Info Note (8 pages)



“Farmer Business Schools (FBS) with climate change and gender perspectives: Learning and monitoring guide”

CIP

The **farmer business school** is a “participatory action learning process” that involves farmer groups participating in agricultural value chains. This publication is meant to guide FBS facilitators in their weekly training sessions.

Training manual (44 pages)

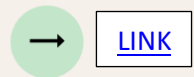


“A rapid assessment of Farmer Business Schools from a gender perspective in Bohol, Philippines”

CIP

Women and men use and participate in **Farmer Business Schools** in different ways. This case study of 3 FBS in the Philippines explains some of the differences and provides recommendations to make participation of different genders and social groups in FBS more meaningful.

Report (20 pages)

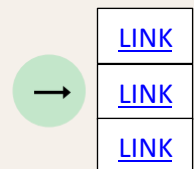


Three participatory videos produced by farmers of the SCARED, LETMULCO, and CLEAP FBS group in Bohol, Philippines

CIP

These participant-made videos provide insights into three FBS in Bohol, Philippines created under the CIP FOODSTART+ project.

Videos



THEME 2: BEST PRACTICES FOR BUILDING AND MANAGING AR4D PARTNERSHIPS

TITLE	LEAD PARTNER	DESCRIPTION	TYPE	FIND HERE
"How inclusive partnerships tackle climate challenges in East and West Africa"	CCAFS	Partnerships are essential for aligning government priorities, private sector interests and civil society's needs. This online article provides examples of how CIAT-Bioversity's project on "Building Livelihoods and Resilience to Climate Change in East and West Africa" has strategically used partnerships to achieve its goals.	News	 LINK
"Innovative partnership models to help scale projects"	CIP	This short article from Asian NGO's iMPACT magazine describes how CIP's FoodSTART+ project partnered with other IFAD loan projects to validate and take innovations to scale.	Magazine article (2 pages, p. 49-50)	 LINK
"Nested Communities of Practice: Co-learning and sharing lessons learned to scale farmer-centered restoration options in East Africa and Sahel"	ICRAF	Instead of slow, disconnected or one-way communication between beneficiaries, NGOs, government entities and donors, ICRAF's Communities of Practice (CoP) approach puts all stakeholders involved in research projects in frequent and consistent contact.	Brochure (8 pages)	 LINK
"Stories from the field: The FoodSTART+ and SOLID collaboration on Farmer Business Schools in Maluku, Indonesia"	CIP	In 2017, FoodSTART+ collaborated with Smallholder Livelihood Development (SOLID), a large IFAD project in Indonesia , to increase farmers' involvement in value chains through farmer business schools (FBS). This brief shares stories from the participating farmers.	Brief (4 pages)	 LINK
"Strengthening Entrepreneurship with Farmer Business Schools, Philippines"	CIP	Farmer Business Schools in the Philippines empowered female farmers to work together to cut out middleman and add value to their products in completely new ways. This video narrates the benefits of the project through the women themselves.	Video	 LINK
"Good practices and innovations for impact at scale"	CIP	This brief shares successful practices for achieving impact through research-development partnerships , as exemplified by CIP's FoodSTART+.	Brief (2 pages)	 LINK
"Towards Smart Farming in Ethiopia: sharing experiences for successful adaptation of small scale-irrigation and value chain assessment"	Bioversity International	This blog shares stories about how CIAT managed partnerships between farmers, researchers and extension agents in Ethiopia by facilitating interactive trainings and farm visits.	Conference proceeding (38 pages)	 LINK

“Research-development partnerships for scaling complex innovation: Lessons from Farmer Business School in IFAD-supported loan-grant collaborations in Asia”

CIP

This journal article analyzes the **drivers of successful partnerships** that lead to the **scaling of innovations**. In doing so, the authors develop a conceptual framework to analyze how partnership dynamics affect the transition from small-scale ‘niche’ innovation testing to large scale testing by development partners in agricultural ‘regimes’.

Journal article (15 pages)










[LINK](#)

THEME 3: MAIN METHODOLOGICAL INNOVATIONS FOR MONITORING AND TRACKING ADOPTION AND IMPACT

TITLE	LEAD PARTNER	DESCRIPTION	TYPE	FIND HERE
“Restoration of Degraded Land for Food Security and Poverty Reduction in East Africa and Sahel – employing a farmer-centered approach in Ethiopia, Kenya, Mali and Niger”	ICRAF	Scaling restoration with smallholders is challenging because every farming household faces different economic and ecological problems. This brief and website illustrates the principles for using the Planned Comparison Approach for assessing the impact of different restoration options for different farmers.	Brief (4 pages) Website	 LINK LINK
“Assessing agrobiodiversity: A compendium of methods”	Bioversity International	This extensive and detailed compendium draws from several PRUNSAR projects to support the documentation, co-creation and sharing of knowledge about agrobiodiversity and its management .	Book (90 pages)	 LINK
“Monitoring biophysical and socio-economic impacts of Climate Smart Agricultural practices at Doyogena and Basona Climate-Smart Landscapes, Ethiopia”	ICRAF	Farmers in Eastern and Southern Ethiopia implemented Climate Smart Agricultural practices over the course of eight years. CIAT surveyed 400 households that implemented the practices and 400 that did not to assess the gender-disaggregated effects on resources, food security, productivity and incomes .	Activity report (18 pages)	 LINK
“Integrated CSA Monitoring Framework: Tracking adoption and perceived impacts of Climate Smart Agriculture at household levels in Kaffrine, Senegal”	CIAT	This CSA Monitoring framework was developed to guide practitioners in assessing the impact of climate smart agriculture in a more participatory and gender-sensitive manner. Kaffrine, a climate-smart village (CSV) in Senegal, is used as an example of how the framework should be implemented.	Framework (website)	 LINK
Geofarmer	CIAT	Geofarmer is a user-friendly monitoring and feedback system for agricultural development projects. The application is available on the web and mobile devices and allows farmers to share their experiences, both positive and negative, with researchers and other farmers.	Application	 LINK
“Geofarmer: A monitoring and feedback system for agricultural development projects”	CIAT	This 13-page article, published by the creators of Geofarmer in the journal “Computers and Electronics in Agriculture,” explains the theoretical background for the Geofarmer app and provides examples of it being applied across four geographic domains.	Journal Article (13 pages)	 LINK
“Farmer Business School with climate change and gender perspective: Learning and monitoring guide”	CIP	The farmer business school (FBS) is a participatory action learning process that involves farmer groups participating in agricultural value chains. This publication is meant to guide FBS facilitators in their weekly training sessions.	Training manual (44 pages)	 LINK

THEME 4: KEY APPROACHES AND MODELS FOR SCALING OF AGRICULTURAL INNOVATIONS

TITLE	LEAD PARTNER	DESCRIPTION	TYPE	FIND HERE
“Value chain and market potential of minor millets to strengthen climate resilience, nutrition security and incomes in India”	Bioversity International	“ Little millet ” are some of the oldest crops grown in South Asia. Despite their nutrient density and drought-resistance, their cultivation and consumption remains underdeveloped compared to other cereals in India. This research brief investigates why this is the case and explains how to bring more millet into the market.	Research brief (4 pages)	 LINK
“Nested Communities of Practice: Co-learning and sharing lessons learned to scale farmer-centered restoration options in East Africa and Sahel”	ICRAF	Instead of slow, disconnected or one-way communication between beneficiaries, NGOs, government entities and donors, ICRAF’s Communities of Practice (CoP) approach puts all stakeholders involved in research projects in frequent and consistent contact.	Brochure (8 pages)	 LINK
“From buffet to best-fits: co-identifying and prioritizing best-bet CSA practices for targeting and scaling in Central Highlands of Ethiopia”	CIAT	This report highlights the key steps and processes followed to select and prioritize Climate-Smart Agricultural (CSA) practices in two contrasting sites of Ethiopia. The CIAT project used participatory approaches to ensure that restoration of degraded land was maintained post-project.	Training material (18 pages)	 LINK
“Restoration needs both women and men”	ICRAF	This blog follows Eunice and Benedict, a Kenyan couple that applied the Options by Context approach, co-developing and testing different restoration options for their farmland. Their experiences provided researchers with important insights about how intra-household relations affect the uptake of new technologies.	Blog	 LINK
“Good practices and innovations for impact at scale”	CIP	In Asia and the Pacific, one reason CIP’s FOODSTART+ project was able to scale its innovations so widely was because the researchers chose to collaborate closely with other IFAD investment projects on design, work-planning, implementation and cross-learning. This brief lists the most important “good practices” in facilitating these partnerships.	Brief (2 pages)	 LINK
“Innovative partnership models to help scale projects”	CIP	This short article from Asian NGO’s iMPACT magazine describes how CIP’s FoodSTART+ project partnered with other IFAD loan projects to validate and take innovations to scale.	Magazine (p.49-50)	 LINK
“Partnership for scaling up Climate-Smart Agriculture (P4S)”	CIAT	With all the climate smart agricultural practices available, project-planners and investors have trouble determining which CSA’s are the best-fit. This one-page flyer explains the tools and resources that CIAT developed under PRUNARS to make research on CSA more readily applicable.	Flyer	 LINK

“Mali, Niger and Senegal: local stakeholders discuss scaling up climate-smart value chains”

CIAT

This blog describes how **connecting stakeholders from different backgrounds is key to building resilience in value chains**, and uses examples of Climate Smart Villages (CSV) in Mali, Niger and Senegal.

Blog



[LINK](#)

“Scaling ecosystem restoration in agricultural landscapes”

ICRAF

Land degradation threatens the livelihoods of over three billion people. Empowering **farmers to test and compare different restoration options** is critical to long-term ecosystem sustainability.

Video



[LINK](#)

RiceAdvice

AfricaRice

RiceAdvice is an android based app that provides customized recommendations for fertilizer management on rice. This brief provides access to the app and instructions on how to use it.

Brief (2 pages)
Guidance for Users



[LINK](#)

“Scaling climate-smart agriculture: Co-creating business models in the supply and finance chains in Nyando, Western Kenya”

CIAT

Private sector investment in smallholder farmer communities can be an effective **pathway for scaling CSA interventions**. This info note follows two models for developing private sector partnerships with smallholder farmers.

Info Note (8 pages)



[LINK](#)

“Research-development partnerships for scaling complex innovations: Lessons from Farmer Business School in IFAD-supported loan-grant collaborations in Asia”

CIP

This journal article analyzes the **drivers of successful partnerships** that lead to the scaling of innovations. In doing so, the authors develop a conceptual framework to analyze how partnership dynamics affect the transition from small-scale ‘niche’ innovation testing to large scale testing by development partners in agricultural ‘regimes’.

Article (open access, 15 pages)



[LINK](#)

“Transformational adaptation of key root and tuber crops in Asia. Assessing crop suitability amidst climate change by species distribution modelling”

CIP








Comparatively few studies have investigated the increasing importance of resilient **Root and Tuber Crops (RTCs)** in the face of climate change. Using climate scenario forecasting and GIS mapping, this study demonstrates that RTCs, especially cassava and sweet potato, **have enormous potential for climate resilient agriculture Asia**.

Report (36 pages)



[LINK](#)

THEME 5: UNDERSTANDING AR4D CHALLENGES AND FINDING SOLUTIONS FOR THE FUTURE

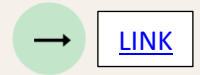
TITLE	LEAD PARTNER	DESCRIPTION	TYPE	FIND HERE
“The options by context approach: a paradigm shift in agronomy”	ICRAF	Traditional agricultural research and extension relies on large scale recommendations for large numbers of farmers and has a limited impact because of how greatly each farmer’s social, economic and ecological context differs. This article establishes a new, more effective way of putting agricultural research into use: The Options by Context (OxC) Approach.	Journal article (open access, 13 pages)	 LINK
“Nutrix: the big reach of small fish in nourishing Cambodia”	WorldFish	Nutrix , used by the Cambodian government, UNICEF, and other NGOs, is the world’s first fish-based, ready-to-use medicinal food. Through PRUNSAR, WorldFish is developing other fish-based products to improve nutrition in vulnerable communities.	Blog	 LINK
“Nutrition-sensitive aquaculture: everyday superfoods”	WorldFish	Fish has had difficulty securing its place in discussions around food and nutrition security even though its critical dietary value to the global poor is well established. This blog follows a workshop on nutrition-sensitive aquaculture systems that WorldFish organized under PRUNSAR.	Blog	 LINK
“Nutrient rich foods to improve diet quality in the first 1000 days of life in Malawi and Zambia”	WorldFish	In Zambia and Malawi, malnutrition, food insecurity and childhood stunting are much worse than the global average. This detailed report focuses on the strategies implemented in both countries under PRUNSAR to increase consumption of nutrient rich fish, vegetables and beans in the first 1000 days of life.	Report (60 pages)	 LINK
“Using Floods as an Asset”	IWMI	Harnessing floods is a quintessential method to allow rural communities in vulnerable areas to adapt to climate change. For many farmer communities who depend on agriculture and fisheries, floods are not a hazard but an asset.	Flyer (2 pages)	 LINK
“Realizing the promise of neglected and underutilized species”	Biodiversity International	Conservation and research of Neglected and Underutilized Species (NUS) is fragmented, uneven and poorly financed. This policy brief provides nine concrete actions that policy makers can take to leverage the potential of NUS for addressing poverty, food insecurity and climate change.	Policy Brief (12 pages)	 LINK
“Flood-Based Farming Systems in Africa”	IWMI	Flood-Based Farming Systems (FBFS) in Africa are extremely extensive—almost 25 million HA—but are often completely ignored in land-management and agricultural plans. Interventions to increase the productivity of FBFS are surprisingly low-cost and low-skill. This paper provides an overview of FBFS in Africa.	Overview paper (52 pages)	 LINK

“Food Trees for diversified diets, improved nutrition and better livelihoods for smallholders in East Africa”

ICRAF

Food from trees have an important role to play in **diverse diets**. In addition to their direct nutritional and food value, trees in diverse agro-ecosystems provide products and services contributing to the **resilience** of resource-constrained households.

Project brief
(4 pages)

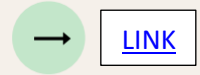


“Bamboo in Homestead Farming System Development”

INBAR

Bamboo agroforestry can be an extremely effective method for **increasing incomes and restoring ecosystems** in rural communities. This technical manual is an attempt to popularize bamboo as a resource for 21st century homestead farming systems development.

Technical Manual (23 pages)

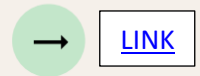


“Climate Smart Villages give farmers options for Climate Smart Future”

CIAT

Climate Smart Villages are communities where climate-smart practices are **communally identified and tested** in an inclusive and integrated manner. This blog and video provide an overview of some highlights from CSVs across different continents.

Blog and Video

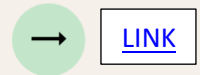


“Integrated water solutions for climate change adaptation in West Africa”

IWMI

In the face of increasingly **dangerous water-related natural disasters**, IWMI uses **spatial hydrological modeling, satellite imagery and artificial intelligence** to assess threats for farmers. Now, with funding from PRUNSAR, IWMI has developed new CSA practices and tools to help farmers adapt.

Brief



“Adaptation’s Thirst: Accelerating the convergence of water and climate action”

IWMI

This paper is part of a series of background papers commissioned by the **Global Commission on Adaptation** to inform its 2019 flagship report.

Paper (42 pages)



“Assessment of the evidence base on adaptation benefits of CSA options across time-scales and geographies in West Africa.”

CIAT

This study assessing Climate Smart Villages and various climate smart practices found that **increased access to climate information, land and credit** are key factors in building a climate **resilient future in West Africa**.

Activity report (73 pages)

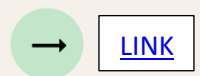


“Spate irrigation, Livelihood improvement and Adaptation to Climate Variability and Change”

IWMI

Spate irrigation is a largely neglected and forgotten form of **resource management**, in spite of its potential to contribute to poverty alleviation, adaptation to climate change and local food security. The authors recommend that IFAD invest more heavily in spate irrigation across **arid lands**.

Practical note (34 pages)



“Transformational adaptation of key root and tuber crops in Asia. Assessing crop suitability amidst climate change by species distribution modelling”

CIP

Comparatively few studies have investigated the increasing importance of **resilient Root and Tuber Crops (RTCs)** in the face of climate change. Using climate scenario forecasting and GIS mapping, this study demonstrates that RTCs, especially cassava and sweet potato, **have enormous potential for climate resilient agriculture Asia**.

Report (36 pages)

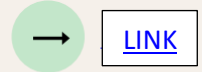


“Root and Tuber Crops (RTCs) for food-nutrition and livelihood security amidst climate change in the Asia-Pacific: facts and figures about root and tuber crops”

CIP

This brief concisely provides important **facts and figures about RTCs** and their relevance to **climate adaptation in Asia**.

Brief (2 pages)



“Economic analysis of climate change adaptation strategies in selected coastal areas in Indonesia, Philippines and Vietnam”

WorldFish

Coastal communities in Vietnam, Indonesia and the Philippines are some of the most vulnerable to **climate change** in the world. This policy brief delivers findings on the **economic impact of adaptation** with major implications for policy makers and investors.

Policy brief (2 pages)

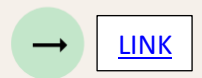


“Assessing agrobiodiversity: A compendium of methods”

Biodiversity International

This extensive and detailed compendium draws from several PRUNSAR projects to support the documentation, co-creation and sharing of knowledge about **agrobiodiversity and its management**.

Book (90 pages)



Annex 1

What are the 13 PRUNSAR projects and what are their goals?

1. ICRAF - Restoration of degraded land for food security and poverty reduction in East Africa and the Sahel: taking successes in land restoration to scale in *Ethiopia, Kenya, Mali, Niger and United Republic of Tanzania* (2016 – 2020)

The project's **goal** is to reduce food insecurity and improve the livelihoods of poor people living in African drylands by restoring degraded land and returning it to effective and sustainable tree, crop and livestock production, thereby increasing land profitability and landscape and livelihood resilience. The project's main **objective** is *to develop and test tools and guidelines for scaling proven land restoration approaches up and out, to suit local circumstances, based on past experience and contemporary action research in four African countries, and to embed the approaches in current practice through capacity development in those countries and global dissemination.*

2. ICRAF - Food trees for diversified diets, improved nutrition, and better livelihoods for smallholders in East Africa in *Kenya and Uganda* (2016 – 2020)

The **goal** of this project is to harness the role and contribution of agroforestry and food trees for improving nutrition directly through increased availability and consumption of nutrient-rich foods and indirectly through the diversification of livelihood opportunities for small-scale farmers. The **objective** is *to diversify diet and livelihood options for improved nutrition for small-scale farmer communities in East Africa by effectively implementing a climate-smart agroforestry approach by integrating food trees that provide nutrient-dense foods into the existing mixed-crop farming systems.*

3. ILRI - Improved productivity through crop-livestock interventions (CLiP) in Eastern *DR Congo and Burundi* (CLiP) *DRC*, (2015 – 2019)

The **project's** goal is to enable poor rural people to improve their food security and nutrition, raise their incomes, and strengthen their resilience. The **specific objective** is *to improve income, nutrition and food security through sustainable intensification of crop-livestock systems linked to markets, with a particular focus on gender and youth.*

4. WorldFish - Managing aquatic agricultural systems to improve nutrition and livelihoods in selected Asian and African countries: Scaling learning from an IFAD-WorldFish collaboration in *Bangladesh Cambodia, Zambia*, (2016 – 2020)

The **goal** of the project is to improve nutrition and livelihoods of poor rural households, in aquatic agricultural systems, through increased intakes of micronutrient-rich small fish and vegetables, from own production as well as through increased household income. The **objective** is *to scale up the fisheries/agriculture-nutrition linkages approach developed and practiced in Bangladesh in targeted communities in the target countries.*

5. WorldFish - Improving the technological foundations for sustainable aquaculture in *Bangladesh, Egypt, Malaysia and Timor-Leste* (2016 – 2020)

The **goal** of the project is to develop, multiply and disseminate quality seed of key aquaculture species that increase productivity and profitability for farmers, while at the same time conserving the genetic resources of aquatic animals (i.e. fish) in anticipation

of future needs. The **objective** is to improve fish strains and associated fish farming technologies through the production of genetically superior fish strains to increase fish production at minimum cost.

6. CIP - Food Resilience Through Root and Tuber Crops in Upland and Coastal Communities of the Asia-Pacific (FOODSTART+) India, Indonesia, Philippines and Viet Nam (2015 – 2019)

The **goal** of the project was to enhance food resilience among poor households in upland and coastal communities of the Asia-Pacific region by introducing root and tuber crops (RTC) in IFAD-supported investments projects. *It focused on: identifying household needs that are gender-sensitive by conducting vulnerability assessments among the food-insecure RTC-producing and -consuming households; designing and implementing, with partners and local stakeholders, innovations that enhance food resilience; and developing effective partnership strategies with IFAD investment projects in promoting RTCs for food security at a larger scale.* The satisfactory implementation progress of the project can thus largely be attributed to partnership arrangements and its relationship with IFAD investment projects.

7. CIAT - Bioersity Alliance - Linking agrobiodiversity value chains, climate adaptation and nutrition: empowering the poor to manage risk India, Guatemala, Mali, (2015 – 2020)

The **goal** of the project is to contribute to achieving food and nutrition security and economic empowerment in local communities facing climate risks. The **project objective** is to strengthen the capacities of vulnerable women and men, farmers, value chain actors and NARSs to deal with climate change through participatory research focusing on underutilized stress-tolerant varieties and associated management practices for improved climate adaptation, nutrition, and marketing opportunities.

8. IWMI - Africa to Asia - Testing Adaptation in Flood-based Resource Management Sudan, Ethiopia, Kenya, Malawi, Pakistan, Uganda and Yemen (2016 – 2020)

The **goal** of the project is to support flood-based farming systems (FLBs), to contribute to food and nutrition security, and to build the resilience of local communities. *It specifically explores: establishing and strengthening farmer and knowledge networks in Africa and Asia in FLB areas; undertaking capacity-building programmes for farmers and professionals, and supporting higher education programmes; and developing investment programmes and supporting policies in FLB.*

9. IRRI - Improved crop management and strengthened seed supply system for drought-prone rain-fed lowlands in South Asia in Bangladesh, India and Nepal (2016 – 2020)

The project's **goal** is enhanced and stable rice productivity in the drought-prone rainfed lowlands of South Asia, leading to improved household food security and reduced poverty. The **objective** is to alleviate poverty levels of farmers in rainfed drought and drought- and flood-prone areas by enhancing and stabilizing rice productivity through the combination of drought-tolerant rice varieties, adoption of improved management technologies, efficient seed supply system and accelerated outscaling.

10. INBAR - South-South knowledge transfer strategies for scaling up pro-poor bamboo livelihoods, income generation and employment creation, and environmental management in Africa in Ethiopia, Madagascar and United Republic of Tanzania (2014-2018)

The project's **goal** is to mainstream technologies and innovations based on bamboo for improved food, nutrition, energy and environmental security for reduced rural household poverty and improved natural resources management. The main **objective** is to scale up the benefits of bamboo, namely: reversing deforestation; reducing soil erosion; protecting riverbanks; substituting fodder and feed in farming systems; increasing power availability to poor rural households (in the shape of fuelwood and charcoal); and developing inclusive enterprise models for energy products and bamboo products.

11. CIAT - Bioversity Alliance Building livelihoods and resilience to climate change in East & West Africa: AR4D for large-scale implementation of Climate-Smart Agriculture in Mali, Niger, Senegal and Ethiopia (CCAFS) (2019 – 2023)

The **overall goal** of the project is to build livelihoods and improve resilience to climate change among smallholder farmers in East and West Africa through large-scale adoption of CSA technologies and practices. The **objectives** of the project were 1) *to derive new knowledge on scalable CSA technologies and institutional options with demonstrable benefits for women and men farmers, youth employment, climate resilience and low-emission development, and 2) to engage in ongoing development and private sector initiatives to assist in the prioritization of the best options and in policy development.*

12. ILRI - Control of Peste des petits ruminants (ECO-PPR) in Eastern and Western Africa Rwanda, Ethiopia, Kenya, Tanzania, Senegal, Burkina Faso, Mali (2019-2023)

The **goal** of the Eco-PPR project is to support ongoing global efforts for PPR control and eradication by generating the necessary evidence and tools to support policy dialogue to strengthen production of small ruminants in Eastern and Western Africa. The **objectives of the project** were 1) *Veterinary services adopt national PPR control policies based on the understanding of disease epidemiology and transmission dynamics. 2) Veterinary services and farmers access well-validated vaccines and use vaccine delivery models appropriate for specific epidemiological and geographical situations. 3) Veterinary services successfully implement PPR control programmes.*

13. AfricaRice - Sustainable and diversified rice-based farming systems Nigeria, Rwanda, and Senegal (2018-2023)

The **goal** of the project is to contribute to improving food and nutritional security and poverty alleviation of local communities in Africa. The overall **objective** (purpose) of the project is *to sustainably intensify rice-based farming systems while minimizing their environmental footprint and adapting them to climate change.*



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