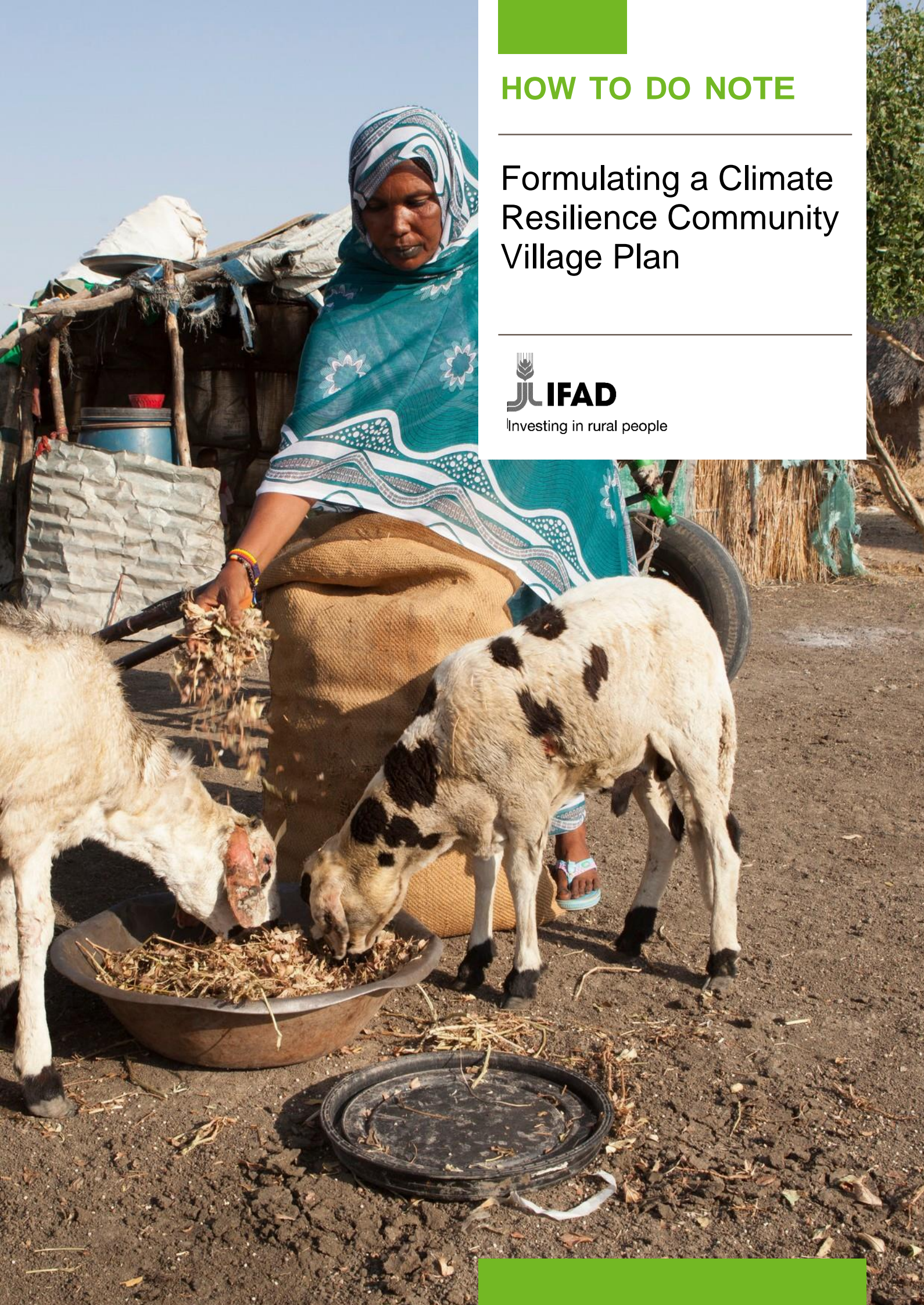


HOW TO DO NOTE

Formulating a Climate Resilience Community Village Plan



Investing in rural people



How To Do Notes provide practical suggestions and guidelines to country programme managers, project design teams and implementing partners to help them design and implement programmes and projects. The notes include best practices and case studies that can be used as models in their particular thematic areas.

How To Do Notes also provide tools for project design and implementation based on best practices collected at the field level. They guide teams on how to implement specific recommendations of IFAD's operational policies, standard project requirements and financing tools.

The How To Do Notes are "living" documents and will be updated periodically based on new experiences and feedback. Your comments or suggestions are most welcome.

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Acronyms

ACR	[agente comunitário rural] rural community agent
BIRDP	Butana Integrated Rural Development Project
CDC	community development committee
CR-CVP	climate resilience community village plan
M&E	monitoring and evaluation
NRGF	natural resources governance framework
NRM	natural resources management
PSA	Pró-Semiárido Project
PVSA	Viva o Semiárido Project
RDMT	Resilience Design and Monitoring Tool

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Introduction

Land, water, forests and rangeland resources offer a compendium of ecological goods and services that small-scale farmers in developing countries need for their economic development. These resources can be private or shared, and can also provide a safety net during crises and external shocks. Natural resources need to be managed sustainably not only on small-scale farms and in individual sectors (e.g. selected sources of water or forest reserves), but through the integrity of landscapes and ecosystems that support their existence. The poorest and most marginalized communities living in vulnerable regions, among them indigenous peoples, whose livelihoods depend on natural resources, are those affected most seriously by the impacts of climate change.

Climate change represents a major social, economic and environmental global challenge, and its adverse effects are already having an impact on biodiversity, food security, natural resources, economic activities and people's livelihoods. To help farmers become more resilient to the impacts of climate change, there is a need to integrate climate change resilience measures into community development planning, adopting sustainable natural resources management (NRM) and governance systems through participatory and responsive processes.

This How To Do Note is intended to provide guidance on the implementation of actions for building climate-resilient livelihoods through NRM. It builds mostly on experiences gained from IFAD programmes in Brazil and Sudan¹. A climate resilience community village plan (CR-CVP), together with capacity-building and strengthening of community-based NRM organizations, makes it possible to identify, lead and implement local adaptation initiatives. This note complements the How To Do Note on the Resilience Design and Monitoring Tool (RDMT) to be published in 2022.

Terminology

“Resilience” refers to the extent to which social or ecological systems can maintain, recover and improve their integrity and functionality when subject to disturbance.² Thus, resilience has three main pillars: maintaining functionality, improving, and transitioning to a better-off state. According to the Intergovernmental Panel on Climate Change, resilience is “the capacity of a social-ecological system to cope with a hazardous event or disturbance, responding or reorganizing in ways that maintain its essential function, identity, and structure, while also maintaining the capacity for adaptation, learning, and transformation”.³

“Climate resilience” describes the capacity over time of a person or household to avoid poverty in the face of climate-related shocks and stresses. The term “climatic shock” relates to climate extremes, often referred to as extreme weather, extreme weather events, or extreme climate events. On the other hand, “climate stresses” are persistent occurrences of lower-intensity climate hazards (i.e. low-intensity/high-frequency successions of damaging phenomena). These include soil erosion, degradation of coastal ecosystems, salinization of soils and groundwater, glacial melting, soil evaporation, oceanic warming and acidification, a shift of river run-off patterns, migration of species or a rise in sea level.⁴

¹ Climate resilience community village plans were first introduced by IFAD in the Gente de Valor Project in north-east Brazil in 2007, and the Butana Integrated Rural Development Project (BIRDP) in Sudan in 2015.

² IFAD, *How to Do: Measuring Climate Resilience; Environmental and Climate Change* (Rome: IFAD, 2015), www.ifad.org/documents/38714170/40193941/htdn_climate_resilience.pdf/fd0b42b0-3fc1-41e2-bd45-c66506fa5004.

³ Intergovernmental Panel on Climate Change. “Annex II: Glossary”, in *Climate Change 2014: Impacts, Adaptation, and Vulnerability; Working Group II Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2014), pp. 1757–1776, http://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-Glossary_FGD.pdf.

⁴ See note 2 above.

Resilience to climate shocks and stressors is built through strengthening households' or communities' capacities to anticipate (prepare and plan to prevent impacts), absorb (build buffers and support networks to withstand and recover from the impact) and adapt to (change livelihood activities and practices) the climate shocks and stressors that are affecting their livelihoods.

The climate resilience community village plan⁵

Box 1. What is a climate resilience community village plan (CR-CVP)?

A climate resilience community village plan (CR-CVP) is a community-based, inclusive, gender- and nutrition-sensitive, responsive plan that ensures the integration of climate change resilience in the planning process. That is, CR-CVPs are community action plans that take vulnerability issues into consideration and identify implementable actions that are intended to reduce the community's vulnerability to the impacts of climate change, while contributing to building resilient livelihood systems.

A CR-CVP is a bottom-up process in which the local and most vulnerable people (individuals, households, men, women, youth, traditional communities and other groups) effectively participate in defining challenges and prioritizing their needs, and as decision makers identifying suitable adaptation options. Although it is a time-bound set of actions, it is a dynamic process that considers the current and future climatic conditions.

Challenges

Key constraints that need to be addressed during the preparation and implementation of a CR-CVP include the lack of awareness of climate change and its impacts, limited knowledge of how to adapt the productive system at different stakeholder levels, poor community organization, weak natural resources governance, poor institutional set-ups and arrangements for NRM at all levels, lack of proper capacity-building, inadequate access to technical assistance and rural extension, weak mechanisms to coordinate collective learning and adaptive actions, low quality of human capital and low ownership by the community.

To effectively guide and inform the design/implementation of the CR-CVPs and to sustain their proper functionality, it is important to consider the following challenges.

Elaboration

- The development of CR-CVPs should be based on a clear vision and theory of change, aiming to produce objectives, outcomes and impacts based on active and inclusive participatory consultative processes.
- The community-level approach may be insufficient in several cases, and a broader strategy may be needed (basin level, set of communities, etc.) (see the example in box 2).
- It should be ensured that there are enough funds available to effectively achieve the objectives of the CR-CVP.
- During the elaboration of CR-CVPs, economic viability is an important aspect that should be considered and could be reinforced. Besides self-consumption and the improvement of food and nutritional security, the search for a better economic valuation of the production (market access) is fundamental.

⁵ The CR-CVP differs from other community approaches. For example, in IFAD Tajikistan's Community-based Agricultural Support Project Plus, there are climate-sensitive community action plans for productive infrastructure/adaptation and mitigation activities. In addition, in the Livestock Marketing and Resilience Programme in Sudan, community adaptive plans, which incorporated the needs and priorities of poor people in target villages, were replaced by the CR-CVP. Through the CR-CVP, rural communities have shown greater ownership of managing natural resources in a sustainable manner in the short and long term.

Box 2. The Pró-Semiárido Project participatory targeting strategy: a territorial approach

In Brazil, the Pró-Semiárido Project (PSA) subprojects are organized in rural territories composed of contiguous or nearby communities represented by an organization; there are usually four communities. The territorial investment plans are built on a diagnosis of the territory's environmental, social and productive status needs, strengths and weaknesses. These territorial plans act as a master plan to guide the project's collective and individual investments. This very effective methodology ensures participation, an effective target, demand-driven investments, and that territories with a large proportion of rural poor people are systematically reached.

Context-specific analysis/diagnosis

- Assess the prevailing local conditions for a thorough understanding of diverse ecosystems, agroecological environment, climate risks, livelihood vulnerabilities, natural resources tenure arrangements, power structures and stakeholders' relations.
- Consider decision-making rights, and how existing local decision-making processes and structures have been and will be motivated/hindered regarding driving climate change adaptation planning.
- Characterize natural resources tenures; whether these resources are public, private, common or open access; and extent to which they are exposed to climate change impacts.
- Analyse factors related to and reasons for communities being willing to come together in groups or networks for NRM and sustainable development, and how scaling up can be undertaken.

Capacity-building

- Provide the project staff with full orientation and capacity-building, at both the management and the technical level, to effectively constitute and closely follow-up and monitor the CR-CVP and its functionality.
- Assure appropriate investment in the capacity-building of the communities and their organizations to effectively lead the design and implementation of CR-CVPs.
- Provide technical assistance and capacity-building using local experts, civil society and NGOs from the territory to enhance ownership, knowledge and sustainability.
- Provide the required guidance to ensure the feasibility of the plan and the relevance of the prioritized actions. For instance, project practitioners should think more broadly about the intensity of inputs and outcomes required for a truly transformative impact.
- Technical teams that will conduct CR-CVP processes in communities need preparation (training, visiting successful experiments, etc.).

Social inclusion

- Consider the experience, knowledge and creativity of traditional and local people to enhance the targeted communities' adaptation and resilience capabilities.
- Consider how to engage the well-off members of the community (those who own a sizeable amount of livestock and agricultural land) in the process of managing and improving the natural resources through their commitment to CR-CVPs, and the agreed regulations and by-laws.

- Analyse how to engage pastoralists in view of their mobile nature, and analyse the relevant approaches and tools that can be used to facilitate their inclusion as users of land and natural resources.
- Recognize women's central role in sustainable NRM, and actions to address climate change issues and build a climate-resilient future.

Opportunities

- There is a need to capitalize and build on existing community structures such as village development committees and NRM committees, which can be trained to enhance climate-resilient solutions and plans, rather than creating new ones.
- Community networks that share resources (e.g. water, rangeland, forest) represent a good entry point for improved and effective community-based NRM, and an opportunity to scale up collective action for climate change adaptation at the landscape level.
- The consensus among communities, planners, decision makers and politicians on the disastrous socio-economic, political and security impacts of land degradation and climate change provides an important opportunity and entry point for addressing sustainable NRM and adaptation to climate change.
- Harnessing and capitalizing on the potential power, experience, information, expertise and capacity of the poor and most vulnerable communities can lead to climate-resilient solutions. These groups usually have a strong commitment to improving their livelihoods when their priorities are addressed.
- Women and youth prove to be indispensable actors in the implementation of CR-CVPs and, eventually, the fight against climate-related impacts. This makes their active engagement and orchestrated investment in their capacities a valuable asset for improved NRM and enhanced resilience to climate change.
- Environmental championships, especially those valuing the innovative capacity of youth and women, constitute good grounds for developing and implementing a CR-CVP.
- The global concerns regarding climate change creates an enabling environment and good opportunities for accessing financial resources. This requires a strong and fully contextualized project design (see the example in box 3).
- In drylands, communities have adapted to drought and the vicissitudes of nature. They have developed a variety of successful adaptation technologies and techniques that provide solutions for the specific climate risks they face. There is a need to tap into and build on the accumulated wealth of indigenous knowledge regarding adaptation.

Box 3. The Planting Climate Resilience in Rural Communities of the North-east Project

The semi-arid region of north-east Brazil has been experiencing water scarcity, and increased drought frequency, intensity and severity. The Planting Climate Resilience in Rural Communities of the North-east Project will address these observed and projected climate impacts and will build the resilience of the most vulnerable farmers in north-east Brazil by transforming family farmers' productive systems towards low-emission and climate-resilient agriculture. The project will increase access to water for agricultural production through solar irrigation, and support women, youth and traditional communities to scale up other tested adaptation and mitigation measures in their agricultural activities.

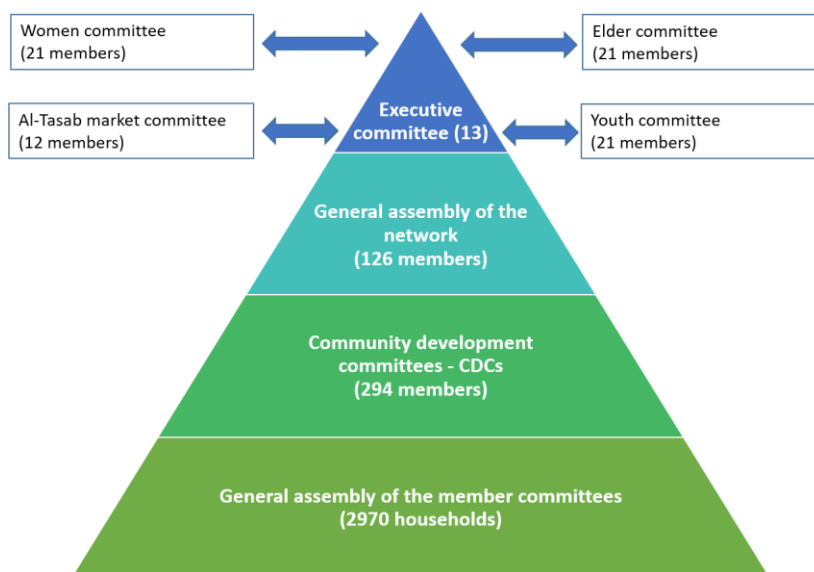
Key constituents of CR-CVPs

CR-CVPs are community-based plans intended to address climate change adaptation in which actions and interventions are collectively identified and implemented. Such activities include reducing the vulnerabilities that affect the community’s tenure security and are linked to insecure access, and, at the same time, increasing incentives for investments in adaptive management of resources (e.g. registration and legalization of community forests and rangeland); building capacities in rehabilitation practices and techniques, and guarding and social fencing of forests and community rangeland managed under community governance rules; establishing community rangeland reserves as a fodder buffer for prolonged dry seasons; investing in water harvesting, storage, recycling structures and local water-governance institutions; investing in technologies that reduce the pressure on forest resources, such as shifting to LPG-based cooking stoves and stabilized sand blocks/bricks to minimize the dependence on wood products for house-building purposes; and building capacities for adaptive governance and conflict resolution of shared resources to ensure equitable access to resources and to avoid violent conflicts.

Networks

The establishment of community networks enables a decision-making mechanism to deal with common challenges, providing important impetus to the CR-CVP, community empowerment and adaptation to climate change through management and governance of shared resources at the landscape level. When forming these networks, it is important that nomadic pastoralists passing through the landscapes managed by the networks are represented and considered as members of the networks. From 2014 to 2019, a total of 18 networks that brought 186 communities of men, women and youth together regarding issues of climate change and NRM were established under the Butana Integrated Rural Development Project (BIRDP). The structure of the networks, as exemplified by the organizational structure of Al-Tasab Network of the River Nile State in Sudan (see figure 1), provided an important avenue for the empowerment of the communities in their struggle against the impact of climate change, including the protection of their land against external capital encroachment.

Figure 1. Organizational structure of Al-Tasab Network of the River Nile State



The Al-Tasab Network consists of 6 villages and 23 satellite hamlets, with a total number of 2,970 households that constitute the general assembly of the network. Since its establishment in 2014, the network has managed to effectively protect community resources from the rapidly expanding agribusiness investment in the area, build and operate water points, establish community rangeland reserves, issue by-laws and create a network of voluntary youth groups to protect forests. The network had also managed to obtain funds from the government, NGOs and charity organizations, and run an office in the nearby town of Shendi. This is in addition to establishing, managing and running primary local livestock markets. The market provides valuable economic opportunities, especially the opportunity for women to engage in various small businesses through the shops allocated to women in the market. See another example of network arrangement in box 4.

Box 4. Networks of cooperatives

Arrangements made by rural organizations, such as cooperatives, can also play an important role in supporting the adoption and diffusion of new practices. In Bahia, Brazil, for instance, the Central da Caatinga Network connects family farming cooperatives in the Brazilian semi-arid region to different markets in Brazil and around the world through technologies and commercial solutions. It is an example of how families successfully organize at local and regional levels. The Central da Caatinga Network has a family farming warehouse and emporium, strategic commercial spaces that specialize in the diversity of products from family agriculture and the solidarity economy. These initiatives provide visibility not only to the products of affiliated cooperatives but also to other Brazilian agrobiodiversity ventures.

Rural women's groups

Rural women working in agriculture do not have a fair share of the assets, resources and services necessary for securing their livelihoods. Worldwide, women own less than 15 per cent of agricultural land.⁶ Adding to their structural disadvantages, women smallholder farmers are significantly more vulnerable to climate-related impact, as they face higher rates of poverty and are often responsible for securing water, food and firewood in a context of increasing pressure on natural resources and escalating environmental degradation. However, women are effective actors who play a key role in strengthening the resilience of rural livelihoods. Women's social role as stewards of natural and household resources is a good position from which to significantly contribute to climate change adaptation. Women and women's groups are key constituents of CR-CVPs (see examples in box 5 and 6).

⁶ Securing women's access to land remains an important aspect of building household and community resilience to climate change, while providing for the social, economic and political empowerment of women as agents of transformative and social change

Box 5. Securing women's access to land

BIRDP decided to invest in women's group farms under the CR-CVPs to reduce the impacts of climate change and improve agricultural production and nutrition. Recognizing the complex web of sociocultural factors that restrict women's secure access to land and the role of customary tribal institutions in land allocation, BIRDP managed to secure land for women through a coordinated negotiation process with tribal leaders in community-level groups. Accordingly, 112 women's group farms have been established, including 37 farms equipped with and operated by solar energy units. The groups were established based on the interest in ensuring harmony among the groups. Because large groups are usually divisive and conflict-prone, the number of women in a group was also restricted (not exceed 25). The groups were further legalized and linked to microfinance institutions. Considering the nomadic background of the women, the project provided focused and intensive training in agricultural practices. The project used seeds of prioritized vegetable crops. In addition to its recognizable and widely appreciated contribution to food security, nutrition, and economic and social empowerment, the project has made a huge contribution in terms of securing access to land for women; lack of access had been a clear impediment to women's development and empowerment.

Box 6. Agroecological logbooks – a methodological tool to render women's work visible

In north-east Brazil, as in so many other places across the world, the work of rural women is often invisible. Their contributions to their households – in terms of housework and raising children, and their work in agriculture and other economic sectors – are immense, but often go unnoticed. IFAD projects in Brazil introduced the agroecological logbooks to change that reality. A total of 879 rural women across eight states are now using logbooks to write down every contribution they make to the family budget, whether through vegetable garden production, handicrafts, sewing, small-animal breeding or gastronomy. The agroecological logbooks measure their monetary and non-monetary contributions to their families' economy, increasing autonomy, empowerment and decision-making power.

NRM forums

Under the CR-CVPs, BIRDP organized 39 participatory forums at different levels of governance, including the community, locality, state and interstate levels. The objective of the forums was to initiate and promote constructive dialogue regarding NRM, and identify solutions for systemic issues affecting the Butana communities. The goal of the forums was to develop and agree on a natural resources governance framework (NRGF) for the Butana area, which is the BIRDP operational area. The 379 communities (over 70 per cent of the Butana communities) were engaged at the community level. They participated in 24 forums through their respective local institutions (community development committees [CDCs] and networks). The forums provided important platforms for discussing the main issues related to NRM at the community level. The issues were further discussed and detailed during locality, state and interstate forums. The state-level forum was intended for discussion of issues related to the harmonization of laws and policies pertaining to NRM, while also providing additional input to the envisaged NRGF. A wide range of stakeholders attended the interstate-level forum from different levels of governance. Issues that require interstate and/or federal support, collaboration and/or coordination regarding policies, strategies, legislation and law enforcement mechanisms were thoroughly discussed and debated. Recommendations for the realization of the NRGF were provided and incorporated in the NRGF document, which has been unanimously endorsed by states.

Youth groups

Under the CR-CVPs, youth (male and female) should be mobilized and organized around NRM. A special fund supporting youth groups initiatives has been established by BIRDP. By 2019, a total of 27 youth groups were in place, and active in forest and rangeland protection and provision of environment-friendly services; this is in addition to their role as advocates for improved NRM. Their role in the dialogue regarding the establishment of an NRGF was conspicuous.

In Brazil, the PSA has selected youth from the communities who benefited from becoming part of the project team to act as rural community agents [*agentes comunitários rurais*] (ACRs). They helped strengthen local organizations and support the implementation of project activities, while assuring community ownership, proximity and trust. ACRs undergo continuing training processes, learning new concepts about sustainable agricultural production and harvesting, agroecological practices, associativism and the solidarity economy, gender, citizenship, social participation and everything about the concept of coexistence with the semi-arid region. The work of ACRs complements that of professional technician teams, providing day-to-day follow-up of the practices introduced by the project. Their role has been valuable in building confidence and social cohesion, promoting community participation and creating an understanding of the project in communities. In addition, the experience of the Gente de Valor Project, PSA's predecessor, shows that working as an ACR opens up new job opportunities for youth. In many cases, these youth go on to occupy positions at the local level in municipalities, unions of small farmers and support organizations.

In the Viva o Semiárido Project (PVSA) in Piauí, Brazil, youth are integrated through work with family farming schools (*escola família agrícola*), where they are trained in nutrition education and the development of nurseries and agroforestry systems. Through field days, students are also sensitized to the importance of preserving the Caatinga biome. See another example of initiative with strong youth participation in box 7.

Box 7. Reaatingamento: reforestation of the Caatinga biome

The practice of reatingamento is a pioneering low-cost action for the preservation, conservation and recovery of the Caatinga – the semi-arid ecosystem of north-east Brazil – that seeks to help reverse the desertification of this biome through the sustainable use of its common goods. In a participatory manner, the communities (men, women and youth) actively participate in the preparations for and the execution of reatingamento, being responsible for preparing the soil, fencing the selected area, building plant nurseries, producing and planting seedlings, and participating in training, meetings and exchanges. In Bahia, reatingamento has contributed to:

- Public recognition of communities as guardians of the Caatinga, particularly empowering youth
- Recovery of the Caatinga, with the formation of strategic forage reserves
- Protection of water resources
- Adding value to local biodiversity products
- Income-generating activities
- Rescuing the traditions of community work
- Participation and involvement of schools in environmental activities
- Strengthening and valuing the traditional way of life of Fundo de Pasto communities to prove that it is possible to live well in the semi-arid region, protecting its biodiversity and valuing the Caatinga
- Strengthening intergenerational relations through promoting the involvement of youth and children, as adults are concerned about leaving future generations with an environment capable of generating resilience, and the socio-environmental, cultural and economic conditions for coexisting with the semi-arid region.

Key principles for formulating a successful and sustainable CR-CVP

- Raising awareness on climate change and participatory vulnerability assessments of livelihood activities of the different social groups should be at the centre of the formulation of the CR-CVPs.
- CR-CVPs should follow a participatory and bottom-up approach, with the broad involvement of interest groups encompassing different thematic areas.⁷
- Integrating CR-CVPs into different levels of the planning process (i.e. local to national) to ensure that identified resilience-building and adaptation solutions/options will be considered during the budgeting process, and that strong multi-stakeholder partnerships are built.
- A shared vision and culture for sustainable results of climate change adaptation should be built among local, state and national stakeholders. The most vulnerable should be at the heart of the efforts to build a resilient community future. CR-CVP should include targeting mechanisms to reach the most disadvantaged communities, assuring no one is left behind.
- Seasonality, time lines, community contribution, affordability and capacity should be considered.
- An effective CR-CVP is rooted in the cultural and ecological assets of a given region, addressing its unique challenges. CR-CVPs should also build on local resources, focusing on strengths and adaptation potential.
- Pastoralists and, in a broader way, traditional harvesting practices of communities should be included through designing programmes, projects and interventions based on approaches and tools that suit their individualities.
- Integrating and valuing different types of knowledge – scientific, traditional, technical and local – will ensure decisions regarding the CR-CVP strategies are robust, locally relevant, tailored to local realities/needs and responsive to climate change impacts.
- Participatory monitoring tools should be used to support decision-making for continuous improvements in approaches, technologies and practices (further information on resilience monitoring will be provided in the forthcoming How To Do Note on RDMT).
- The experience of designing/implementing the CR-CVP, its best practices, lessons learned, and recommendations should be documented, systematized and communicated (in different formats). Ongoing learning from practice is key to knowledge management, informing project decisions, adjustments, evaluations and future replications.

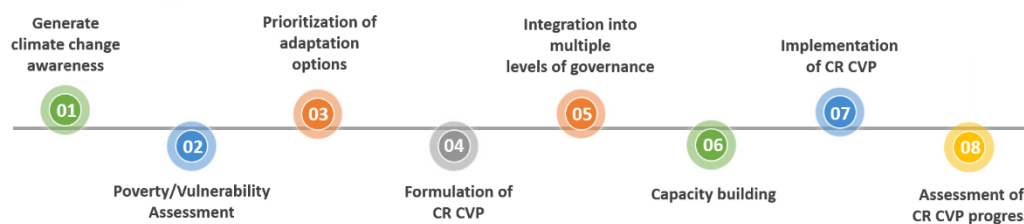
⁷ This collaborative effort is key to ensuring complementary actions at individual, household, community and societal levels.

Guidance for designing/implementing CR-CVPs

Although the outputs and outcomes of the **CR-CVPs** might be different based on the nature of specific ecological zones, types of livelihoods and the degree of exposure to climate change impacts, the implementation steps described in this section can still be used to identify climate and other risks, livelihood vulnerabilities, and resilience-building and adaptation actions. The steps will assist in raising awareness and formulating community action plans that address adaptation to climate change by making use of a participatory learning action system and other suitable participatory tools and approaches. Some of these can then be selected during project design/implementation based on the specific context and type of interventions. While the nature of a CR-CVP will vary depending on the climate change impact targeted (e.g. decline in crop productivity and production), the preparation and implementation of a new CR-CVP follow the stepwise process presented in this section.

Project design teams and project implementers will have to decide which specific steps/principles can be applied to an existing situation based on the magnitude of vulnerability and the affordable adaptation options (e.g. constructing rainwater-harvesting terraces/structures to increase productivity or using underground water for supplementary irrigation to offset a rainwater shortage).

Figure 2. Key steps for formulating a successful and sustainable CR-CVP



Step 1: Generate climate change awareness

- Awareness-raising is a continuous process that begins in the community/villages selection process and continues through the mobilization and awareness campaigns. It mainly sensitizes people at different levels to climate change and its differential impacts on men, women and other social groups. Enhancing communities' understanding and knowledge of climate change enables them to create adaptation plans that are more responsive, inclusive, flexible, context-appropriate and gender-sensitive (see box 8). The initial stage of awareness-raising and broad mobilization of communities helps to prevent elite capture of the planning process and prioritization of actions. It also enables members and other stakeholders to openly discuss and understand vulnerabilities, resilience-building and adaptation options, the potential benefits of implementing the plan, and how to ensure their sustainable impact. In addition, embedding knowledge into existing community structures strengthens them. Climate change sensitization is one of the most important milestones in formulating the CR-CVP, and is composed of two actions: collection of information; and sharing a common understanding of climate change and its different impacts on local livelihoods and men, women and vulnerable social groups. This is done by using and sharing downscaled information on historical trends and future scenario data through active participatory and consultative processes and by making use of the NRM forums at the community, locality, state and national levels to agree on suitable resilience-building and adaptation options, arrangements and strategies.

Box 8. The outputs of awareness-raising

- A common understanding of the CR-CVP in terms of objectives, functions, organizational structure, the importance of collective action, participation, follow-up and monitoring, and the anticipated benefits for individual households, the community and the natural environment.
- An awareness of the available opportunities and the potential challenges at different governance levels, and the measures needed to address these challenges and to sustainably manage the CR-CVP.
- Participants are equipped with the capacities required to develop the CRCVP vision and implement the plan.

- Awareness-raising and sensitization regarding climate change issues are carried out throughout the implementation process, based on remote sensing data and other climate data, findings from participatory monitoring of the effectiveness of different resilience-building and adaptation actions (further information will be provided in the forthcoming How To Do Note on RDMT), and the information and knowledge drawn from natural resources forums and other relevant events. The awareness and knowledge of climate change risks, potential impacts and local livelihood vulnerabilities need to be created at the village level, covering the following topics:
 - The nature of CR-CVPs, and their role in reducing vulnerability to climate change, enhancing the resilience and quality of livelihoods, and the restoration of ecosystem services and their sustainability.
 - Contextualized vulnerability analysis focused on the positive correlation between dependence on natural resources and exposure to climate shocks and stressors that increase with climate change. This involves the inseparable links between land governance and management systems; exposure to climate risks (shocks and stressors); and the vulnerability of livelihoods dependent on the health of soils, vegetation cover, the hydrological functioning of watersheds/wadis (dry water courses), and biodiversity.
 - Climate change shocks, stressors and conflict.
 - Opportunities for reversing the negative climatic impacts (e.g. group/organization formation for collective action and development, improved management of the soil, water, vegetation, agroforestry and other natural resources).
 - The best options to address the impacts of climate change that are possible under local conditions.
 - Collective effort and partnership.
 - Mapping challenges to build resilience and adapt to climate change, from the household and community levels to the highest level of governance, including community organizations' capacities.
 - The need to articulate the CR-CVP vision and plan based on agreed upon requirements.

Step 2: Poverty/vulnerability assessment and targeting

This step stresses the need for clarity regarding the scope of the CR-CVPs; the identification of the poorest and/or most vulnerable regions, communities, groups, households and individuals; and identification of the resilience-building and adaptation options that can reduce their vulnerability to impacts of climate change. Usually, the poverty/vulnerability assessment starts at the early stages of the project's design and continues through the initial phase of implementation, with the following action substeps.

Scope of CR-CVPs

Climate change applies to all agroclimatic zones, but has differential impacts on each of them, and also on men, women, youth, traditional communities and other vulnerable social groups living in the same zone. Structural inequalities, such as racism, the patriarchy and a lack of attention to rural development, contribute to these unequal climate impacts. Although those most vulnerable to the effects of climate change have relevant direct experience, information, expertise and capacity to lead climate-resilient solutions, their role is often undervalued and underresourced.

While CR-CVPs are conceptualized as and constitute community-based institutions intended to provide enhanced resilience to the impacts of climate change, they are also envisaged to serve as a platform for the implementation of a wide array of climate-resilient interventions and the organization of communities in active local structures geared towards the collective interests of wider society. To that end, CR-CVPs should be grounded in a multidimensional approach that fosters socio-economic and ecological resilience in all its forms. This involves a broader human development framework in which issues of sustainability, climate resilience and agrobiodiverse systems connected to remunerative markets are addressed, and poor rural peoples are strengthened across multiple domains (economic, productive, social, environmental and political).

Identification of poor/vulnerable communities, households, and individuals

This substep involves identifying:

- The most vulnerable region(s) based on certain selection criteria that are bound to the status of natural resources, exposure of the most typical livelihoods to climate change impacts and the capacities of the communities to cope (i.e. capacities to anticipate [prepare and plan to prevent impacts], absorb [build buffers and support networks to withstand and recover] and adapt [change livelihood activities and practices]).
- Poor localities, using a ranking based on the information collected on climate vulnerability and resilience capacities.
- Vulnerable communities with highly degraded natural resources affected by climate change; communities that, at the same time, have the least access to public services; and households, women and men with low adaptation capacities and livelihood activities highly exposed to climate change. For example, in BIRDP, the Butana area was selected from the beginning because of its high levels of rural poverty and food insecurity, and the fragility of the environment and its high susceptibility to degradation. The community selection criteria was designed with more focus on the status of natural resources, which are fundamental to the livelihood of poor people, who are highly affected by climate change such as increasing temperature, evaporation, prolonged dry seasons and droughts. The participatory wealth ranking within the communities, undertaken during the community selection process, further enabled poor households, women and youth to have top priority in the planning and benefits of implementing the adaptation options and actions identified.

Identifying resilience-building and adaptation actions

This substep includes:

- Undertaking a participatory vulnerability assessments to measure the stability of a particular ecosystem and the vulnerability of human communities. Participatory vulnerability assessments involve field experts and local community members, who work together to identify adaptation solutions based on local priorities and knowledge, supported by scientific information and technologies.⁸
- In the analysis of livelihood vulnerability, identifying socio-economic characteristics of groups in the community, and understanding the constraints and opportunities they face and their resources for resilience to climate change. Participatory tools that can be used for livelihood vulnerability assessment include: focus group discussion; future vision; strengths, weaknesses, opportunities and threats (SWOT) analysis; wealth ranking; income and expenditure analysis; impact analysis; gender analysis; and trend analysis.
- Identifying resilience-building and adaptation actions (with co-benefits for climate change mitigation by reducing emissions, and increasing carbon stocks in soils and vegetation cover) that enable access to and increase the quality of natural resources, improves the resilience of ecosystems and the services they provide, and reduces the exposure of livelihoods to climate risks (shocks and stressors).
- Identifying actions that are coherent with local needs, and adequate for smallholder farmers' capacity and absorption capacity through the general meeting and different group discussions that take place during the selection and the mobilization campaigns.
- Identifying adaptation actions suitable for the specific agroecological environment and most effective at addressing the vulnerabilities identified in step 2(a) (e.g. scarce water resources; lack of diversity and, therefore, concentration of risks in some livelihood activities; deforestation pressure; soil degradation; lack of tenure security; local participatory resources governance and conflict resolution institutions; lack of physical and digital connectivity affecting ability to cope with and recover from shocks).
- Guaranteeing the constitution of stock (water, seeds, fodder, grains, etc.) at certain times of the year to be able to face periods of shortage. The plans should foresee techniques and means to transform and store these resources.
- Elaborating disaster-risk analysis when relevant (see the example in box 9).

⁸ Oxfam Australia, *Integrated Disaster Risk Reduction and Climate Change: Participatory Capacity and Vulnerability Analysis Toolkit* (Carlton: Oxfam Australia, 2012), https://unfccc.int/files/adaptation/cancun_adaptation_framework/adaptation_committee/application/pdf/pcva_toolkit_oxfam_austria.pdf.

Box 9. Disaster-risk analysis

Lessons learned from the Southern Laos Food and Nutrition Security and Market Linkages Programme indicated that the project could achieve significant climate change adaptation success if village development plans and action plans integrated specific disaster-risk and climate change adaptation scenarios. Such an analysis is essential to inform decision-making processes and programmatic actions. It is also an area that can enable information-sharing and partnership with a wide range of actors. Identification of disaster risk will involve:

- Identification of disaster susceptibility based on past climate information and weather trends at the local level
- Development of specific disaster response strategies (for disasters that are deemed high risk or have a high probability of occurrence)
- Preparation of plans and schedule for mock drills to test the preparedness of disaster response strategies and ensure sufficient resources are available in the advent of a climate shock/stressor
- Mainstreaming of the disaster-risk strategy component in CR-CVPs and ensuring holistic participation from all stakeholders (different levels of institutional involvement).

Step 3: Prioritization of adaptation options

This step is a participatory process that prioritizes the resilience-building and adaptation options defined in previous steps to help start the implementation with the most urgent and suitable actions for vulnerable people. This is done through the following steps:

- Prioritize the adaptation actions that are important for the most vulnerable people (women, men, youth, indigenous and traditional peoples, and other groups) according to their areas of interest (interest groups)
- Prioritize options for implementation based on criteria such as environmental criteria, technological criteria, accessibility for vulnerable people, and economic costs and benefits
- Prioritize the most urgent and important actions based on gender needs and priorities
- Identify a set of actions with short-term results, and actions with midterm or long-term results.
- Tools that can be used to prioritize adaptation options include: different rankings (preferable ranking, matrix/multi-criteria ranking), problem tree analysis, innovation assessment and gender needs assessment (see good practices of adaptation in boxes 10–13).

Box 10. Agroforestry systems

Agroforestry systems are more resistant to extreme weather conditions than annual crops and tree monocultures, as they have various mechanisms to reduce the impact of droughts, such as moisture retention, reduction of extreme air and soil temperatures, windbreaks, and water loss reduction. Stratified, diversified and densified cultivation increases the photosynthetic capacity and, therefore, the biomass volume per cultivated area, increasing water circulation and promoting microclimate improvement. The approach is to combine different plants into a system capable of photosynthesis throughout the year, thus constantly producing biomass and accumulating water. By practicing active management, the entire system regenerates vigorously, therefore offering more resilience during dry periods.

For instance, the syntropic model of the farming family in the municipality of Riachão do Jacuípe, Brazil, is characterized as a diverse agrosilvopastoral system, managed with pruning and densification, and its main products are goat and cattle milk, meat, vegetables and fruits. In addition, the Savanna Agroforestry Horticulture (the Filho system [Systema Filho]) optimizes farming lands by using the space available between the orchards, representing an intensive and economically viable form of land use with great potential for small producers.

Box 11. Terrace construction for increased soil moisture and crop productivity

Terrace construction, one form of rainfall water harvesting, is a climate-resilient-land management intervention introduced by BIRDP in the Butana region of eastern Sudan to address rainfall shortage and fluctuation while increasing crop productivity. The terrace parameters depend on the prevailing conditions, which largely relate to run-off/water level, soil type and topography.

Traditionally, people cultivate in the vicinity of their settlements. Over time, the soil becomes degraded, infertile and of low productivity. Degradation coupled with frequent drought forced farmers to the beds of wadis, which are of restricted cultivable acreage and far away. Otherwise, they have to opt for rural–urban migration. Women are culturally denied access to distant wadis.

Improved productivity from terrace construction (e.g. sorghum from 180 to 630 kg/acre) contributed to better food security, increased income levels and revitalization of local trade. The terraces' location being closer to settlements resulted in a regulatory framework for NRM that prohibited livestock grazing in the vicinity of villages, minimizing community-based NRM conflict. Near the terraces, women started to have their own cultivation, while poor women were inspired to engage in a wide range of post-harvest activities inside the terraces.

Box 12. Small-scale social technologies for climate-resilient agriculture

In north-east Brazil and other dry regions, access to water resources is still a limiting factor for productive development and family health. IFAD has adopted and tested several small- and large-scale social technologies, such as household cisterns, underground dams, a Fusegate system at the Ponto Novo dam (Bahia), greywater reuse systems, biodigesters, efficient ecostoves, and wind and solar systems. It was demonstrated that, in semi-arid regions, it is essential that productive interventions are complemented by small-scale water-and-energy-access interventions, which are the main demands of the population. The primarily small interventions, normally managed by women, allowed greater access to clean energy and a significant diversification of the production of vegetables, fruits and forages, with a direct impact on the dietary patterns and nutritional status of families, and an increase in food security and the income of families. Although the integration of water activities is strategic and mainly in the context of drylands, high-impact social technologies can be adapted to suit different geographical contexts.

For more detailed information, see annex IV, “Social technologies for climate resilience”.

In the Paulo Freire Project (Ceará, Brazil), technical assistance teams provided mason training, targeted at women, on the installation and maintenance of social technologies.

Box 13. Bridging the animal feeding gap

To offset the shortage in animal feed, BIRDP has assisted some villages in establishing their own rangeland reserves in the nearby environs. The communities are helpful and ready to deploy land, but the limiting factor is how to protect this land, especially during the growing season, given the high influx of animals from various parts of Sudan to graze in the Butana, which is considered a disease-free area by nomadic groups. So, to address this issue, the project, with the involvement of the communities, explored different protection means for these reserves as follows:

- Erecting and fixing metal posts at the corners and along the boundaries of the reserves, with signs to dissuade travelling groups from keeping their animals in the reserved land
- Creating landmarks by making soil bunds or heaps along the boundary of the rangeland reserve
- Urging the communities to develop their own regulations and rules, and to benefit from the existing traditions and written laws
- Encouraging the community to cultivate the area around the reserve with a buffer zone to prevent or reduce the potential for encroachment and intrusion cases, whether malicious or unintentional
- Deploying voluntary guards from the communities who can work in shifts for incentives such as training, pooled hands to help on their farm or mobile phones.

In 2011, which marked the worst year in that decade in terms of rainfall, the community rangeland reserves had supplied good and abundant dry fodder during the dry season. For example, the Surooj, Mana, At-Takon and Jad Alla rangeland reserves had supplied 21, 22, 11 and 4.5 tons of fodder, respectively, by using mowers and rakes mounted on tractors, in addition to labour for packing bags or baling in bundles. The project assisted some villages in building storage structures for the collected fodder, with 25 per cent community contribution, while some households built their own stores at the back of the house to ensure the availability of fodder in the next year in case of drought (a resilience mechanism). In addition, surplus fodder was used to supply the livestock secondary markets, which helps increase throughput and, consequently, the flourishing of the markets and benefiting of producers, particularly pastoralists..

Step 4: Formulation of a CR-CVP

An adaptation plan is developed from the defined and prioritized options, showing the milestones (what), the action steps for each milestone (how), the location of implementation (where), the implementation period for each action step (when) and those with responsibility (who). The action steps are as follows:

- The planning process starts with establishing a shared vision and land-use map, which allows for improved governance of the community's land to ensure ecosystem integrity, the basis for resilient production landscapes. This map will guide the planning of concrete resilience-building and adaptation actions linked to land use with interested groups in the community.
- The technical assistance and rural extension teams usually assist each interested group (based around a common thematic area or sector, e.g. forests, rangeland, animal health and production, water, different agricultural groups, processing and commercialization, and special women and youth groups) within the community with developing their participatory adaptation plans, depending on the results of the participatory learning action tools applied in the previous steps.
- Participatory discussion and analysis with community representatives take place. The agreed adaptation actions or solutions that are defined on the roots of the solutions trees of each theme represent the milestones (**what**).
- The technical assistance and rural extension teams facilitate further discussion to come up with action steps that represent the implementation of each milestone (**how**).
- Decisions are made regarding **where** the action will be implemented and, referring to the agreed land-use map, whether it will be easily accessible to vulnerable communities and people.
- Decisions are made regarding who will be responsible for implementing the specific actions, which could include organizations, service providers or local people; **who** will be managing, maintaining and/or operating the intervention (e.g. a rainwater harvesting reservoir) under what rules; the workload distribution; and fee systems.
- Decisions are made regarding the suitable time (**when**) for implementing the specific actions, considering the availability of women and other different groups.

Tools that can be used in the formulation of CR-CVPs include community land-use mapping and visioning of a changed future, problem and solution trees analysis, group discussion, gender analysis, daily/monthly routines and the seasonal calendar.

Step 5: Integration of the CR-CVP at multiple levels of governance (from local to national planning)

This integration is usually undertaken at different levels, paying attention to gender, social inclusion and empowerment in decision-making to ensure that the final planning, outcomes and implementation process will address the needs of the targeted groups: men, women, households or communities. The integration includes:

- Compilation of the plans prepared by more than one group regarding the same thematic area or sector, for example a women's rangeland/forest group and men's rangeland/forest group.
- Further compilation is undertaken at the network/cluster or cooperative level and with assistance from the extension teams to come up with a single consolidated plan for the specific project area.

- Presentation and discussion of the plan at the administrative unit and/or at the locality/county/district level, for the plan to be approved at this level of decision-making and integrated into the planning process.
- Follow-up with localities/counties/districts and States to ensure the integration of the local resilience and adaptations plans into local development planning.
- Compilation and sharing of periodic reports and lessons learned at these levels to ensure that the national planning and implementation processes are ongoing and supporting the developed adaptation and resilience plans. To monitor the effectiveness of the resilience-building actions/interventions, the household resilience scorecard can be periodically applied, which will generate learning on which actions were adopted/implemented more by the community participants and which had stronger results in building a household's resilience capacities (further information will be provided in the forthcoming How To Do Note on RDMT).

Tools that can be used to integrate CR-CVPs into local- to national-level planning are group discussion, mini workshops, meetings and reporting.

Step 6: Capacity-building

The CR-CVP is usually formed around the collective and participatory management of community-based natural resources. From this perspective, it is one layer of community organizations related to and supervised by higher community governance structures such as community customary institutions, village development committees and community networks.

Accordingly, it is essential to identify the community organization that will exercise formal and/or customary power over the preparation, implementation and monitoring of the CR-CVP from the beginning. The organization must be empowered to take and enforce all key decisions required to make CR-CVP realistic and applicable. Members of the organization using the resources must elect representatives to carry out certain functions on their behalf. Representatives must be accountable to the membership.

The membership should receive adequate training to conduct its function and must be involved in key decisions made in following all the steps required to realize the CR-CVP. The roles and responsibilities of members, elected representatives and other stakeholders in decision-making must be clearly spelled out. This should ensure that the organization's operations reflect a good response to climate change vulnerabilities, are transparent and are communicated effectively. Other key training activities include:

- Team building within the community-based organization on the need for each member to play their assigned role in management, based on the understanding that the CR-CVP is the foundation for climate change resilience, along with improved economic and social conditions over the long term
- Basic training in participatory planning for climate resilience
- Formulating criteria/procedures for sharing benefits among members of the communities and social groups targeted
- Activities on gender concepts and the importance of gender participation in the planning, implementation and benefits of the CR-CVPs
- Basic training on participatory approaches and tools, and in particular participatory learning actions, the Gender Action Learning System and the involvement of youth
- Community procurement and contract management

- Developing rules/criteria for accessing, managing and governing shared infrastructures and assets (e.g. those related to water, the market, processing, renewable energy and agricultural machinery), and any financial resources mobilized by the community organization
- Preparing a CR – CVP at the community-based-organization level
- Tools for participatory livelihood vulnerability assessment and monitoring of progress in building resilience capacities (e.g. the IFAD RDMT; see step 8).

Participatory tools that can be used for climate change sensitization include focus group discussion/shared learning dialogue, problem analysis, trend analysis, the seasonal calendar, gender analysis, audio-visual materials, stories and historical background/time-line history.

Step 7: Implementation of the CR-CVP

This step executes the outcomes of the participatory process or the adaptative actions identified in step 2, prioritized in step 3, and prepared as an adaptation plan in step 4. The implementation can be carried out through:

- Reviewing the organizational structure and stakeholders chosen during the formulation of the plan to ensure their commitment to the agreed responsibilities
- Ensuring the effective participation of women, youth and other groups in the implementation and decision-making process based on the monitoring and evaluation (M&E) process that is committed to producing gender-disaggregated data
- Ensuring the abilities of the community-based organizations and their readiness to undertake the responsibilities (building the capacities of the responsible committees on both managerial and technical subject matters to achieve effective implementation [execution of training on community procurement, gender, climate change sensitization, governance of shared infrastructure and assets, etc.]
- Coordinating with ministries' service providers, and undertaking procurement and contracting where needed
- Implementing the plan by following the stated sequence of actions, taking into consideration that the plan should be flexible and dynamic to include any agreed additions or amendments according to the needs of the current situation and continuous feedback on progress
- Reviewing and discussing the feedback and lessons learned at different levels to make additions and/or changes if needed.

Tools that can be used for implementation include group discussion, training workshops, meetings, reporting and the M&E format

The **social control commission [comissão de controle social]** is an example of a successful implementation tool used in Brazil that can help to ensure that a CR-CVP results in transparent and inclusive decision-making. Within the territories, these commissions have been established to strengthen the role of project participants, guide and raise awareness of social control mechanisms among members, and ensure participation and transparency in the execution of the investment plans. These committees have a consultative nature, and are intended to monitor the execution of the project, carry out social control of the project actions, mediate conflicts, plan the activities to be carried out by the ACR (with input from the ACR and the board of associations), and carry out coordination beyond the limits of communities and rural territory. Social control commissions are one of the results of technical assistance aimed at strengthening local capacities and play an important role in the functioning of territories. They are also crucial to ensuring openness, monitoring and transparency in the processes.

Step 8: Assessment of the CR-CVP's progress

M&E is a continuous process usually undertaken throughout the formulation/preparation and implementation of the CR-CVP. It supports the development of the planning and implementation processes to be responsive to any uncertainty associated with the impact of climate change. M&E provides a learning environment that helps communities take suitable mitigation measures at the most appropriate time. Thus, it enables more effective planning and implementation regarding realizing the set objectives and goals. The M&E process mainly depends on:

- Continuous monitoring and follow-up for mitigations/corrections and technical backstopping
- Periodic reporting on the progress made, based on the detailed M&E indicators and format, and prepared for those at different levels.

This step focuses on the assessment of progress in building the resilience capacities of the household participating in the CR-CVPs, and improvements in the status, quality and resilience of ecosystem services that they are dependent on for their livelihoods. In addition, it includes the assessment of their access to the ecosystem services.

The project management unit staff and those of implementation partners and committees⁹ should be responsible for monitoring the implementation of the CR-CVP, using defined indicators to track progress towards achieving the expected outputs and reaching the desired goals. Monitoring can be carried out at two levels (project and community) using indicators that measure achievements and change at three levels: output, outcome and impact.

At the community level

Outputs: The community body/organization responsible for monitoring the implementation of the CR-CVP should monitor the extent to which community members and their households have participated in and adopted the resilience-building and adaptation actions agreed in the plan. Depending on the specific actions, this may include if they (i) have acquired new knowledge and skills (capacity-building actions); (ii) are participating in and following the rules for the governance and management of shared resources to secure their rehabilitation and sustainability; or (iii) have adopted/are using new practices and technologies (e.g. harvesting and safe storage of fodder as a buffer for prolonged dry seasons, using rainwater harvesting structures and drip irrigation systems for water-use efficiencies, starting a new livelihood activity for diversification and spreading of risks, selling their produce through a farmers' organization/producers' group/cooperative to achieve value addition and better access to markets).

This monitoring could be undertaken using questionnaires with focus groups or a representative sample of households in the community at the time of the development of the plan (baseline), midway through its implementation or annually, and at the end of the implementation of the plan. It will support the communities in their systematic learning regarding which resilience-building and adaptation actions have higher buy-in, or are, for other reasons, more likely to be implemented and adopted by community members/households. It can also help them detect if some vulnerable community members/households are not participating or are unable to access the actions that are meant to benefit them. All of this will support the communities in improving outreach and adaptive management of implementing the plans.

⁹ One possible resources management arrangement is a community-based NRM organization. These organizations are usually formed around the management of a specific common resource (e.g. fisheries, forests, land, rangeland, bodies of water and wildlife). The membership of these organizations elects committees that represent the membership in the management of the resource according to an agreed set of rules (IFAD, *How to Do: Strengthen Community-based Natural Resources Management Organizations; Smallholder Institutions and Organizations* [Rome: IFAD, 2014], www.ifad.org/documents/38714170/40312241/How+to+strengthen+community-based+natural+resource+management+organizations.pdf/444e08c4-35b8-4150-b3a5-850f89ed5e04?t=1555414351000). Thus, the committees referenced in the main text are constitutive parts of community-based NRM organizations.

Outcomes and impacts: The community body/organization should monitor the extent to which the implemented resilience-building and adaptation actions are achieving the desired results. This means monitoring if they are reducing the vulnerabilities they were identified to address, and are building the desired resilience capacities for the community members/households who are participating in and/or have adopted the action. Depending on the specific actions, this could, for example, include if they have access to a secure water source for their crop and livestock needs, particularly in dry years; they are able to maintain crop losses of below 20 per cent in some dry years; they have two or more alternative income sources in their household that can help them to cope with and recover from a shock that has an impact on one income-generating activity (e.g. a flood or drop in market prices); they can avoid months with food insecurity, even in particular dry years; the community has tenure security for their rangeland and forests that has led them to invest in rehabilitation and management; or they are experiencing increased and/or more stable prices for their produce by selling through a farmers' organization, producers' group or cooperative.

The outcome/impact monitoring question can be part of the questionnaires used for output/adoption monitoring with focus groups or a representative sample of households in the community at the time of the development of the plan (baseline), midway through its implementation or annually, and at the end of the implementation of the plan. It will support the communities in their systematic learning regarding which resilience-building and adaptation actions are most effective and can, therefore, help them improve the identification and prioritization of actions in future iterations of their CR-CVP.

The IFAD RDMT and the related How To Do Note will have a detailed step-by-step description of how a plan and context-specific household-resilience-monitoring questionnaire can be built to monitor the output/adoption and outcome/impact of resilience and adaptation action plans.

At the impact level: The outcomes should, in turn, be shown to be contributing to impacts, such as enhanced livelihoods, decreased poverty and vulnerability, decreased rate of deforestation, better nutrition, improved individual and family well-being, and biophysical impacts at the ecosystem level (see example in box 14).

Box 14. Economic-ecological analysis of agroecosystems – the Lume method

The PSA has applied the Lume method to calculate the economic return of agroecological investments. This experience allowed the PSA to identify the project's contribution to increasing the autonomy of agroecosystems and the social integration of farming families in the territorial dynamics of rural development. The Lume method also drew attention to the economic, ecological and political relationships that distinguish the ways of production and life of family farming and traditional communities, including women, which are often hidden by conventional economic theory.

At the programme/project level: The project implementing team should monitor the output/adoption and the related outcomes/impacts at an aggregated level across the communities being supported to develop and implement CR-CVPs in the project. This can be achieved by either aggregating results from the community monitoring or applying a questionnaire developed to cover most resilience-building and adaptation actions that are likely to be found in the CR-CVP. Eventually, two or three questionnaires can be developed, tailored to different types of communities if there would be significant differences in their livelihoods, agroecological, climate and socio-economic systems, and, therefore, their risk vulnerabilities, and prioritized resilience-building and adaptation actions (e.g. nomadic pastoralist, agropastoralists in rainfed areas and crop farmers in irrigated areas).

The How To Do Note on the RDMT will explain how a household resilience scorecard and index can be developed based on the output/adoption and the related outcomes/impacts questions using a unified scoring system that enables aggregation across different households and communities. This can aid the project in monitoring aggregated achievements in building resilience capacities and

adjusting the support given to the communities accordingly. The implementing team will also be able to perform different kinds of disaggregated analysis to identify which actions are more prioritized, implemented and adopted by each group of beneficiaries in different contexts, and also which actions are most effective. This can help to improve future policies and programmes aimed at scaling up adaptation and resilience-building.

The household resilience monitoring can be triangulated with geographical information systems georeferencing the communities, their resilience-building and adaptation actions, and remote sensing analytical data. These data can monitor what shocks and stressors are actually happening while the project is ongoing, and improvements in the ecosystem's health and services (e.g. seasonal vegetation cover in rangeland, forests and catchment areas that are important for the conservation of water sources, soil moisture and land degradation).

Supporting policies, strategies and arrangements

Generally, climate change adaptation planning falls under the mandate of several administrations and systems that impose fragmented policies. These legal and institutional regimes deal with each option in a manner that does not communicate or foster any form of integrated and coherent framework that would ensure a sustainable climate adaptation process.

Recommendations

- Developing policy and regulation leverage to scale up local solutions on climate change impacts, for example solutions regarding land and water governance, and to ensure long-term tenure security for vulnerable rural populations. Thus, there is an urgent need for institutional, legal and policy reviews of all natural-resources-related aspects, particularly those at the state and interstate levels. These reviews should aim to fill policy, legal and/or institutional gaps; harmonize and/or integrate different regulatory and legal regimes; activate existing policies at all levels pertaining to climate change adaptation planning; and strengthen the capacity of law enforcement mechanisms and institutions.
- Developing policies that recognize CR-CVPs as instruments for dealing with climate change adaptation planning and options.
- Institutionalizing the participation of the target individuals, households, groups and communities in developing and implementing the CR-CVPs.
- Introducing policies that encourage and promote resilient varieties of farming crops and livestock species.
- Establishing a land-use policy that reconciles the rights of the local community to live a dignified life and the State's right to adapt underutilized land resources for public interests.
- Drafting or enforcing a policy that promotes the inclusion and integration of the excluded pastoral communities in NRM and local community development through a co-management approach to NRM, including intra-state and interstate livestock routes and related services (e.g. water, veterinary, peace and markets).
- Endorsing policies that empower local communities, providing them with the necessary skills, abilities, and collective bargaining power; and policies that enable community representatives to engage more positively with authorities on issues related to climate change adaptation planning.
- Formulating policies that ensure cooperation, linkages and interdependencies among all institutions, sectors and levels engaged in or pertaining to climate change planning.

Box 15. Brazilian public policies for family farming

Despite recent cuts to public funding, the Government of Brazil has a wide range of policies targeting family farming, which are extremely important for strengthening the dynamics of climate resilience strategies in the country. For instance, the Food Acquisition Program (Programa de Aquisição de Alimentos) and the National School Feeding Program (Programa Nacional de Alimentação Escolar) are the main institutional food purchase programs for family farming in Brazil. Another strategic policy is the National Program for the Strengthening of Family Agriculture (Programa Nacional de Fortalecimento da Agricultura Familiar), which finances investments and loans for family farmers and their rural organizations using 17 modalities, including specific credit lines for women and youth. Furthermore, the Rural Development Program (Foment) combines two actions: social and productive monitoring, and the direct transfer of non-reimbursable financial resources to families for investment in a productive project (R\$2,400 or R\$3,000). These two actions are implemented with the objective of supporting the productivity of the poorest rural families and the development of their productive projects.

Conclusions, lessons learned and strategic recommendations

- CR-CVPs provide an indispensable platform for the implementation of a wide array of climate-resilient interventions, and the organization of communities in active local structures geared towards shared interests and collective rights.
- CR-CVPs should be based on a comprehensive and integrated multidimensional strategy, combining climate risk management and adaptation activities with other investments to increase agricultural productivity and access to financial services. Measures for fostering climate, environmental, economic and social resilience should be coordinated to increase communities' capacity to reduce impacts (by anticipating, planning and preventing), and absorb (by building buffers) and recover from external shocks. It is important to recognize and harness the potential positive power of poor and marginalized people through targeted responses to priorities, investment in social capital development, and upgrading their productive and social skills and capabilities.
- Related to the above, CR-CVPs should apply a multidimensional approach that fosters socioecological resilience in all its forms. This is in line with IFAD's strategic vision of inclusive and sustainable rural transformation,¹⁰ in which strengthening climate resilience is understood as a subsection of a broader human development framework, strengthening the assets base of poor rural people from multiple perspectives (economic, productive, social, environmental and political).
- The establishment of CR-CVPs should be a demand-driven process, with self-prioritization of needs being encouraged, rather than practices being selected by the projects. Designing and implementing CR-CVPs with communities improves the uptake and sustainability of processes because communities develop a stronger sense of ownership and their priorities are met. To that end, community mobilization, investment in awareness-raising, empowering the social capital of poor people and their organizations, and capitalization on community entry points (champions, community activists, community leaders, youth and other social

¹⁰ IFAD, *IFAD Strategic Framework 2016–2025: Enabling Inclusive and Sustainable Rural Transformation* (Rome: IFAD, 2016), www.ifad.org/documents/38714170/39132730/IFAD+Strategic+Framework+2016-2025/d43eed79-c827-4ae8-b043-09e65977e22d.

mobilizers) are important inputs for the development of collective culture, and the realization of active and sustained CR-CVPs.

- Intensive and focused capacity-building is a prerequisite for successful interventions for the development of active community structures. Targeted investment in the capacities of the project staff at all levels contributes to enhancing their skills and capacities and, more importantly, provides them with inspiration and commitment to both the project and the communities they serve. In addition, building social cohesion means that individuals can be supported within strengthened social structures in the context of external shocks and stresses, such as a severe and prolonged drought. Community stewardship is also paramount for genuine climate resilience.
- Strengthening grass-roots community-level organizations (cooperatives, producers' organizations, associative enterprises, microenterprises, etc.) to drive the design, implementation and monitoring of CR-CVPs is key to effective and sustainable intervention.
- Preparing and implementing CR-CVPs with technical assistance has been a transformative intervention in Brazil, especially for poor families who had never received technical assistance. This practice has helped ensure the sustainability of investments, and strengthen and diversify agricultural production, enhancing resilience. There is a need to prepare and train technical assistance personnel to work in the area of climate resilience.
- As adaptation techniques may take several years to show results, the strategy to extend a CR-CVP must consider incorporating support for a shorter cycle production and with a quicker response (bee-keeping, poultry-farming, vegetables, etc.). This produces a stimulating effect and allows communities to wait for longer-term actions to generate benefits.
- Cross-sector collaboration, with community leaders at the centre, is key to the development, implementation and sustainability of climate-resilient innovative solutions. Building equitable and horizontal multi-stakeholder partnerships, particularly between local government and community-based organizations, brings expertise and capillarity to community-driven solutions. Several successful technologies are being created and implemented in Brazil and Sudan, but investment is still needed. In this context, private-sector engagement can strategically encourage investment and scale up climate solutions.
- Valuing, bridging links between and promoting dialogue between types of knowledge (academic, technical, traditional and local) create an enabling environment for innovation, experimentation, knowledge-sharing and scaling up of climate adaptation good practices valuable for CR-CVPs.
- Women are potentially active agents in the fight against climate change if their potential capabilities are recognized, their livelihood priorities are identified and addressed, and the right approaches to dealing with these priorities are applied.
- Community networking helps collective decision-making and actions reduce the adverse impacts of climate change. It also empowers the people who emerged as strong defendants of community rights, including rights to land and natural resources, and elevates community voices in public spaces. In the process, significant civic-government engagement has been constituted. Successful networks are voluntary structures based on interest, community initiative and social harmony among the participating members
- This publication on how to design and implement the CR-CVPs can be used to carry out an inventory of existing good practices in projects across IFAD's portfolio, including an assessment of their validation and scaling up status.

Frequently asked questions

1. What is a CR-CVP?

See Box 1.

2. How do you prepare a CR-CVP?

See annex I and annex II.

3. What are the prerequisites for successful and sustained CR-CVPs?

See page 14.

4. How can women benefit from CR-CVPs, and what role could they play in constituting and sustaining CR-CVPs?

As highlighted in different sections of this note, women benefit from CR-CVP by accessing tangible (credit, technology, water, land and income) and intangible assets (knowledge, empowerment and capacity). They can also be empowered by leadership training specifically targeting them, host demonstrations of climate-resilience solutions, participate in climate resilience agricultural technology exhibits, participate in entrepreneurship awards specifically for women engaged in creating climate-resilient productive systems and receive training grants. Women could play leadership roles in designing and implementing CR-CVPs, sustainable NRM, climate-resilient social technologies, and knowledge networks of farmers practising agriculture adapted to the current and expected climate conditions.

5. How could youth be engaged in CR-CVPs?

There are multiple ways to engage youth in CR-CVPs. Some good practice examples of roles that include rural youth have been highlighted throughout this note, such as ACRs, guardians of ecosystems/biomes/forests (e.g. guardians of the Caatinga), climate champions/leaders, knowledge managers, leaders in the sustainable NRM of collective areas, local talents, and members of technical assistance and rural extension teams. Other strategies targeting rural youth inclusion in Brazil and Sudan are (i) building and supporting youth sustainable NRM networks and organizations, (ii) financing climate-resilient solutions created by youth (e.g. the Rural Youth Innovation Award in Latin America and the Caribbean) and (iii) implementing agroforestry systems in schools (e.g. PVSA in Piauí, Brazil).

6. How can CR-CVPs specifically target traditional communities?

First, CR-CVPs can target traditional communities by valuing customary regulations and tribal institutions, which should be considered viable and effective structures that can support climate change adaptation planning and implementation processes. Second, it should be recognized that traditional communities are often bearers of unique adaptative knowledge and practices accumulated across generations. This know-how can be blended with modern scientific approaches to build innovative climate-resilient strategies. Third, traditional communities may serve as references for other groups through learning routes and exchange visits between the target groups. These initiatives help accelerate the implementation process and have efficient outputs.

7. What are the main challenges to CR-CVPs?

See page 6.

8. Who would be a good facilitator of CR-CVP analysis, planning and design?

A good CR-CVP analysis and design facilitator assists as a catalyst in the planning processes. They are a planning promoter who coordinates the design processes through which the groups receive both soft and technical skills. They facilitate the needs analysis and coordinate the delivery of

capacity-strengthening skills in participatory planning for sustainability, leadership, good governance, visioning culture, budgeting, communication, management, basic problem-solving, resource mobilization and partnership-building skills. They broker links between organizations and other development/service-provision actors (private sector and government/NGO development services). They should understand how to use a range of planning methods, including resource-mapping, production flow charts and future vision analysis.

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Annex I: Framework for preparing a CR-CVP

A climate-resilient plan should specify the interventions to be carried out by the community institution to fulfil its mandate in reversing the negative impacts of climate change. The plan should also link to other important activities undertaken by the community. Participatory methods are extremely useful, as they enable community representatives and other stakeholders to contribute to the adaptation planning process, and provide accessible information and ideas for use at the grass-roots level. It should be ensured that the plan uses visual tools and simple illustrations; use maps, posters and charts, where necessary. These tools may then prove useful for monitoring progress.

It should be ensured that the framework is accessible to all community organization members. For operational purposes, this plan should inform the action plans of organizations and the project's annual work plans/budgets, in addition to the monitoring process. The plan should be clear regarding what should be done to improve resilience and how this should be done. The key elements of the CR-CVP include:

- **A goal:** A common understanding of the value of the climate change adaptation within and among the community in the villages concerned should be established. This will form the basis of the proposed climate change resilient actions.
- **Objectives:** All stakeholders and committees at the village level and higher levels must agree on concrete adaptation objectives and desired outcomes.
- **The land-use option plan:** This is a mechanism for zoning locations based on criteria that allow for different user types in different parts of the production ecosystem. Its advantages include the following:
 - It helps to reconcile competition for conservation and development objectives (especially in situations involving settlers and mobile communities), while maximizing benefits that can be derived from using the resource.
 - It facilitates comparison among alternative scenarios, which is instrumental in selecting realistic proposals.
 - It enables specific risks associated with land, resettlement or environmental damage to be integrated into the main plan and support measures designed and managed in consultation with the communities affected.
- **Activity plans and road maps:** Precise action plans and road maps should be prepared, and a realistic time frame should be agreed on:
 - Activities should be specific to each zoned location, setting out the desired outcomes and targets to be achieved over defined periods. The level of detail of the plan and its complexity should be commensurate with the specific risks, impacts and opportunities of the project area.
 - Considering that some community members are disadvantaged and more vulnerable than others, the plan can clarify the need for differentiated measures so that groups are not disproportionately affected in the sharing of benefits and opportunities.
 - The dynamic nature of projects and the implementation process needs to be taken into account. The plan should be flexible and responsive to changes in project circumstances, unforeseen events, regulatory changes, climate change impacts, environmental and climate shocks, etc.

- An implementation approach should be defined. It should be ensured that activities are sequenced to show which ones should be implemented in the short, medium and long term, hence providing the necessary interface between long-term priorities and the routine annual work plan and budgeting exercise.
- There should be a clear understanding on the part of all stakeholders of who plays what role within the proposed CR-CVP.
 - The necessary technical capacity (including further training requirements) should be incorporated to address and manage the environmental and social risks that may occur during the implementation period.
- Clarity regarding lines of communication and authority in the implementation of action plans should be provided. Key performance indicators should be set, and the milestones agreed on. This should also include supervision routines and measures to be employed in case of non-compliance with agreed actions.
- **Procedures:** Procedures and by-laws should be agreed to establish what can and cannot be done in different parts of the CR-CVP (e.g. stakeholder participation in plan development, screening for environmental dam safety and social impacts). The procedures and by-laws should be strictly enforced by the community institution in collaboration with local authorities. The procedures should also comply with IFAD requirements for assessing and managing environmental risk. Chance-find procedures should be included in the plan, particularly in an area where tangible cultural heritage is likely to be found.

Annex II: The detailed implementation modality of CR-CVPs at the community/village level

A unified modality of implementation has been developed, explained, discussed and shared within the extension teams. This is intended to ensure the smooth implementation of mobilization campaigns that aim to mobilize and sensitize communities regarding the impacts of climate change and NRM; facilitate the formation of community-based organizations, including community-based NRM organizations and networks that can be registered under the agreed law; and support the formulation of the CR-CVP. The division of roles among the team members follows the explanation and discussion of the modality to aid effective implementation and performance of those roles during the campaign; these explanations and discussions often take at least three days per community/village. The main steps of this modality by field day are set out below.

The first field day:

Start by convening a public meeting with all community members or the majority of them (focusing on the participation of women, youth and the poorest groups) to ensure the execution of the following tasks or sub-activities:

- **Raising** the community's awareness of the negative impacts of climate change, and the intended objectives of increasing the community's resilience and enhancing the adaptation ability to cope with the climate change uncertainties.
- **Clarifying** the importance of community in the form of individuals, groups, women, men or households in addressing their issues and needs in the development process, from identification of problems/constraints, adaptation actions and priorities, to planning, implementation, monitoring and overall management. In other words, the government, NGOs and projects are only assistants and facilitators, while the community is the origin and central element in the development process.
- **Explaining** the benefit of community organization and formulation of strengthened grass-roots institutions and, in particular, the natural resources organizations that are regularly capable of accessing funding and development opportunities to sustainably improve the livelihood of their members. At this point, more focus is given to clarifying the different laws and regulations that underline the formulation and registration of the community-based organizations (agricultural societies, cooperatives societies, the voluntary law, etc.), which affect the objectives, benefits and requirements of the particular intervention's or project's objectives and approaches.
- **Raising** the awareness of the community on the importance of gender integration in the development path (women, men and youth), with a clear focus on the role of women in the village becoming more stable, and on women's expected participation in and contribution to the climate resilience interventions.
- **Constructing** a timetable and sites – suited to both men and women – for the three days, with full discussion and agreement with the community and their leaders, stressing the necessity for all participants to commit and adhere to this timetable and the specified sites.
- **Implementing** the three tools that pertained to the site (the resources, services, and opportunities map/village map; the mobility map; and the transect tool) with considerable participation from the community members who are knowledgeable regarding the themes. This depends on the number of community participants: in cases of limited participants, the three tools will be implemented sequentially; otherwise, they will be implemented simultaneously. While the team is implementing these tools, priority should be given to discussion of the particular resource, benefits, access by different groups, economic

partnership with other neighbouring villages, development actors, shortage of rainfall, the extent of exposure to climate change and the mitigation options or the community proposal to achieve development objectives, etc.

- While part of the team is applying the transect tool, the rest should discuss and analyse the general constraints that face natural resources (water, rangeland, forests, land, agriculture, livestock, etc.). Following this discussion, constraints should be listed based on their importance using preference ranking for each sector/theme. Based on that, the core problem should be identified and the correlation between reasons and effects clarified (problem tree analysis). This step should be performed by constructing the goal; accordingly, all the necessary activities/adaptation actions, means and resources required to achieve this goal should be discussed and listed. The same step is applied to identify the expected effects (goal tree analysis).
- All of this work is followed by a presentation of the findings at a public gathering for further interpretation, along with additions or deletions.
- **Concluding** by the end of day one that the community has managed to define the problems/constraints facing their natural resources, set their priorities, analysed the defined and prioritized constraints, and identified the mitigation/adaptation options. By achieving this, the team will be prepared to continue working with the village/community in the subsequent two days based on the agreed timetable and sites.

The second field day:

- **Applying** the future vision analysis tool for each specific theme/sector/resource with the same group members who participated in the application of the above steps, with the possibility of adding new participants. By the end of this, the team should arrive at the current and future vision of the sector/resource, and should have analysed the constraints and supporting factors to be taken into consideration when preparing the adaptation plan.
- **Applying** the seasonal calendar tool to produce a suitable time frame for implementation and project interventions based on the objectives.
- **Listing and discussing** all the required operations of the agreed adaptation options or interventions to inform the identification of constraints and opportunities, and drafting of the plan.
- **Convening** a public meeting by the end of this day to discuss the importance of organizing communities/farmers, and revising the already existing committees or formulating new ones
- **Explaining** the criteria and conditions for membership, and the roles and responsibilities of the members.

The third field day:

- **Deciding on** and declaring if and how the new committee will be formed (e.g. by consensus, or through free, direct election), or if the existing committee will be revised and renewed.
- **Developing** and formulating the CR-CVP, using all the findings/results attained over the three days (e.g. main and sub-activities; clear time lines; defined responsibilities; and all resources, means and materials required to execute this plan as mentioned in section 6, step 4, regarding the formulation of a CR-CVP.

Annex III: Implementation modality for formulating community networks

A community network is a community-based organization in which several neighbouring communities come together under one legal entity. They benefit from the existence of a CDC in each community, which have the main objective of protecting their land to sustain natural resources as their principal source of livelihood. In addition, solidarity and coherence will serve to address their other needs, particularly those due to non-existent social and financial services.

This modality of formulating CNWs developed by BIRDP became a central element in the implementation manual, especially for improving and developing natural resources governance and empowering community-based institutions. The following steps explain this modality:

- Convening orientation sessions for the development teams at the state coordination units, focusing on potentialities for networking, challenges and enabling factors (e.g. sharing rangeland, forests and water facilities).
- Identifying and delineating the expected area coverage and villages based on certain indicators, which include possessing rangeland, forests and cultivable land within the environment of the expected member villages; sharing use of natural resources or social facilities like hafirs/water yards; having robust social fabrics; and having similar developmental problems in accessing basic social services.
- Selecting one village, based on community consensus, from among those villages nominated to compose the intended network, to host a workshop for stipulating and selling the idea of networking. This selection is made based on certain criteria, such as (i) having an active CDC (good record of follow-up of planned and implemented activities, and strong belief in voluntary work, participation principle and complementarities of roles); (ii) the existence of influential community leaders with good reputations in their communities and the neighbouring ones; and (iii) active community participation in the implementation of activities.
- Defining and coordinating a meeting with the CDC of the selected village, with the attendance of the influential community leaders, with the purpose of (i) explaining the idea and objectives of networking; (ii) exploring the possibility of the selected CDC and the community leaders participating in the orientation campaign targeting the neighbour villages that are going to join them their network; (iii) identifying and naming villages that could participate in the animation process; (iv) constructing a time line for implementing the orientation campaigns to cover all the initially selected villages; (v) setting and ascribing standards, condition and rules for qualifying for membership of the network (legal CDC or under registration process, no remarkable dispute, strong social relations, common resources, under threat of land grabbing, insecure natural resources tenure and use); and (vi) identifying and ranking preferred characteristics of participating villages (e.g. access via a grid of rural roads connecting the nominated villages and their environs; one market for agricultural produce/livestock; lacking a basic education service – specifically, not having a school for girls, who deserve the right to education).
- Convening a public meeting with all community members on the subsequent day to gain the consensus of the absolute majority of women, men and youth on the idea of networking (the project staff are to play the role of facilitation only, and the community leaders are to moderate and decide).
- Implementing the orientation campaign to cover all the initially selected villages, following the same steps as in the initial village, that is a meeting with the CDC of the selected village and the influential community leaders, and another meeting with the public. There is an opportunity to select influential community leaders from the public to join the orientation

campaign team. In addition, by the end of the public meeting in each village, the following are expected essential outcomes: (i) selecting, by public consensus, the members who are to represent the village in the preparatory committee of the network and (ii) introducing/voicing salient issues (if any) to be on the agenda in the start-up workshop or the periodical meeting of the preparatory committee.

- Constructing time lines for the periodical meeting of the network preparatory committee.
- Drafting and developing the rules and tasks of the network preparatory committee, which could include:
 - Identifying, by consensus, the common issues and challenges that are facing or may threaten their area and the network.
 - Specifying and determining, in consultation with their assemblies, the start-up workshop's venue and time.
 - Specifying the number of village representatives to participate in the start-up workshop, with the necessary inclusion of women and youth.
 - Instructing all villages, at a public meeting, on the objectives and the agenda of the start-up workshop.
 - Coordinating the estimation of the budget and cost of the start-up workshop, and the workshop contents and methodology, with the respective state coordination units.
 - Supervising the workshop implementation.
 - Instructing each village, at a public meeting, on workshop outcomes, with a focus on the work plan (this is to be undertaken by the village representatives in the preparatory committee).
 - Supporting the CDCs in completing or renewing their registration as a legal entity.
 - Registering the network as a legal community entity.
- Implementing the start-up workshop with the following content and purposes:
 - Presenting and discussing a working paper on networking as a general theme, with a focus on the network issues and challenges using strengths, weaknesses, opportunities and threats (SWOT) analysis. By the end of this, there should be a ranked list of issues and challenges, based on consensus.
 - Splitting the participants into working groups and assigning each group an issue/challenge to discuss and come up with a plan to respond to and address it within a specific time frame (one to two or three years). Each group to be given technical support by the development team and government counterparts.
 - Presenting and discussing the work of the groups.
 - Validating the outcomes/findings of the groups' work and constructing a holistic/consolidated work plan for the network.
 - Reviewing and approving the structure and members of the preparatory committee (add new or replace an existing member).
 - Providing technical support to the preparatory committee to break down and mainstream the work plan by using the vision tool in the presentation to help the perception and understanding of the public.
 - Assisting the preparatory committee in implementing and following up the work plan.

Annex IV: Social technologies for climate resilience

Social technologies are a set of transforming techniques and methodologies, developed and/or applied in the interaction with the population and appropriated by it. They represent effective solutions for social inclusion and the improvement of living conditions. Social technologies have clear and defined characteristics, such as low implementation cost, ease of construction and replication, non-discriminatory participation and social gain for the population. Social technologies are widely used in the Brazilian semi-arid region, and are usually implemented by beneficiary families under the supervision of technical assistance teams. In addition to generating work and income in the territories, the installation of these social technologies also involves an education component that guarantees the development of capacities for their maintenance without depending on external services. These community-based technologies create better conditions for farmers to strengthen their production systems, generating food and nutrition security.

The implementation of diverse social technologies for coexistence with the semi-arid region by different IFAD projects in Brazil has improved the livelihoods of vulnerable small family farmers in poverty and extreme poverty, particularly the priority groups (women, youth, indigenous peoples and *quilombolas*¹¹). Social technologies are alternative ways of promoting high-impact and low-cost solutions to communities facing economic, social and environmental vulnerability. These infrastructures helped IFAD's effort to promote solutions for rural development from a transversal perspective that encompasses the interconnection between the issues of poverty reduction; combating hunger; sustainable management of ecosystems; and productive development, mitigation and adaptation to climate change.

Regarding climate resilience, water infrastructure and energy-access social technologies are particularly relevant (see table 1). Water infrastructure social technologies safeguard access to water; improve productivity; contribute to food and nutrition security; foster climate resilience; and maintain the environment, soil and human health. Energy access social technologies help to solve two main environmental challenges: the inadequate management of waste produced in rural areas and the deforestation of native forests to collect firewood for cooking. These solutions directly support climate change mitigation efforts.

¹¹ Quilombolas are Afro-Brazilian resident of quilombo settlements first established by escaped slaves in Brazil. They are the descendants of Afro-Brazilian slaves who escaped from slave plantations that existed in Brazil.

Table 1. Examples of climate-resilient social technologies

Water infrastructure social technologies
<p>Greywater reuse systems prevent domestic wastewater from being a risk to the environment, soil and human health. They are divided into four stations: (i) the grease trap, into which the greywater from the residence is directed; (ii) the filter and worm farm, a filtering unit composed of physical and biological waste prevention mechanisms, with humus as a product; (iii) the reuse tank, a reservoir for storing filtered water; and (iv) the productive backyard, where the water from the reuse tank is pumped to a water tank to be used in the irrigation of small plots, such as backyard gardens and nurseries. Therefore, this process is based on the filtration of greywater through physical and biological mechanisms, in which micro-organisms and earthworms biodegrade organic matter.</p>
<p>Green septic tanks blackwater treatment systems use anaerobic digestion, associated with the septic bed, to consume the organic matter from household waste, together with the action of aerobic micro-organisms in the root zones of plants. Human waste is transformed into plant nutrients, and water irrigates trees (usually banana trees, which are part of the treatment systems) and non-edible plants by evaporation. Thus, the effluent does not infiltrate the soil, preventing the pollution of soil, surface water and groundwater.</p>
<p>Household-level cisterns are 16,000-l household cisterns designed to provide families with access to high-quality water in sufficient quantities for human consumption (drinking, cooking and oral hygiene) during the dry season. Plate cisterns are a type of cylindrical, covered and semi-buried reservoir that can capture and store rainwater that runs off the roofs of houses, using zinc or PVC gutters.</p>
<p>Boardwalk cisterns or production cisterns (<i>cisternas-calçada</i>) have a capacity of 52,000 l and are connected to a “boardwalk” (a cement floor measuring approximately 10 m × 20 m [200 m²]). For this area of the boardwalk, 300 mm of rain is enough to fill the cistern. Through pipes, the rain that falls on the boardwalk flows into the cistern, which is built in the lowest part of the land and close to the production area. They are often installed in schools to provide high-quality water for consumption by students and teachers, and are guaranteed to fill even in years when rainfall is below average. They can also be used to irrigate small productive plots to support short-cycle crops (mainly vegetables, fruits and medicinal plants) or for animal consumption during the dry season.</p>
<p>Itinerant water treatment stations (<i>estações de tratamento de água móveis</i>) supply the household and boardwalk cisterns, ensuring greater regularity of access to potable water in rural communities in emergency situations. The equipment that constitutes these stations perform the processes of desalination, decontamination and water purification. Each mobile water-treatment system comes with three water trucks: two with a capacity of 10,000 l and one with a capacity of 6,000 l. The great advantage of this equipment is its mobility, which means that it can reach any region.</p>
<p>Solar-powered desalination units consist of a box built with pre-moulded concrete plates, with a glass cover through which solar radiation can pass. When the temperature inside the desalination equipment increases, this promotes the evaporation of the stored water, which is collected in an attached tank.</p>
<p>Underground dams are usually built in areas of streams that form in winter, which is the rainy season in the Brazilian semi-arid region. It is built by digging a trench in the impermeable layer of the soil: the rock. This ditch is lined with a plastic sheet and then covered. In this way, a barrier is created that “holds” the rainwater that flows under the ground, leaving the area soaked and enabling production. To ensure water during the driest period of the year, wells are built approximately 5 m away from the dam. The well captures the water stored in the dam, which can then be used for small irrigation, allowing families to produce throughout the year.</p>
<p>Small surface dams (<i>barraginhas</i>) are between 2 m and 3 m deep, with a diameter between 12 m and 30 m. It is constructed in the shape of a shell or semicircle. It stores rainwater for two to three months, so that the soil remains moist for longer. If the dams are successive, the water supplies the next dam when one overflows. The surrounding soil moisture favours the planting of fruits and vegetables.</p>
<p>Barreiro-trincheira are long, narrow, deep tanks that are dug into the ground. They are built on flat land and close to the production area. With the capacity to store at least 500,000 l of water, they have the advantage of being narrow, which reduces the effect of wind and sun on the water. This makes the water evaporate less and stay stored longer during the dry season.</p>
<p>Popular water pumps (<i>bombas d’água populares</i>) take advantage of deactivated tubular wells to extract groundwater using manual equipment that contains a wheel. When turned, this wheel pulls in large volumes of water with little physical effort. It can be installed in wells up to 80 m deep. In 40-m wells, it can draw up to 1,000 l of water in an hour.</p>

Energy access social technologies

Biodigesters are equipment with the purpose of producing biogas, a renewable source of energy, for rural areas, through the fermentation process of organic matter (manure) carried out by micro-organisms under anaerobic conditions. The energy obtained can replace the cooking gas purchased in cylinders (generally liquefied petroleum gas). The biodegradation residue (biofertilizer) can be safely used in agriculture or fish-farming, sustainably improving productivity. In PVSA, biodigesters were installed in cassava-processing units to transform *manipueira* (effluent) into biogas, avoiding contamination and significantly lowering processing costs.

Collective solar systems are made up of photovoltaic panels, cables and connectors, and require a specific inverter for the soft-starting of motors, which converts direct current into alternating current. These energy generation systems can be applied individually or collectively. The systems enable farmers to use, for example, a pump when there is solar radiation and to have electricity available in places where the distribution network does not reach, solving problems related to the poor quality of distributed energy (fall in power supply, voltage fluctuation, etc.) and the resulting material damage.

Eco-efficient cookstoves provide diverse social, economic and environmental benefits. Among the specific impacts of this investment are (i) preserving the Caatinga biome by reducing deforestation and preserving ecosystem services; (ii) mitigating climate change by reducing greenhouse gas emissions; (iii) reducing exposure to health risks related to toxic smoke; (iv) improving economic conditions, with the reduction of gas expenses; (v) empowering women and girls, who then spend less time cooking and collecting firewood, having a better chance of diversifying their income-generating activities; and (vi) supporting food and nutrition security. By presenting greater energy efficiency than traditional wood stoves, ecological stoves significantly reduce the consumption of firewood and the effort of families in its collection.

Annex V: The role of continuous and specialized technical assistance

In Brazil, IFAD has promoted implementing productive investments or projects by providing at least two years of continuous technical assistance to the families. This has been a transformative intervention, especially for poor families who had never received technical assistance, ensuring the sustainability of the investments. The investment plans prepared and implemented, together with the technical assistance, have contributed greatly to strengthening and diversifying agricultural production systems of beneficiaries' families, and increasing the capacity of families in the management of organizations and access to other public policies. Important lessons learned are:

Providing high-quality technical assistance brings a series of benefits to the beneficiaries and communities. Among these, it is worth highlighting the mobilization of families, greater adequacy of investments to their needs, and the strengthening of rural community organizations. The Brazil COSOP 2016-2022 Mid-Term Results Review affirms that "state-managed projects have achieved excellent results in increasing and diversifying production by combining productive investments with technical assistance (TA) that advises on both production and institutional strengthening issues. This TA has contributed to farmers' autonomy by developing the technical and managerial skills necessary to enhance their natural resource management capacities and their access to public support programmes, including credit and public purchase programmes, and to regularize their land tenure".

- Technical assistance should not focus only on technical issues but be multi-purpose, covering management, financial and procurement issues and contracts, thus ensuring the good management of the productive investment plans by the beneficiary organizations. IFAD's experience in Brazil highlights the importance of diversifying technical assistance arrangements. Technical assistance providers can include entities of civil society (NGOs), private companies and public rural extension agencies.
- Another lesson learned is that technical assistance arrangements must clearly establish goals and outcomes, and a contractual arrangement for an efficient service. In the context of COVID-19, the importance of remote technical assistance tools, encompassing the use of mobile phones, the internet, radio, applications and other virtual technological solutions, is clear.

Examples from the IFAD Brazil portfolio of measures to strengthen the organizational capacity of rural organizations include:

- Providing computer and audio-visual kits to rural organizations helped to expose beneficiaries to modern skills, and to increase the accountability and transparency of project financial resources, as this equipment enabled the dissemination and discussion of the accounting of project activities among the beneficiaries.
- Capacity-building in the formation and strengthening of rural organizations improved their management, procurement and financial accounting capacities for demand-driven and participatory development.

Two complementary technical assistance modalities have been successfully used: continuous and specialized. Usually, productive investment plans receive at least two years of continuous technical assistance. Preferably, this service is provided by the same technician, assuring coherence and continuity. Whenever necessary, specialists can be mobilized to deal with specific, more complex technical issues.






Knowledge management grants also play a role in fostering continuous experimentation and learning from practice. Currently, the Dryland Adaptation Knowledge Initiative has the specific objective of

developing appropriate technical assistance and rural extension capacities to address climate-related challenges using climate-resilient agriculture courses, teaching materials and knowledge products to enable instructors to disseminate successful practices and experiences. In addition to the courses, some pilot units will be implemented to apply selected techniques and best practices to ease replication and testing. To ensure the best use and enhancement of these units, they will preferably be installed in rural schools, such as family farming schools or rural training centres.

The Dryland Adaptation Knowledge Initiative is preparing the way for the start of the new IFAD regional project in Brazil, the Planting Climate Resilience in Rural Communities of the North-east Project, co-financed by the Green Climate Fund, which aims to increase smallholders' capacity to face climate change challenges.



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