United Nations
Framework Convention on
Climate Change

TECHNOLOGY
EXECUTIVE
COMMITTEE

COMPILATION OF GOOD PRACTICES

in effective knowledge-sharing and practical learning on climate adaptation technologies through South–South and triangular cooperation

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1. Why this TEC compilation?

Adaptation is not a new practice in human development. For generations, local communities have been developing, testing, improving and refining techniques, customs and routines to help them build habitats and cultivate crops in harsh environments, prepare for severe weather conditions and cope with the aftermath of natural hazards. Constructing houses on stilts, rainwater harvesting and food preservation are common examples of traditional adaptation practices. A wealth of such practices, indigenous knowledge and technologies for adaptation has been accumulated around the world. In their technology needs assessments (TNAs),[1] several developing countries prioritized indigenous technologies that could be applied for adaptation (UNFCCC 2013). In addition to traditional technologies and indigenous knowledge, some adaptation actions may require contemporary cutting-edge equipment, know-how and expertise. New adaptation technologies originating from developing countries are likely to be more suitable and cost-effective for other developing countries as they are well attuned to similar geo-climatic, cultural and/or socioeconomic conditions (UNFCCC 2016).

However, information on these locally developed adaptation technologies quite often remains limited and access to them is a challenge (Wilk and Wittgren 2009). South–South cooperation is one of the most natural means for the identification, selection and transfer of adaptation technologies from developing countries to those regions and countries where they are in high demand. Triangular cooperation also has a pivotal role in facilitating the transfer of adaptation technologies between developing countries by fostering communication and providing technical support and financial resources.

The Technology Executive Committee (TEC), recognizing potential opportunities that South–South and triangular cooperation could bring to facilitate enhanced action on technology development and transfer, agreed to develop a compilation of good practices on effective information sharing and practical learning from South–South and triangular cooperation on technologies for adaptation. The aim of the compilation is to help countries identify practices that may be relevant to advance the implementation of their country's national adaptation plans[2] and nationally determined contributions[3] under the Paris Agreement.[4]

In general, in technology development and transfer processes, hardware (equipment and capital goods) should be combined with software (capacity-building, knowledge-sharing, skills development) and 'orgware' (institutional arrangements) to ensure acceptance and ownership from local stakeholders (Christiansen et al. 2011). In the adaptation context, hardware may not be central for addressing needs of vulnerable communities, whereas software may offer much needed solutions for increasing livelihood resilience and adaptive capacity.

Against this background, the focus of the present compilation is the software and orgware components of South–South and triangular cooperation on adaptation technologies. The compilation presents several case studies from different regions focusing on knowledge-sharing, practical peer-to-peer learning and utilization of countries' practices and technologies, including their indigenous knowledge and technologies.

1 http://unfccc.int/ttclear/tna.
2 http://unfccc.int/adaptation/workstreams/national_adaptation_plans/items/6057.php.
3 http://unfccc.int/focus/ndc_registry/items/9433.php.
4 http://unfccc.int/paris_agreement/items/9485.php.

According to the latest TNA synthesis report (UNFCCC 2013), the majority of developing countries prioritize agricultural and water management sectors for adaptation action. Case studies for this compilation have therefore been selected from recent and ongoing projects in these two economic sectors. Various means for sharing knowledge and learning in each case, gender responsive approaches and a potential to enhance endogenous capacities of countries are also highlighted. The adaptation practices approach to share the knowledge and the learning described in the case studies may still be relevant in the implementation of adaptation to climate change, although some might have been deployed in the context of adapting to climate variability.[5]

5 The UNFCCC defines climate change as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods". The Intergovernmental Panel on Climate Change defines climate variability as "variations in the mean state and other statistics (such as standard deviations, the occurrence of extremes, etc.) of the climate on all temporal and spatial scales beyond that of individual weather events. Variability may be due to natural internal processes within the climate system (internal variability), or to variations in natural or anthropogenic external forcing (external variability)".

2. Highlights

This compilation of case studies can only provide first insights on a broad range of knowledge-sharing and practical learning approaches on adaptation technologies applied in South–South and triangular cooperation. However, some common trends, good practices, barriers and enablers can be drawn from these cases, as highlighted below:

Trends

- South–South cooperation fosters knowledge-sharing and practical learning through the involvement of technical experts and practitioners, such as smallholder farmers, to allow for a **direct exchange without an intermediary**.
- Knowledge-sharing on adaptation technologies through South–South and triangular cooperation at the local level can **inform policymaking at the national level**.
- **Regional adaptation networks** and online knowledge management platforms offer an ever-growing number of South–South cooperation experiences relating to adaptation technologies.
- Developing countries are becoming **increasingly involved in South–South cooperation on adaptation technologies** and recognize the value of triangular cooperation.
- South–South and triangular cooperation projects are initiated and **carried out by governmental and non-governmental entities and often involve local research institutions**.

Good practices

- A **bottom-up approach** that uses local practices and indigenous knowledge as a starting point for designing adaptation technology-related interventions is becoming a norm for South–South and triangular cooperation.
- **Effective communication** is ensured through working with and through local institutions and partners who are familiar with local conditions and known to the target groups. Increasing access to affordable online communication channels facilitates regular communication between project partners.
- **Investing time and resources in team and trust-building** in the beginning of a new project can facilitate effective communication and collaboration throughout the project and lead to a better absorption of knowledge and easier adoption of new practices.
- The **demonstration of immediate benefits** of the application of new knowledge and skills facilitates the replication and uptake of adaptation technologies.
- Knowledge sharing and practical learning often **continue beyond the project period**, which creates sustainability and enhances endogenous capacity. This can be done through long-term partnerships in the form of networks or through tertiary education activities and newly established institutions.

Barriers and enablers

- While transfer of knowledge and good practices may be successful at the project level, **lack of financial resources for the continuation and upscaling** of projects remains a barrier to the large-scale diffusion of adaptation technologies from developing countries through South–South cooperation. Triangular cooperation is one of the most effective ways to overcome this barrier.
- **Lack of knowledge on how to engage policymakers** to support the continuation and scaling-up of successful community-level projects is observed. This constitutes a barrier hindering the broad application of insights and practical skills gained through South–South and triangular cooperation. However, examples of how knowledge on this aspect of long-term sustainability has been successfully shared through South–South cooperation are emerging.
- South–South cooperation projects initiated at the national level have not always gained full support at the initial stage from local authorities and stakeholders. Therefore, it is critical to **engage local actors from the outset** to ensure acceptance and ownership of introduced knowledge and technologies.
- **Underestimating the amount of time and resources needed** for adapting technologies to local conditions can hinder the success of a project.
- **Close collaboration with local research institutions and technology users** from the project development phase is important to ensure proper planning.
- **Assessing the effectiveness of the adaptation measures** in developing countries, especially in rural areas, could be a challenge. While innovative measures are being practiced, they are not necessarily documented in a systematic manner, which may hinder the replication of the good practices in the short run and affecting policy in the long run.

Recommendations

- Developing countries should **take advantage of** the **wealth of information available** through regional adaptation networks and thematic knowledge-sharing platforms to identify appropriate software and orgware for community-based and local-level adaptation action, including good practices and indigenous knowledge.

- When designing a South–South cooperation project on adaptation technologies, such elements as endogenous capacity-building, engagement of local stakeholders, including women, youth and community/religious leaders, and a **long-term sustainability should be integrated from the beginning**. Long-term sustainability of South–South and triangular cooperation projects could be increased by engaging the private sector to ensure sufficient funding and by establishing partnerships with research and educational institutions to preserve, utilize and disseminate knowledge.

- The Climate Technology Centre and Network (CTCN) could consider supporting countries through **providing information on good practices and indigenous knowledge on adaptation technologie**s as part of the CTCN climate technology library, including those implemented through South–South and triangular cooperation.

- There is still **a need to systematically document and disseminate information on the outcomes** of South–South and triangular cooperation projects, including analyzing and sharing examples of unsuccessful initiatives and approaches that did not lead to expected results to ensure learning from mistakes and avoidance of ineffective practices. There is also a need to document ways to engage with and establish collaboration with relevant actors.

- Governing bodies of international financial institutions, in particular the Green Climate Fund (GCF) and the Global Environment Facility (GEF), could consider devising simplified submission and approval procedures for projects containing elements of South–South knowledge-sharing or peer-to-peer learning. They also could help countries to document and monitor the success of shared adaptation knowledge and practices systematically to facilitate the replication and upscaling of these practices.

- Utilizing existing climate change related South-South cooperation funds or mobilizing a developed country partner or an international organization to **engage in a triangular cooperation project o**r programme may help in the replication and upscaling of the South–South sharing of knowledge and good practices.

3. Concepts and definitions

Adaptation technology

is any "piece of equipment, technique, practical knowledge or skills" that supports adaptation to climate change, which is understood as the 'adjustment in natural or human systems in response to actual or expected climate stimuli or their effects, that moderates harm or exploits beneficial opportunities'" (IPCC 2000).

South–South cooperation

is a "broad framework of collaboration among countries of the South in the political, economic, social, cultural, environmental and technical domains. Involving two or more developing countries, it can take place on a bilateral, regional, intraregional or interregional basis. Developing countries share knowledge, skills, expertise and resources to meet their development goals through concerted efforts" (UNOSSC 2017).

Triangular cooperation

is "collaboration in which traditional donor countries and multilateral organizations facilitate South–South initiatives through the provision of funding, training, management and technological systems as well as other forms of support" (UNOSSC 2017).

4. Case studies

4.1. South–South cooperation

4.1.1. Samoa adopts agricultural practices from China

©Asian Development Bank

Countries
Samoa and China

Partners
Ministry of Agriculture and Fisheries of Samoa and Embassy of People's Republic of China in Samoa

Background
Samoa has a small and developing economy that depends heavily on natural resources, both for the sustenance of its people and for future economic expansion. Samoa's main economic sectors are agriculture and fisheries, with tourism rapidly becoming an important factor in the country's development.

Higher temperatures, changing rainfall conditions, heavier winds and sea-level rise are key challenges associated with climate change that increase the vulnerability of the agricultural sector in Samoa. These climate-related stresses cause farmers significant financial hardship and disrupt the food supply for local and export markets (MNRE 2010). Samoa's National Adaptation Programme of Action identified the development of alternative community farming systems as a priority adaptation action in the agricultural sector (MNRE 2005).

The project, initiated at the request of the Government of Samoa to China, aims to strengthen the resilience of rural communities and smallholder farmers by stabilizing food security and decreasing reliance on imports and aid.

Phase one of the project focused on demonstrating and showcasing Chinese technologies that farmers in Samoa could adopt. Phase two resulted in the construction of 10 advisory centres. During phase three, China assisted Samoa in restoring agricultural infrastructure damaged by Cyclone Evan in 2012. The purpose of phase four, which started in June 2017 and will continue for three years, is to deploy the workable technologies for vegetable production demonstrated and tested during the previous phases of the project to other parts of Samoa.

Knowledge-sharing and practical learning

Chinese experts and extension workers transfer their knowledge to about 100 demonstration farm households, carry out large-scale training activities aiming to equip 6,000 local technicians and farmers with know-how and skills to diversify and grow climate-resilient crops, assist farmers in piloting organic farming, upgrade the China–Samoa agricultural technology demonstration centres,[6] and establish a platform for agricultural exchange.

Practical learning starts with local farmers visiting a China–Samoa agricultural technology demonstration centre, where they receive hands-on training on vegetable cultivation techniques. Then farmers learn how to construct vegetable tunnel houses in their villages and benefit from continued technical support from Chinese extension services.

Development and enhancement of endogenous capacities

The Minister of Agriculture and Fisheries of Samoa suggested to Parliament that vegetable gardening, based on practices demonstrated by Chinese experts, should be introduced in schools as a means of promoting healthy living to children.

Long-term sustainability, replicability and a potential for upscaling

The Embassy of China in Samoa is willing to cooperate further with the Ministry of Agriculture and Fisheries to develop long-term and sustainable training programmes for farmers in agricultural technology.

There is demand for more demonstration centres that use simple agriculture technology and technical expertise in climate-resilient crops in the wider Pacific. The investment in climate-resilient agriculture programming and capacity-building improves not only efficiency but also productivity, thereby helping to ensure food security in the Pacific.

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6 See video documentary on a Chinese agricultural technology demonstration center in Samoa at https://www.youtube.com/watch?v=71uBVUosKyQ.

4.1.2. Mexico partners with Caribbean countries on climate-resilient agriculture



"Engaging universities made the project efficient as they were genuinely interested in sharing knowledge and have a very good understanding of local contexts" – IICA

Countries

Mexico and Caribbean Small Island Developing States (SIDS)

Partners

Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food of Mexico (SAGARPA), Inter-American Institute for Cooperation on Agriculture (IICA), Graduate School of Mexico (COLPOS), Regional Center for Integrated Services in Protected Agriculture (CRESIAP), Autonomous University of Chapingo (UACH), Mexican Institute of Water Technology (IMTA) and Yucatán Scientific Research Center (CICY)

Background

Climate change represents a growing threat to food security in the Caribbean, with differing rainfall patterns, water scarcity and heat stress and increased climatic variability, which makes it difficult for farmers to meet demand for crops and livestock. Nearly all the countries in the Caribbean have been experiencing prolonged drought, which has led to a decline in domestic crop production. Climate change has also contributed to the continued dependence of the Caribbean islands on imported produce, with USD 5 billion worth of food being imported annually.

The improvement in food security and the eradication of hunger in the Caribbean region require a paradigm shift through a fully sustainable agricultural model that protects its natural resources, generates equitable socioeconomic development and allows adaptation and mitigation of climate change effects (UNECLAC 2016).

With the aim of fostering agricultural development in the Caribbean region, Mexico designed a capacity-building programme utilizing the talent and experience of its educational and research institutions as its knowledge base.

Knowledge-sharing and practical learning

The target audience of the capacity-building programme included producers, technical officers and professionals from the public and private agricultural sectors of 15 Caribbean SIDS.[7] Practical learning is achieved through a three-stage approach. The first stage entails a 1.5-month technical field training for Caribbean producers conducted in Mexico. The second stage involves small-scale agricultural projects selected based on a high local impact, sustainability and a potential for replication in other countries, carried out by the Caribbean trainees in their respective countries. During the third stage, Mexican academics and researchers travel to the Caribbean countries to evaluate and reinforce the new expertise acquired by the trainees.[8]

Development and enhancement of endogenous capacities

Training courses tailored to the needs of each participating country included such subjects as animal and plant health control, biotechnology and genomics, water and soil conservation, family and backyard farming, rural tourism and protected agriculture. More than 300 agricultural producers and technical officers have been trained under the capacity-building programme.

Gender responsiveness

Family agriculture is responsible for producing the majority of food consumed in the region. COLPOS developed a model for family agriculture that made it possible to reduce capital costs, overcome food insecurity and harness natural resources. Many family farmers are women and youth who toil on their farms every day, bring their produce to the markets and keep themselves informed about climatic conditions, product prices and appropriate technologies. New models and approaches in family farming will therefore build on gender and intergenerational considerations.

Long-term sustainability, replicability and a potential for upscaling

The capacity-building programme resulted in identifying productivity models that could be replicated in the economies of the Caribbean countries in relation to six key issues: protected agriculture, water conservation, family agriculture, sheep production, plant pathology and rural tourism. Due to the success of the programme in the Caribbean, ministries of agriculture of six Central American countries expressed their interest in being involved in future activities. The capacity-building programme was subsequently expanded to include these countries.[9]

Contact: Mr. Franklin Marin (franklin.marin@iica.int), Inter-American Institute for Cooperation on Agriculture

7 Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, St. Lucia, St. Kitts and Nevis, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago.

8 http://www.iica.int/en/press/news/mexico-and-iica-begin-agricultural-training-caribbean-countries.

9 http://www.iica.int/en/press/news/mexico-promote-agricultural-development-central-america-and-caribbean.

4.1.3. Bangladesh shared knowledge with Kenya on increasing climate resilience

"I learned in Bangladesh the art of bringing people together and was able to replicate lessons from ICCCAD on successfully engaging policy-makers to support my work" – ACTS

Countries
Bangladesh and Kenya

Partners
International Centre for Climate Change and Development (ICCCAD) (Bangladesh) and African Centre for Technology Studies (ACTS) (Kenya)

Background
ICCCAD is a research institution that, together with its local partners, conducts research on climate change and shares adaptation knowledge from Bangladesh domestically as well as with governments, organizations, researchers and practitioners from other countries. Its South–South knowledge exchange programme covers matters relating to adaptation technologies among others. ICCCAD aims to share experiences on how to engage decision makers effectively in adopting new, or scaling up existing, adaptation technologies.

Knowledge-sharing and practical learning
ICCCAD undertook various field visits with ACTS researchers to learn about successfully applied adaptation technologies directly from rural communities. ACTS identified specific needs of Kenyan communities on which a project proposal was developed in cooperation with ICCCAD and other local partners in Bangladesh. ICCCAD shared experiences from its own work with local governments in Bangladesh on how best to present the project proposal to Kenyan government authorities, including which benefits and co-benefits to highlight. ICCCAD then invited the ACTS researchers to visit again, together with a Kenyan government representative, for showcasing how a project similar to the one proposed by ACTS was successfully implemented

in Bangladesh. Following the visit, the project was approved in Kenya and is being carried out successfully.

Development and enhancement of endogenous capacities

Through the project, ACTS learned new techniques for organizing knowledge-sharing and practical learning with rural community and government officers and applied these insights successfully in Kenya.

Gender responsiveness

The project in Bangladesh ensured the engagement of women's groups from the outset and designed interventions for their effective participation. ACTS researchers learned about those techniques firsthand and adapted them to the Kenyan context.

Long-term sustainability, replicability and a potential for upscaling

Through experiential learning during the field visits with ICCCAD in Bangladesh, ACTS effectively acquired knowledge on adaptation technologies, knowledge-sharing and practical learning techniques. ICCCAD's knowledge-sharing and dissemination model is simple and resource-efficient and was successfully replicated in Kenya.

Contact: Mr. Saleemul Huq (contact@icccad.net), International Centre for Climate Change and Development

4.2. Triangular cooperation through financial support provided by developed countries/multilateral organizations

4.2.1. Colombia and the Dominican Republic cooperate on introducing the System of Rice Intensification to enhance resilience to climate change in agriculture

"Many producers in the Dominican Republic are applying the knowledge independent of the project as they have seen the benefits" – IICA

Countries
Colombia and Dominican Republic

Partners
IICA, Dominican Institute of Agricultural and Forestry Research (IDIAF), Dominican Council of Agricultural and Forestry Research (CONIAF), National Federation of Rice Producers (FEDEARROZ-FNA), Regional Fund for Agricultural Technology (FONTAGRO), and GEF.

Background
The aim of the project is to reduce the vulnerability of smallholder rice producers in Colombia and the Dominican Republic to the socioeconomic and biophysical impacts of climate change through the

System of Rice Intensification (SRI).[10] SRI is an agro-ecological and climate-smart production methodology that changes the management of plants, water, soil, and nutrients to increase productivity while decreasing inputs. It has four primary, interdependent principles:

- Early and healthy plant establishment;
- Minimize competition between plants;
- Build fertile soils rich in organic matter and soil biota;
- Manage water carefully, avoid flooding and water stress and increase soil aeration.[11]

SRI was designed by rice producers in Madagascar in the second half of the 20th century and is used by over 10 million producers in Africa and Asia,[12] but is not yet widely known or used in Latin America and the Caribbean. The project partners are working with smallholder producers in Colombia and the Dominican Republic to apply this flexible rice production methodology to local contexts and foster the sharing of experiences in this process between technical experts and producers from these countries.

Knowledge-sharing and practical learning

Technical experts and producers from Colombia and Panama visited their counterparts in the Dominican Republic to exchange experiences on the local contextualization and application of SRI principles. The exchange included both theoretical aspects and practical insights through a field visit to see the machinery utilized and a demonstration parcel. They exchanged data, discussed challenges, developed draft protocols for the implementation and monitoring of demonstration parcels and established a process and communication channels for the regular exchange of information.

Development and enhancement of endogenous capacities

Endogenous capacities of both the technical experts and the smallholder producers were developed on SRI and the application of its principles and on how to establish validation parcels, including how to measure results over time as well as how to communicate this technology to other technical experts and smallholder producers.

Utilization of indigenous knowledge and technologies

SRI is a flexible technology that producers can tailor based on their own knowledge, priorities and needs. Capacity development usually starts with an explanation of SRI principles. Then the existing local systems of rice production are analyzed during field visits, and technical staff and smallholder producers jointly identify potential practices for applying SRI approaches in the region. Producers are encouraged to innovate and test different possibilities to discover the best practices with which to implement SRI in their own context. The aim of the project is to utilize continued farmer-led innovation accompanied by technical support from research and extension organizations to adapt and optimize results and overcome local constraints to SRI effectively. Producers are dedicated to continue to work with SRI as initial production cycles already saw yield increments of up to 12 per cent (10,130 kg/ha with SRI vs 9,025 kg/ha using conventional techniques), a 13 per cent reduction in water use, seed use efficiencies of up to 93

10 https://www.fontagro.org/proyecto/cultivar-mas-con-menos-adaptacion-validacion-y-promocion-del-sistema-intensivo-del-cultivo-arrocero-sica-en-las-americas-como-una-respuesta-al-cambio-climatico.
11 http://sri.cals.cornell.edu/aboutsri/SRI_FAQs_Uphoff_2016.pdf.
12 http://sri.cals.cornell.edu/aboutsri/SRI_FAQs_Uphoff_2016.pdf.

per cent and a decrease in the cost of inputs by 20 per cent. In Tolima, Colombia, one producer had an 84 per cent increase in net utility using SRI when compared to conventional production.

Gender responsiveness

The project encourages the participation of women in the training and field trips and collects gender-disaggregated participation data for all activities.

Long-term sustainability, replicability and a potential for upscaling

Several other rice producers from other Latin American countries who participated in the field visits and exchanges held on SRI have started to adapt their traditional practices towards those that reflect the principles of SRI. In addition, two people trained through the project have already traveled to Venezuela to help the national agricultural research institute develop demonstration parcels and continue to provide support virtually. In both countries, the local institutional partners are continuing to share knowledge on SRI independent of the project and will continue to support producers to incorporate SRI principles into their local production practices. Using virtual methods and a regional exchange in Colombia, the project has also involved technicians from other countries who have demonstrated interest in implementing validation parcels using the guidance provided by the project.

Contact: Ms. Kelly Witkowski (kelly.witkowski@iica.int), Inter-American Institute for Cooperation on Agriculture

4.2.2. Transfer of Indian farm and food processing machinery to promote food security in Kenya

"While we face similar challenges regarding agricultural mechanization as our partners from India, adaptation of the Indian technologies to our local conditions was key for the success of the project" – JKUAT

Countries
India, Kenya and United States

Partners
Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI), Jomo Kenyatta University of Agriculture and Technology (JKUAT), United States Agency for International Development

Background
The project enhanced climate resilience in Kenya by improving local agricultural productivity and food security through replicating India's success in adopting grassroots innovations for farm mechanization.[13] Three types of low-cost mechanization and processing equipment were transferred to Kenya, including a motorcycle-driven ploughing machine (also termed "Bullet Santi"), a manually operated seed cum fertilizer dibbler and a multi-purpose food processing machine. SRISTI and JKUAT demonstrated and diffused these technologies and initiated local manufacturing of some of the technologies to ensure long-term sustainability.[14]

Knowledge-sharing and practical learning
Knowledge-sharing and practical learning took place between SRISTI, JKUAT and local stakeholders in Kenya in three stages. Firstly, JKUAT and Kenyan smallholder farmers provided SRISTI with insights on local circumstances, needs and constraints regarding agricultural activities and local coping strategies. Secondly, SRISTI and JKUAT demonstrated the proposed farm machinery, facilitated trial uses

13 http://www.sristi.org/cms/sristi-usaid.
14 http://www.sristi.org/cms/files/usaid/Annual-report.pdf.

and solicited feedback on the user experiences from smallholder farmers in 12 counties (Machakos, Kitui, Makueni, Nairobi, Bomet, Migori, Kisumu, Siaya, Busia, Kakamega, Bungoma and Vihiga). Thirdly, SRISTI and JKUAT, in consultation with local stakeholders, in particular Numerical Machining Complex Limited, made necessary modifications to the machine design to ensure local requirements are fully met. Modified machines were then tested again by farmers in selected counties and training was provided on machine operation and maintenance.

Development and enhancement of endogenous capacities

On value addition, farmers' groups, mainly composed of women and youth, have been formed in eight counties. These groups produce a variety of fruits, including mangoes, oranges, melons, avocado, lemons, passion fruits and apples. Each group has been provided with a multi-purpose food processing machine which they use for processing juice from the fruits they harvest from their farms. The group in Kitui County packages the juice products and sells them locally. The other groups have been fully trained on juice production and are currently registering with KEBS to sell their produce on commercial scale. Multipurpose food-processing machines have also been placed in agricultural training centres in Kakamega and Busia Counties for demonstration purposes during farmer trainings.

To make the motorcycle-driven ploughing machine and seed dibbler more suitable for local conditions in Kenya through an improved design, JKUAT and SRISTI organized a two-week training in India of nine selected mechanics from different counties. In addition, lead farmers in all the counties where the technologies have been placed (Makueni, Machakos, Migori, Kakamega and Bungoma) have been trained on the functional operation of the machines. The design of the motorcycle ploughing machine included changing from three wheels to four wheels, among other improvements. Kenyan technicians were trained in India on how to repair and maintain the machines. This training is now being put into practice by one or two technicians in each county.

Gender responsiveness

The project encouraged the participation of female farmers and women groups in Kenya, who contributed to the adaptation of the Indian technologies to the local contexts and are successfully utilizing these technologies today.

Long-term sustainability, replicability and a potential for upscaling

The project included the establishment of a local production of the four-wheel multipurpose tractor christened Shujaa and the seed dibbler in Kenya. JKUAT and SRISTI are in the process of identifying local entrepreneurs to manufacture the machinery and provide maintenance services and are supporting them with the development of a bankable business plan. JKUAT is also engaging government schemes, rural banks and microventure finance institutions to facilitate credit and financial support for smallholder farmers to purchase the machinery.

JKUAT has been working with the Kenyan Ministry of Agriculture's Committee on Mechanization throughout the project and the Ministry is currently considering options for scaling up the project at both county and national levels.

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4.2.3. Brazil facilitates the transfer of adaptation technologies from Latin America and the Caribbean to Africa

"Through this project we also build our own capacity on how to do international cooperation more effectively" – Embrapa

Countries

Brazil, African countries, Latin American, countries and Caribbean countries

Partners

Brazilian Agricultural Research Corporation (Embrapa), Forum for Agricultural Research in Africa (FARA), IICA, Brazilian Cooperation Agency (ABC), Bill & Melinda Gates Foundation, United Kingdom Department for International Development, United Nations Food and Agriculture Organization (FAO), Inter-American Development Bank, International Fund for Agricultural Development, International Center for Tropical Agriculture (CIAT), University of California—Davis, Brazilian Ministry of Agriculture, Livestock and Food Supply (MAPA) and World Bank

Background

Over the past 30 years, Brazilian agricultural growth has been guided by policies and technologies based on research and development. Resource-saving technologies for resilient small-scale farming and entrepreneurial agricultural approaches were instrumental in addressing concerns related to sustainability, competitive markets and climate change. The Agricultural Innovation Marketplace (the MKTPlace),[15] an international open partnership, was established to learn from these achievements in Brazil and utilize them to support smallholder agriculture development in Africa, Latin America and the Caribbean (Reifschneider et al. 2016). The partnership also aims to promote innovative research of common interest to participating countries.

The MKTPlace is based on three complementary pillars: policy dialogue, knowledge-sharing activities and competitive funding of collaborative research and development projects. It brings together researchers, academia, nongovernmental organizations, producers

15 http://www.mktplace.org/site/index.php.

and policymakers with support from a wide range of partners. Its implementation relies on the knowledge and networks of Embrapa, FARA and IICA.

Thematic areas of work of the MKTPlace include the development of technologies for adaptation to, and mitigation of, climate change, such as forestry and agroforestry options for combatting desertification, poverty and hunger; livestock distribution, health and productivity; plant breeding and climate-resilient crop management; water harvesting and management techniques; soil reclamation and reforestation.

Knowledge-sharing and practical learning

Among the priority areas of the MKTPlace work is the development of strategies for knowledge management and improved access to knowledge, technologies and information for stakeholders in the commodity chain as well as strategies and policies for institutional strengthening.

While most of the collaboration between researchers from Brazil, Africa, Latin America and the Caribbean happens virtually, the MKTPlace also conducts regular fora, which were crucial in creating the bonds necessary to ensure successful collaboration among partners throughout the project implementation. Capacity-building elements were introduced in the design of the fora to foster and facilitate proposal preparation and project implementation, including interactive sessions where participants received peer-to-peer feedback on their draft proposals and discussed challenges, lessons learned and follow-up actions upon the completion of projects. Field visits were also offered to enhance practical learning about Brazilian agricultural technologies and value chains.

Development and enhancement of endogenous capacities

Training activities and study visits supported by the MKTPlace involved over 4,700 people. These activities, targeting researchers and farmers, focused on knowledge-sharing and developing skills needed to adopt and apply new agricultural technologies involving high-value cropping systems, market-oriented crops and more remunerative land-use practices.

Utilization of indigenous knowledge and technologies

Under one of the projects, three farmer field schools were created to equip farmers with technological, commercial and farm administration skills, as well as with ownership and leadership, for the organic production of unique native species of potatoes in Bolivia. Forty-five family farms benefited directly and their organic produce business is already self-sustained.

Gender responsiveness

The partnership encourages the submission of proposals by female researchers and has achieved a submission rate of 26 per cent from women.

Long-term sustainability, replicability and a potential for upscaling

The MKTPlace funded and implemented 82 projects, which achieved significant results. This motivated partners and actors to launch a second phase of the initiative, named Building on the Successes of the MKTPlace (M-BoSs), to replicate impactful projects and promote wider adoption of positive practices. The purpose of M-BoSs is to strengthen, deepen and institutionalize agricultural research collaboration further between Embrapa and its African partners. The aim of M-BoSs is to identify and scale up promising results (policies, technologies, products) developed in the MKTPlace-supported projects. Institutionalization through the Scale-up Fund will help foster ownership by African partners, develop long-term collaboration and encourage the dissemination and adoption of products, technologies and improved policies affecting sustainable production and productivity by smallholders.

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4.3. Triangular cooperation through various types of support provided by developed countries and multilateral organizations

4.3.1. Nepal advances ecosystem-based adaptation in cooperation with China

"China and Nepal both are mountainous countries. We share similarities in geographic features plus we are neighbors. It is easy for us to learn experiences from China" – Nepal

Countries
China and Nepal

Partners
Ministry of Population and Environment (Nepal), Tribhuvan University (Nepal), National Development and Reform Commission (China), Chinese Ecosystem Research Network (China), Institute of Geographic Sciences and Natural Resources Research of the Chinese Academy of Sciences (China), Chengdu Institute of Mountain Hazards and Environment (China), C4 EcoSolutions (South Africa), United Nations Environment Programme–International Ecosystem Management Partnership (UNEP-IEMP), United Nations Environment Programme (UN Environment) and GEF

Background
Nepal is a mountainous country in which about three fourths of the population directly depend on agricultural activities and are therefore highly vulnerable to current and anticipated climate change impacts. Local communities are already affected by unpredictable rainfall and diminishing water resources. Crop losses from droughts or floods, and topsoil loss from increased soil erosion and landslides, pose a risk to future food security. Extreme weather events, together with other climate-induced hazards such as glacier lake outburst floods, avalanches and wildfires, are rapidly increasing in frequency and intensity.[16]

16 http://ebasouth.org/pilot-country/nepal.

The aim of the project is to assist local communities to adapt to the impacts of climate change by using biodiversity and ecosystem services (ecosystem-based adaptation (EbA[17])) based on experiences from China and other developing countries. The project seeks to build climate resilience by strengthening institutional capacity, mobilizing knowledge and transferring adaptation technologies through EbA interventions. Under the Ecosystem-based Adaptation through South–South Cooperation project (EbA South),[18] similar pilot projects are undertaken in parallel in Mauritania and the Seychelles.

The project has three components:

1. Development and implementation of EbA interventions in community-based watershed restoration and a long-term research framework.

2. Inter-regional capacity-building workshops and training on planning and implementing EbA approaches through sharing experiences from EbA South countries and other developing countries.[19]

3. Inter-regional online knowledge platform,[20] including a good practice database[21] and e-discussion programme,[22] to disseminate information, facilitate learning and promote dialogue on EbA among developing countries and contributing EbA South–South cooperation experiences to the global Ecosystem-based Adaptation Community of Practice Portal.[23]

The project is financed by the GEF, implemented by UN Environment, managed by UNEP-IEMP, and carried out by Chinese and Nepalese government entities, research institutions and technical experts with technical support provided by a South African environmental consultancy.

Knowledge-sharing and practical learning

Knowledge-sharing and practical learning take place mainly through the joint development and implementation of the Long-Term Research Programme (LTRP) and EbA interventions, such as setting up plant nurseries and seedling propagation, mixed plantations of bamboo, banana and salix on degraded riverbanks for soil erosion control and cardamom plantations and crop diversification to improve livelihoods. The LTRP includes, inter alia, training by Chinese and South African experts on data collection methodologies, including developing and conducting household surveys to measure vulnerability changes and awareness changes in response to EbA interventions. Furthermore, knowledge-sharing takes place between Chinese and Nepalese experts, as well as experts from other pilot countries, through inter-regional capacity-building workshops, training and a web-based knowledge platform.

17 As defined by the Convention on Biological Diversity (CBD 2009).
18 http://ebasouth.org.
19 http://ebasouth.org/training/eba-regional-network-coordination-joint-workshops.
20 http://ebasouth.org/knowledge-centre.
21 http://ebasouth.org/knowledge-centre/good-practices.
22 http://ebasouth.org/e-discussions/introduction-e-discussions-webinar-programme.
23 http://ebasouth.org/e-discussions.

Development and enhancement of endogenous capacities

The LTRP includes the establishment of a permanent monitoring site as well as research on the short- and long-term effects of EbA interventions. To establish the monitoring site, the Nepalese experts were first invited to visit the Chinese Ecosystem Research Network (CERN) stations[24] in China to see how the monitoring sites with plots were set up, operated, and contributed to research activities. Specific research data and equipment needs for watershed management from the Nepalese side were jointly identified with the support of South African experts based on which the design for the monitoring site was developed in partnership. The Ministry of Population and Environment, together with Chinese experts, then identified Tribhuvan University as a partner to lead the LTRP, particularly the construction and management of the station and to ensure generated data are used at the local level as well as integrated in the national database. The site with monitoring plots and a meteorological station was established in 2016 and will be independently managed by Tribhuvan University beyond the project period. The project also contributed to the process for Nepal's national adaptation plan.

Utilization of indigenous knowledge and technologies

The development of EbA interventions starts with an assessment of local practices and whether these practices can be improved or upscaled before introducing new approaches. Existing practices were identified by a local expert through extensive field visits and interviews with local stakeholders, including community forest groups, women groups, farmers and district officers. Based on these findings, the Chinese and South African experts designed possible interventions together with the local expert and advised on their implementation and monitoring against project indicators and targets.

Gender responsiveness

The project encourages the participation of women in EbA intervention and has succeeded in this regard in the areas of propagation in nurseries, planting, agro-forest planting and harvesting. Furthermore, inputs from men and women are sought when designing EbA interventions and household surveys and conducting capacity-building activities such as community training and school projects.

Long-term sustainability, replicability and a potential for upscaling

Long-term sustainability is ensured through the LTRP and the permanent monitoring site, which continued beyond the project period. Furthermore, a workshop[25] was conducted, during which project proposals on the continuation and upscaling of EbA interventions were developed for seeking further financial support from the GCF, Adaptation Fund, GEF, and UNEP-IEMP's new Flagship Programme on Climate, Ecosystems, and Livelihoods.[26]

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24 CERN stations integrate monitoring, research and demonstrations into long-term research frameworks to address ecosystem management, environmental protection, agriculture, disaster risk reduction and natural resource management in China and other countries.

25 http://ebasouth.org/training/eba-south-interregional-writing-workshop.

26 Through the decade-long programme (2016-2025), UNEP-IEMP, China and developing countries will join forces to improve livelihoods through ecosystem restoration and conservation, in the context of climate change. See: http://unep-iemp.org/programmes/flagship-programme-on-climate-ecosystems-and-livelihoods-cel.

4.3.2. The Middle East-North Africa Water and Livelihoods Initiative

"We looked at how to use indigenous knowledge and fine-tune traditional practices together to achieve water savings and higher yields" – ICARDA

Countries

Egypt, Iraq, Jordan, Lebanon, Palestine, Tunisia and Yemen

Partners

Ministries of Agriculture, Irrigation and Water of Egypt, Iraq, Jordan, Lebanon, Palestine, Tunisia and Yemen, International Center for Agricultural Research in the Dry Areas (ICARDA), regional and United States universities, United States Agency for International Development, Arab Fund for Economic and Social Development, International Fund for Agricultural Development, Kuwait Fund for Arab Economic Development, OPEC Fund for International Development and Islamic Development Bank

Background

Many countries in the Middle East and North Africa face similar challenges posed by climate change regarding water and food security. The Water and Livelihoods Initiative (WLI)[27] brings together seven of these countries to share local, regional and international knowledge and practical approaches on how to address these challenges. WLI countries jointly identify, develop and deploy locally appropriate adaptation technologies.

Knowledge-sharing and practical learning

Knowledge-sharing and peer-to-peer learning take place through the regular exchange of the latest research on, and the development and deployment of, adaptation technologies within thematic working groups that include representatives from all WLI countries. Each WLI country hosts, on a rotational basis, the annual meeting, including field visits, with all WLI partners. Exchanges also take place

27 http://wli.icarda.org.

online throughout the year. WLI serves as a regional and international platform for research collaboration and knowledge-sharing as it includes national centres for research and extension services, national universities and universities and research institutes in the United States.

Development and enhancement of endogenous capacities

One example of the development of endogenous capacities is the introduction of raised-bed farming in Egypt. Piloting this technology for growing wheat, berseem clover, faba beans, maize and cotton in the Egyptian Delta resulted in substantial improvements in agricultural productivity and irrigation management, including a 30 per cent increase in grain yield, 25 per cent savings in irrigation water and 74 per cent increase in water-use efficiency.[28] The project also led to the development of an affordable multi-crop raised-bed machine for small and medium-sized farms, which was successfully deployed in Egypt and later adjusted to local conditions in Iraq, where it also found successful deployment. Following the joint piloting of the technology with WLI project partners in Egypt, the Egyptian side replicated the approach successfully in other areas of the country.

Utilization of indigenous knowledge and technologies

Building on indigenous knowledge and technologies in Tunisia, WLI pilot-tested several irrigation and crop management strategies, including supplemental irrigation for drought control, deficit irrigation, irrigation management with marginal saline water, alley cropping, and conservation agriculture.

Gender responsiveness

WLI integrates gender aspects into its research work[29] and ensures activities at the farm level are gender sensitive by considering the challenges of, and potential benefits for, both men and women in the respective communities when designing its activities.

Long-term sustainability, replicability and a potential for upscaling

WLI primarily targets specific benchmark sites in each country that typify the full spectrum of livelihood and watershed constraints. The sites also represent the three main agro-ecological systems in the Middle East and North African region, namely irrigated, rain-fed and rangeland. Research technologies and strategies developed in the benchmark sites can thus be disseminated in the region by scaling out the lessons learned and the results obtained at the benchmark sites, as demonstrated in the case of raised-bed technology.

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28 http://www.icarda.org/sites/default/files/u158/Science%20Impact%20Raised-Bed_final.pdf.
29 http://wli.icarda.org/pdfs/WLIGenderTraining_FINALREPORT_3-20-11.pdf.

4.3.3. South–South Cooperation between Pacific and Caribbean small island developing states on climate change adaptation and disaster risk management

"South–South cooperation is much more relevant and meaningful than traditional ways of development cooperation ... it is more empowering as it can be replicated more easily than practices from developed countries" – UNDP

Countries
Pacific and Caribbean SIDS

Partners
Caribbean Disaster and Emergency Management Agency, Caribbean Institute of Meteorology and Hydrology, Caribbean Community Climate Change Centre, University of the West Indies, Cuban National Institute of Meteorology (INSMET), Japan government, Japan International Cooperation Agency Research Institute, Pacific Islands Applied Geo-Science Commission, Secretariat of the Pacific Community, University of the South Pacific, South Pacific Regional Environmental Programme, United Nations Office for South–South Cooperation and United Nations Development Programme

Background
Due to their similar geography and socioeconomic vulnerabilities, the Pacific and the Caribbean islands face common risks and threats posed by climate change. Tropical cyclones and seawater flooding have become annual occurrences, with consequent damages and setbacks for human development. The small size and limited economic diversification of these islands affect the resilience of their populations and hamper post-disaster recovery. At the same time, local communities in the Pacific and the Caribbean SIDS have a range of traditional practices for coping with, and adapting to, climate change.

The project[30] encouraged systematic sharing of knowledge and experiences to enhance community resilience and adaptive capacity in the Pacific and the Caribbean SIDS. Activities fell under three focus areas: documenting and dissemination of good practices in integrated climate change adaptation and disaster risk management specific to the SIDS context, transfer and exchange of related technologies and methodologies and mainstreaming of climate change adaptation and disaster risk management into national development planning (JICA-RI 2013).

Knowledge-sharing and practical learning

Transfer of knowledge and peer-to-peer learning was conducted through exchange visits of delegations comprised of governmental officials, practitioners and researchers from the two regions. A simple yet effective system for monitoring and warning the population on recurring floods on the outskirts of Kingston, Jamaica, and the development of community disaster plans to cope with the threat of cyclones in remote villages in the Pacific, were among good practices shared.

Development and enhancement of endogenous capacities

To introduce a Master's in Climate Change programme in the University of the West Indies, the Caribbean countries obtained a relevant syllabus from the University of the South Pacific and developed the curriculum. The new master's programme was launched and has been successfully running ever since.

Students from Samoa, Vanuatu, Solomon Islands and Papua New Guinea were trained on scholarships at the Caribbean Institute of Meteorology and Hydrology in Barbados to provide quality data inputs for weather forecasting and climate projections. The students committed to replicate this training course nationally and regionally across the Pacific.

Utilization of indigenous knowledge and technologies

Solomon Islands shared with their Caribbean counterparts traditional coping practices employed in some of the 900 islands that comprise this country. These practices, focusing on cultivation, processing and preservation of staple foods, help remote communities survive during hurricane seasons when they cannot be reached by authorities and aid providers. During the exchange between Fijians and a Caribbean delegation, it emerged that the best way to facilitate the incorporation of a written adaptation plan into the daily life of a village would be to share it verbally at community gatherings or to translate it into a song or a story.

Gender responsiveness

Women from Haiti shared their experiences with recovery programmes that aimed to provide women with a means to earn an income and give them ready access to microfinance necessary to restore their livelihoods in post-disaster conditions. In exchange, women from Fiji explained how indigenous knowledge and practices are used to increase the resilience of their fishing villages to severe weather events.

A checklist on how to mainstream gender into disaster risk management in SIDS, developed under the project, was used as a key learning resource in training activities in several countries.[31]

30 The video "Looking South across the Regions" showcasing various project activities is available at: https://www.youtube.com/watch?v=RQSnuZgJp5U.

31 http://www.undp.org/content/dam/undp/library/crisis%20prevention/disaster/asia_pacific/Intergratinggender%20in%20disaster%20managment%20in%20SID.pdf?download.

Long-term sustainability, replicability and a potential for upscaling

The cooperation between the universities of the two regions and the incorporation of acquired knowledge into regular educational programmes help ensure a long-term sustainability of learning outcomes and systematic building of endogenous capacities.

The systematic exchange at regional meetings established institutional relationships and improved networking across the two regions, which led to a more unified and clearly articulated SIDS' position at international fora. It also allowed leveraged funding from the European Union to continue this cross-regional knowledge exchange beyond the time frame of the project.

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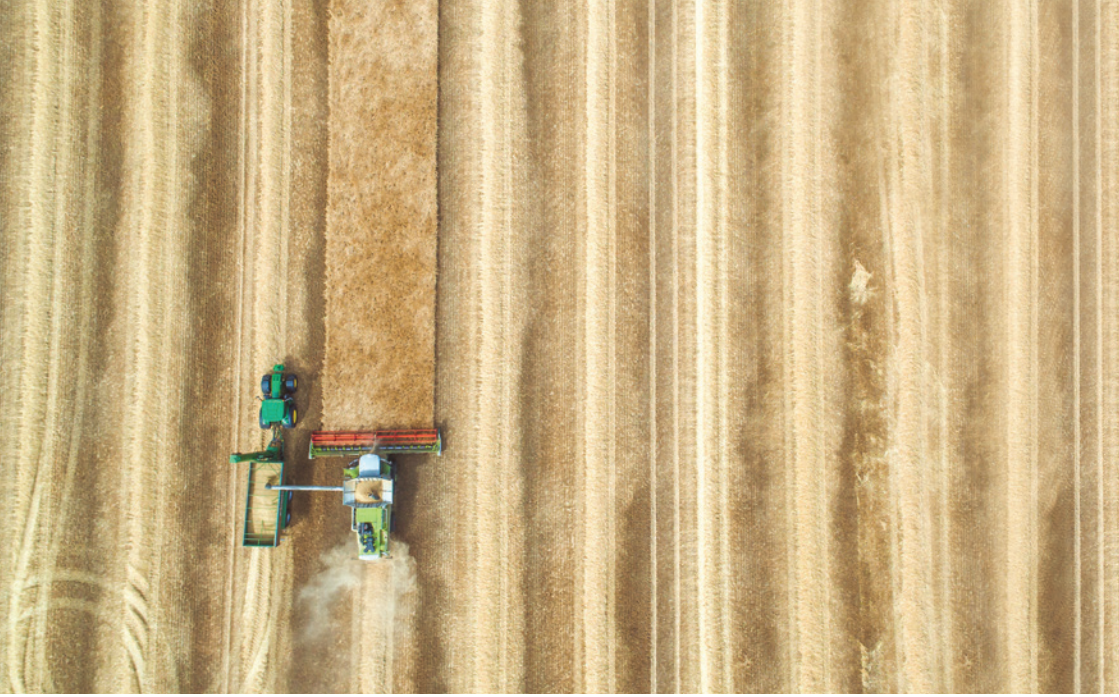
5. Sharing of knowledge on adaptation technologies through regional networks and online platforms

While South–South and triangular cooperation projects present the most direct and effective means for adaptation technology exchange between developing countries, regional adaptation networks, online information management platforms hosted by developing countries and other knowledge-sharing arrangements offer an additional avenue to learn about proven Southern technologies and replicable adaptation measures and identify potential partners for future collaborative efforts.

The **Asia Pacific Adaptation Network (APAN)**[32] facilitates the dissemination of information on adaptation technologies from the region through its Adaptation Technology Database and Adaptation Good Practices Database, complemented by the Exchange Series where more than 800 practitioners engage in an online open discussion, the e-Communiqué newsletter that reaches a subscription base of about 6,000 policymakers and practitioners, regular live online chats and the community of practice. To promote peer-to-peer learning and experience exchange, APAN conducts regional fora on a biennial basis. The latest 5th Asia Pacific Climate Change Adaptation Forum, held in October 2016 in Colombo, Sri Lanka, titled "Adapting and Living below 2°C: Bridging the Gaps in Policy and Practice",[33] brought together over 900 participants from over 50 countries, including policymakers, scientists, indigenous peoples, representatives from technology and finance sectors, civil society and youth to discuss opportunities and agree to collaborate on solutions and integrated approaches to address gaps in the provision of financing, technology and capacity-building for adaptation action.

The primary aim of the **Regional Gateway for Technology Transfer and Climate Change Action**[34] is to strengthen capacity and knowledge-sharing on climate change technologies and

32 http://www.asiapacificadapt.net.
33 http://www.asiapacificadapt.net/adaptationforum/2016.
34 http://www.cambioclimatico-regatta.org/index.php/en.



experiences for adaptation and mitigation in Latin America and the Caribbean. The platform contains communities of practice, databases, pilot projects and studies and information on workshops. The communities of practice are organized thematically and geographically and engage members through webinars and online dialogues resulting in policy briefs and other documents. The face-to-face workshops provide information from community members to enhance the online network and complement online learning with offline engagement and knowledge-sharing.

The **AfriCAN Climate Portal**[35] shares climate change research and good practices to harmonize multilingual, interdisciplinary and pan-continental climate change knowledge. It encourages project developers, researchers, field practitioners, development partners, non-governmental organizations, local and national governments and farmers' organizations to learn and benefit from Africa's challenges and success stories, including those relating to adaptation practices, indigenous knowledge and technologies.

The **Pacific Climate Change Portal**[36] is a one-stop shop for Pacific Islands climate change information that aims to enhance adaptation and resilient planning in the region by ensuring easy access to data and knowledge on good practices, measures and technologies. Among other features, it offers a database for traditional knowledge of weather and climate in the Pacific that was designed to support the following principles: (1) preservation of knowledge to maintain cultural context wherever possible, (2) respect for intellectual property and cultural sensitivities around data sharing and use, and (3) moving beyond data preservation to ensure continued use and growth of traditional knowledge.

35 http://africanclimate.net.
36 https://www.pacificclimatechange.net.

The **Least Developed Countries Universities Consortium for Climate Change (LUCCC)**[37] is a South–South, long-term capacity-building programme established by 10 universities from the least developed countries (LDCs) to exchange knowledge on climate change with a particular focus on adaptation, primarily through training and research. LUCCC aspires to capacitate all 48 LDCs to adapt effectively to the adverse impacts of climate change by promoting South–South and triangular knowledge-sharing and introducing courses on climate change adaptation in universities and training institutes in LDCs.

In response to the request of the Conference of the Parties to facilitate knowledge-sharing through a well-functioning information platform that serves as a comprehensive, up-to-date and easily accessible library of information on climate technology availability, costs and performance,[38] the CTCN is developing a **CTCN Climate Technology Library** that will cover a broad range of hard-, soft- and orgware-type solutions to combat climate change. To populate this library, the CTCN is harvesting technology information from its knowledge partners, constituencies of non-governmental organizations and national designated entities.[39]

Although web-based platforms provide an effective means for knowledge-sharing, there are villages and rural areas in the South where computers are not readily available or community members may not have even the most basic level of computer literacy by which to access these resources. However, smart phones and tools such as online-based free text messaging services are increasingly available throughout the developing countries, so electronic resources should be developed to be readily accessible and readable on these smaller devices.

37 http://www.icccad.net/luccc.
38 UNFCCC COP Decision 25/CP.19.
39 https://www.ctc-n.org/node/16329.

6. Applying South–South knowledge-sharing and practical learning to advance implementation of national adaptation plans and nationally determined contributions

South–South and triangular cooperation can be an agile vehicle for advancing the NAP processes and the implementation of nationally determined contributions (NDCs), where relevant, in particular through effective knowledge transfer, practical learning and endogenous capacities development for adaptation technologies. Fifteen developing countries have highlighted South–South and triangular cooperation in their NDCs as a promising means for supporting the implementation of climate actions, complementing national efforts and international support. Furthermore, Brazil, China, Colombia and India committed in their NDCs to expand their South–South cooperation for the implementation of the Paris Agreement (UNCPGS 2017).

In preparing national policies, strategies and plans on climate change, developing countries have traditionally placed emphasis on hardware components of climate technologies, and this trend still prevails. However, experiences of recent years show that a need to increase resilience of local communities and vulnerable groups to climate change can often be addressed most effectively by applying suitable software and orgware. While translating national adaptation strategies into local plans and designing action on the ground, decision makers and planners should consider the benefits, including cost savings and easier adaptability to local conditions, of software and orgware components of adaptation technologies.

To identify appropriate software and orgware for community-based and local-level adaptation action, including good practices and indigenous knowledge, developing countries should take advantage of a wealth of information available through regional adaptation networks and thematic knowledge-sharing platforms. The CTCN and other partners engaged in triangular cooperation should support this process by compiling success stories, lessons learned, descriptions of technologies used and knowledge gathered through regional projects and make this information readily available through the CTCN Climate Technology Library and the UNFCCC Adaptation Knowledge Portal.[40] United Nations country teams should assist in widely disseminating this information to local stakeholders using national languages and offline communication channels.

40 http://www4.unfccc.int/sites/NWP/Pages/Home.aspx.

Once potentially suitable adaptation practices and technologies are identified, a first step to initiate a South–South cooperation project to transfer these technologies could be contacting an embassy of a prospective South partner. Another effective avenue to launch South–South cooperation could be to connect non-governmental and/or research institutions in prospective partner countries.

When designing a South–South cooperation project on adaptation technologies, such elements as endogenous capacity-building; engagement of local stakeholders, including women, youth and community/religious leaders and long-term sustainability should be integrated from the beginning.

While Southern adaptation technologies, practices and approaches may be available, additional financial resources and technical support to ensure their effective transfer and adaptation to local circumstances of a recipient country may still be required. This barrier can be overcome by utilizing existing climate-change-related South–South cooperation funds of individual countries, such as the China South–South Cooperation Climate Fund (Weigel 2016) or those under the auspices of United Nations organizations, such as the India–Brazil–South Africa Facility for the Alleviation of Poverty and Hunger (IBSA Fund),[41] the India–UN Development Partnership Fund,[42] and the FAO–China South–South Cooperation Trust Fund.[43] Furthermore, developing countries can mobilize a developed country partner or an international organization to engage in a triangular cooperation project or programme. Opportunities of triangular cooperation could be explored with developed country Parties who have a track-record in utilizing this modality in various development cooperation contexts, such as Germany,[44] Japan, Norway and Spain.[45]

International financial institutions have been providing funding for an increasing number of projects focusing on South–South cooperation. While this is a welcome trend, some important benefits of traditional South–South cooperation, such as the prompt start of a project and disbursement of funds, less bureaucratic procedures and learning-by-doing approaches to project implementation could decrease. Governing bodies of international financial institutions, in particular those of the GCF and the GEF, could consider devising simplified submission and approval procedures for projects with South–South knowledge-sharing components.

41 http://www.ibsa-trilateral.org/about-ibsa/ibsa-fund.
42 https://www.unsouthsouth.org/partner-with-us/india-un-fund.
43 http://www.fao.org/3/a-i4700e/i4700e00.pdf.
44 Germany and China have recently launched the Sino-German Center for Sustainable Development in Beijing, China to jointly foster sustainable development in Africa through triangular cooperation with African countries. See: http://www.bmz.de/en/press/aktuelleMeldungen/2017/mai/170510_pm_053_sustainable-development-and-training-for-young-people-Minister-Mueller-travels-to-Asia/index.html.
45 Countries are listed here based on their number of projects reported to the Organization for Economic Cooperation and Development Triangular Co-operation Repository of Projects available at: http://www.oecd.org/dac/dac-global-relations/triangular-co-operation-repository.htm.

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About the Technology Executive Committee

The Technology Executive Committee is the policy component of the Technology Mechanism, which was established by the Conference of the Parties in 2010 to facilitate the implementation of enhanced action on climate technology development and transfer. Along with the other component of the Technology Mechanism, the Climate Technology Centre and Network, the committee is mandated to facilitate the effective implementation of the Technology Mechanism.

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