

SOUTH-SOUTH IN ACTION
**CHINA SOUTH-SOUTH
DEVELOPMENT CENTER**



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United Nations Office for South-South Cooperation

304 East 45th Street, FF 11th Floor
New York, NY 10017

China International Center for Economic and Technical Exchanges

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Forewords

China attaches great importance to South-South cooperation. As Chinese President Xi Jinping pointed out at the round table on 27 September 2015, South-South cooperation is a great pioneering measure uniting the developing countries for self-improvement and helping them to pave a new path for development and prosperity. As the overall strength of developing countries improves, South-South cooperation is set to play a bigger role in promoting the collective rise of developing countries and generating robust, sustained, balanced and inclusive growth of the world economy.

In the past four decades, China, thanks to its reform and opening-up policy, has overcome all kinds of difficulties and realized rapid economic growth. As a firm supporter, active participant and important contributor of South-South cooperation, China is always generous in sharing with the global South the innovations, successful solutions and lessons learned in achieving the Sustainable Development Goals and building a community with a shared future for mankind through South-South cooperation.

Being a specialized project management agency directly under the Ministry of Commerce, the China International Center for Economic and Technical Exchanges (CICETE) has been playing an active role in South-South cooperation since its establishment in 1983. The mandate of CICETE has been expanded from coordinating the development activities of the United Nations Development Programme (UNDP), the United Nations Industrial Development Organization (UNIDO) and United Nations Volunteers (UNV) in China to managing the implementation of general goods supply projects, South-South Cooperation Assistance Fund projects and Human Resource Development Cooperation projects under the China-Aid programme to other developing countries.

The history of CICETE's cooperative partnership with the United Nations Office for South-South Cooperation (UNOSSC) dates to the very beginning of the twenty-first century. Since then, both sides have been maintaining close exchanges, yielding fruitful results through pragmatic cooperation under the framework of South-South cooperation.

CICETE is proud to work with UNOSSC in the creation of this South-South in Action report. The report provides sketches of several small-grant projects from the China South-South Development Center (SSDC) project. Since the official joint launching in 2008 by CICETE and UNOSSC, SSDC has been successful and effective in supporting the exchange of South-South knowledge and expertise, resource mobilization and the building of public-private partnerships as well as facilitating cooperation between China and other developing countries in the economic and technical domains. Up to December 2018, SSDC supported 19 small-grant projects benefiting more than 20 developing countries by means of the public-private partnership (PPP) modality.

Through their shared endeavour of promoting South-South cooperation, CICETE will, as always, further deepen its strategic partnership with UNOSSC and serve as a bridge between China and the rest of the world.



Yan Dong
Director General
China International Center
for Economic and Technical
Exchanges (CICETE)

A handwritten signature in black ink, consisting of stylized Chinese characters, located below the printed name and title.

South-South in Action, one of the flagship publications of the United Nations Office for South-South Cooperation (UNOSSC), has been designed to create a space for United Nations Member States, intergovernmental organizations, and other stakeholders to share their successful South-South and triangular cooperation activities. As the world looks for solutions to achieve the Sustainable Development Goals, contributions shared in this series will deepen the scope of thinking and facilitate broader South-South and triangular exchanges.

My Office is proud to present a new volume of South-South in Action on the China South-South Development Center (SSDC), which was established in 2008 by the China International Center for Economic and Technical Exchanges (CICETE) under the Ministry of Commerce of China and UNOSSC. This publication serves as an illustration of the ten years of progress made by SSDC, which has been successful in its mission to consolidate good practices from China and disseminate and support South-South and triangular cooperation efforts globally.

This publication presents SSDC's story of its efforts to promote economic and technical exchanges and support small-grant projects in developing countries. It is noteworthy to highlight that SSDC has developed workstreams related to South-South and triangular cooperation and to date has supported 19 projects in more than 30 developing countries and regions.

I would like to congratulate the colleagues from SSDC for presenting excellent South-South and triangular cooperation experiences in this publication that could serve as an inspiration for other countries and organizations to replicate and scale up.

Finally, I wish to take this opportunity to thank our partners at CICETE and the Government of China for their dedication and partnership with UNOSSC to promote and support South-South and triangular cooperation for sustainable development.



Jorge Chediak

Director of the United Nations Office for South-South Cooperation and Envoy of the Secretary-General on South-South Cooperation

A handwritten signature in black ink that reads "Jorge S. Chediak".



The SSSC has promoted the development of the value-added bamboo industry in Vanuatu.



Chapter I



Background

The increasing economic and technical capacities of the South and the emergence of a growing group of Southern countries, such as China, India, Brazil, South Africa and the Gulf countries, as influential actors in international economic relations have created important opportunities for South-South development cooperation as a complement to North-South cooperation.

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. They are pragmatic modalities through which the countries of the South can be the drivers of their own sustainable change.

China, as an emerging economy with a great deal of development experience, has always been a champion and staunch supporter of South-South cooperation. Notably, the Belt and Road Initiative (BRI), championed by China, has sparked interest on the part of more

than 140 countries and international organizations. BRI provides new opportunities and impetus for international collaboration, including South-South cooperation and triangular cooperation. Institutions and mechanisms such as the China International Development Cooperation Agency (CIDCA), the Silk Road Fund, the South-South Cooperation Assistance Fund and the China Centre for International Knowledge on Development (CIKD) have also been newly established to further promote cooperation between China and other countries of the South.



Integrated solutions to drinking water safety issues of rural area in Sri Lanka



The 5th Steering Committee Meeting of the SSDC Project took place in Tianjin China, December 2017.



Building Efficiency and Research and Development of Energy Efficient Walling Systems

Through SSDC Project, the practical capacity of local automobile companies in Saudi Arabia has been strengthened.



Introduction to the China South-South Development Center

The China South-South Development Center project (SSDC project) was officially launched in 2008 through the partnership between the China International Centre for Economic and Technical Exchanges (CICETE), under the Ministry of Commerce, and the United Nations Office for South-South Cooperation (UNOSSC) to support South-South cooperation between China and other developing countries for sustainable development. Over the past ten years, the SSDC project has been successful and effective in supporting South-South knowledge-sharing, expertise exchange, resource mobilization and the building of public-private partnerships, as well as facilitating cooperation between China and other developing countries in the economic and technical domains.

SSDC Project Priorities

- consolidate all resources and expertise in China for South-South and triangular cooperation (SSTC);
- establish a platform to facilitate practical SSTC projects;
- facilitate SSTC capacity development;
- set up an SSTC expert database;
- organize research and policy dialogue;
- generate knowledge; and
- promote and facilitate exchanges among countries of the global South.

Highlights of the SSDC Project

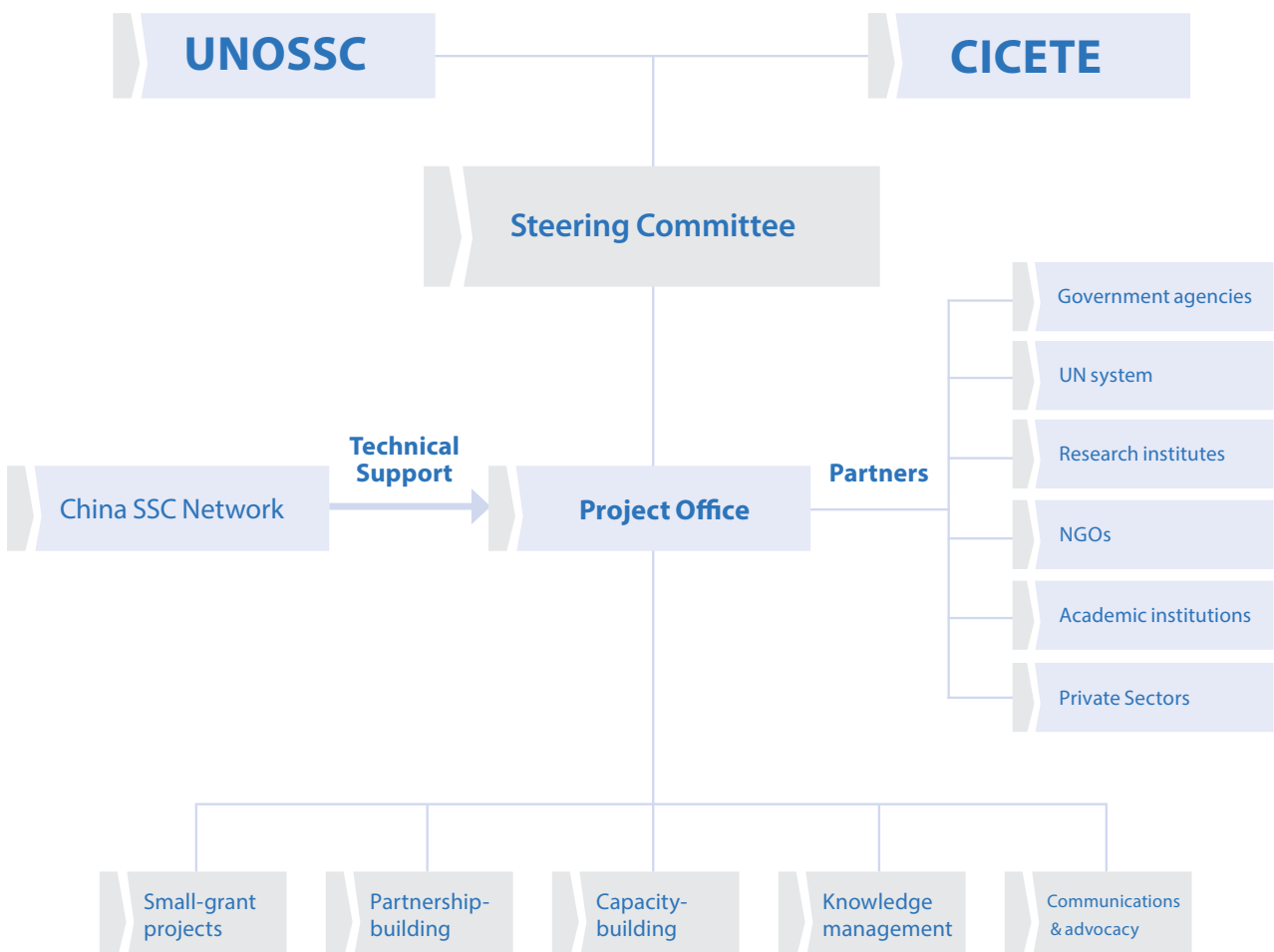
A Multi-level Platform Covering Broad Thematic Areas and Providing Comprehensive Support

Rather than focusing on one technical area, the project model of SSDC brings together resources from multiple fields and multiple industries. The project not only serves as a multi-level platform but also includes practical training and the implementation of small projects that have a focus on innovation and replicability.

UNOSSC and CICETE provided a platform for advocacy of the work of SSDC and its projects, financial support and policy guidance for the project. At all times, the project has responded to the needs of partner countries.

SSDC, with its Secretariat hosted by CICETE, is responsible for formulating and submitting work plans as well as SSDC activity plans, organizing SSDC activities, managing external partnerships, and writing and submitting annual reports, monthly reports and activity reports. CICETE and UNOSSC jointly review and approve the annual work plan.

SSDC MANAGEMENT STRUCTURE



*Training in Planning and Design
of Small Hydro Power, July 2017,
Antananarivo, Madagascar*



Small-grant Projects: Small Financial Inputs with Impactful Results

Over the past ten years, more than 25 per cent of project funds have been invested in small projects in the form of grants. Grants are structured so that implementing partners match at least dollar for dollar the investment from SSSDC. Parallel funding channelled through PPP reached a level 1.6 times of the core funds.

Partners and participating institutions from developing countries and China were provided access to technologies, equipment and facilities as well as opportunities to gain knowledge and develop capacity at the same time: a “win-win” scenario. Based on a third-party evaluation of the ten-year project, these small-grant projects are considered by the project-country local communities as making considerable contributions to the achievement of sustainable

development goals (SDGs) in their local context, including eradicating extreme poverty, ending hunger, achieving gender equality, providing decent work for all and promoting economic growth.

By December 2018, there were 19 small grant projects under SSSDC, covering a variety of themes including agriculture, forestry, energy, cultural exchanges and informatization. These projects have benefited more than 30 developing countries, including Cambodia, Ethiopia, Kenya, Liberia, Myanmar, South Africa, Sri Lanka, Sudan, the United Republic of Tanzania, Vanuatu and Viet Nam. Some examples of the areas covered by small grants are:

- Sino-Kenya small-scale demonstration project on solar photovoltaic systems and solar water heating systems;

- comprehensive use of wastes and sustainable development in building-materials sector for Asian countries along the “Belt and Road”;
- affordable housing technology for developing countries;
- technology transfer package for commissioning an environmentally friendly pesticide formulation plant in Sudan;
- increased research on and development and application of energy-efficient walling systems tailored to Viet Nam and Cambodia;
- promotion of Africa’s broadcast television dubbing skills; and,
- development of value-added bamboo processing in Vanuatu.

More information on a selection of these projects is provided in chapter II.

In short, the implementation of small projects has largely achieved the goal of cooperation and co-building among developing countries and obtaining mutual benefits.

After a decade of effort, SSDC attaches great importance to practical cooperation among developing countries. Through facilitating the exchange of experiences and workshops to develop technical capacity, it is building the capacity of partners in other countries, who can then pass this knowledge on to peers and colleagues.

Knowledge Management

Throughout the implementation of the SSDC project, many good practices have been documented. International policy dialogues were organized. Multiple analytical reports, quarterly South-South Cooperation Updates and timely news briefs were published and disseminated within and beyond its networks.

Training Stakeholders in Forest Fungi System Agroforestry project in Nepal, India and China



Quarterly South-South Cooperation Updates

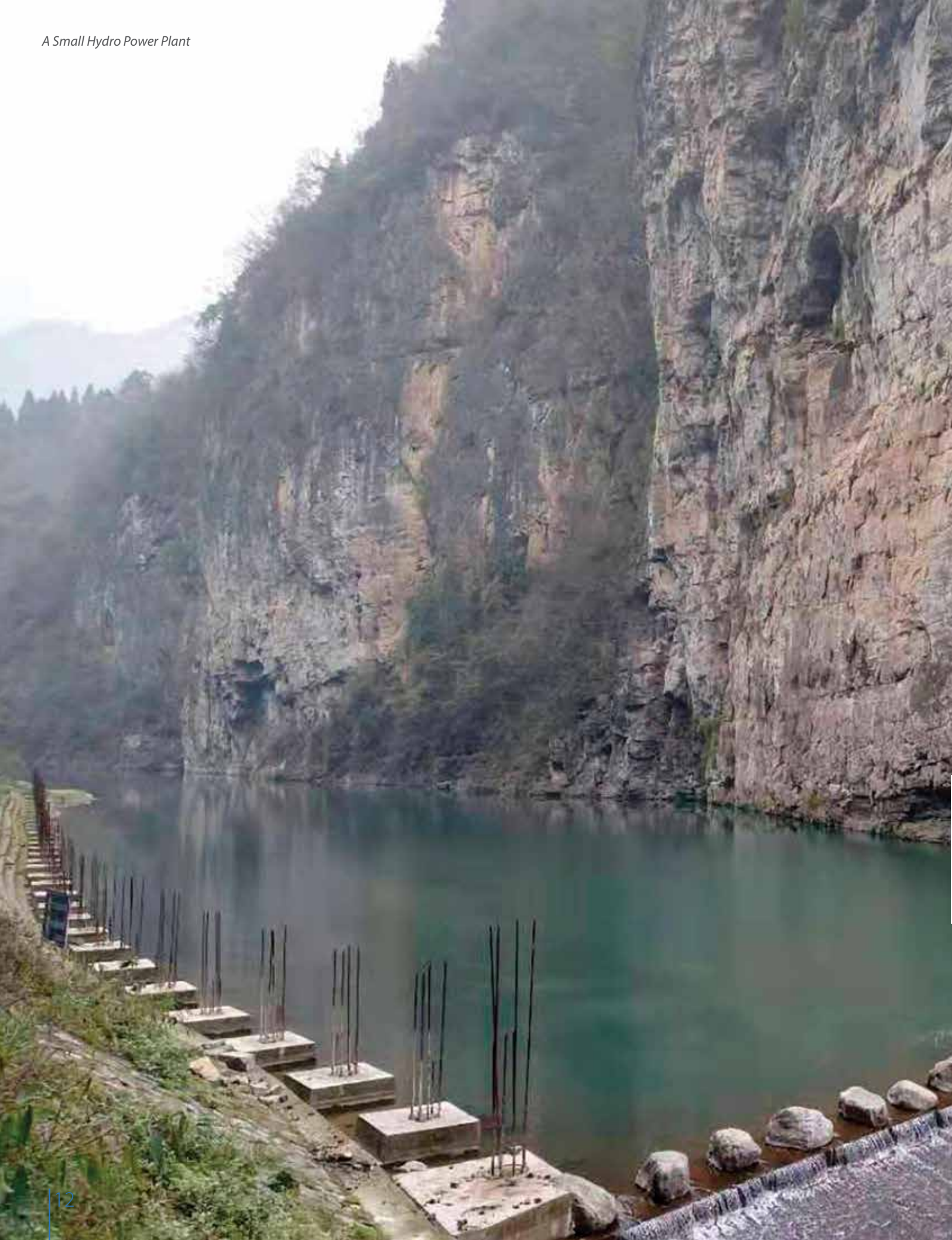


China's Development Report on South-South Cooperation



Members of the SSDC Network

1. Beijing Academy of Agriculture and Forestry Sciences
2. Biogas Institute of Ministry of Agriculture (BIOMA)
3. Center for Environmental Education and Communications of Ministry of Environmental Protection
4. China-Africa Business Council (CABC)
5. China Meat Research Center
6. China National Bamboo Research Center
7. CIFAL Shanghai International Training Center
8. Freshwater Fisheries Research Center of Chinese Academy of Fishery Sciences
9. Fujian Provincial Science and Technology Exchange Center with Foreign Countries (FSTEC)
10. Fujian Provincial United Nations SSC Network Demonstration Base
11. Gansu Natural Energy Research Institute (GNERI)/UNIDO International Solar Energy Center for Technology Promotion and Transfer (UNIDO-ISEC)
12. International Center for Research & Training on Sea Buckthorn
13. International Center on Small Hydro Power
14. Jiangxi Association for International Economic Cooperation
15. LanCang-Mekong Sub-Regional Economic Cooperation and Trade Development Center
16. Management Observer Magazine Office
17. National Research Institute for Rural Electrification (NRIRE), Ministry of Water Resources/Hangzhou Regional Center (Asia-Pacific) for Small Hydro Power (HRC)
18. Office of the Mountain-River-Lake Development Committee of Jiangxi Province (MRLDO)
19. Shenzhen International Technology Promotion Centre for Sustainable Development (UNIDO-ITPC)
20. South-South (Beijing) Biological Technology Center
21. South-South Global Assets and Technology Exchange
22. Study Center on South-South Cooperation NanKai University
23. The International Infocenter for the New Silk Road
24. The New Eurasian Continental Bridge Development Research Center
25. UNIDO Center for South-South Industrial Cooperation (China)
26. UNIDO International Centre for Materials Technology Promotion (ICM)
27. United Nations Nantong Pesticide Formulation Development Center (NPFC)
28. WMO RTC Nanjing





Chapter II

South-South in Action
China South-South Development Center



International Cooperation of City ICT Application Promotion for Developing Countries

SSDC Partner	Centre international de formation des autorités locales (CIFAL) - Shanghai (International Training Centre for Local Authorities)
Countries Involved	Albania, Plurinational State of Bolivia, Bulgaria, China, the Former Yugoslav Republic of Macedonia, Ghana, Indonesia, Kazakhstan, Kenya, Lao People's Democratic Republic, Liberia, Malawi, Myanmar, Nepal, Pakistan, Papua New Guinea, Philippines, Republic of Moldova, Seychelles, Sierra Leone, Uganda, United Republic of Tanzania and Viet Nam.
Overview	<p>In recent years, CIFAL-Shanghai has found that information and communications technology (ICT) has been proven useful in promoting city management, industry, the provision of public services and citizen welfare.</p> <p>This project was designed to promote and facilitate the use of ICT at the city level. This was achieved through:</p> <ol style="list-style-type: none"> 1. raising awareness of how ICT can be leveraged for city development; and 2. sharing Southern countries' experiences with ICT.
Results Achieved	<ol style="list-style-type: none"> 1. Facilitated cooperation between public-and private-sector organizations across the global South to collect relevant data on the use of ICT at the city level. 2. Organized two seminars on ICT use in developing countries, as a platform for countries to share their successful experiences and learn from each other. 3. Organized two high-level global forums.
Lessons Learned	<ol style="list-style-type: none"> 1. Build comprehensive project management systems. 2. Formulate reasonable arrangements for training, forums and visits. 3. Strengthen communication with project participants. <p>Lessons drawn from implementation of ICT in Shanghai:</p> <ol style="list-style-type: none"> 1. Seize development opportunities and implement a development strategy. 2. Improve institutional mechanisms and strengthen organizational leadership. 3. Focus on policy guidance and key projects. 4. Promote pilot testing and achieve "leapfrog" development. 5. Encourage government to take the lead in demonstration projects, with wide consultation with relevant stakeholders.



2018 Global CEO
Development Conference

Overview

This project, titled “International Cooperation of City ICT Application Promotion for Developing Countries”, was designed to promote and facilitate the use of information and communications technologies (ICTs) for development at the city level in countries of the global South.

ICT has many benefits for development. Research has shown that these technologies have enabled governments to improve the efficiency and effectiveness of public administration services, promoted economic growth and social development, and ensured better and more convenient provision of public services to citizens. At the same time, the use of ICT for complex data processing, real-time monitoring, and decision-making can help to address emerging challenges such as energy shortages, climate change and congestion.

Although there has been research into the use of ICT for city development, there have been few programmes that systematically analyse the current situation in the developing countries and even fewer that discuss how

to implement ICT in countries with limited capacity.

This project concentrated on countries of the South sharing with one another their experiences with advanced development of ICT systems and, more important, how ICT could be best applied in developing countries where ICT infrastructure was not yet well developed. It made use of the CIFAL-Shanghai stable communication network and extensive experience with local authorities, national governments, international organizations, the private sector and academia.

The project achieved these aims through:

- developing and operationalizing a platform for the exchange of data, research and experiences between participating countries and institutions, which enabled sharing of findings and joint problem-solving; and
- organizing workshops, seminars and forums for participating countries to discuss challenges in their specific contexts, share experiences and explore how challenges can be addressed.

Results Achieved

Over the life of the project, CIFAL-Shanghai cooperated with public and private-sector entities to gather, analyse and compare statistics on ICT in developing countries. Data were collected on indicators such as Internet subscription rates, percentage of individuals using the Internet and cell phone subscriber rates.

In addition to the gathering and sharing of data, the project organized a number of seminars, training programme and forums:

- “Training courses on information technology application for developing countries”, held in Shanghai in 2012, featured lectures on information security systems, wireless network technologies and strategic planning. The training course also included site visits.
- “Seminar on information development for developing countries”, held in Shanghai in 2012, featured lectures on software design for urban management, use of ICT in Shanghai, and the experience with establishing and operating Shanghai web portals. The training course also included site visits.
- “Global City Informatization Forum”, hosted by the Department of Economic and Social Affairs (DESA), the United Nations Industrial Development Organization (UNIDO), the International Telecommunication Union (ITU), the United Nations Institute for Training and Research (UNITAR) and the Shanghai Municipal Commission of Economy and Informatization. The Forum attracted approximately 400 participants from 20 countries.
- “Global CEO Development Forum”, hosted by UNIDO. The Forum had approximately 1,500 participants from more than 30 countries.

Lessons Learned from This Project

- **Build a comprehensive project management system.** Create relevant management norms such as training, inspection and forum management. Set up a project leadership management team and organize emergency response teams. Ensure that project management has rules to follow and strict standards, and provide a guarantee for the smooth implementation of the project.
- **Formulate reasonable arrangements for training, forums and visits.** Create an implementation plan, drawing from past experience, based on the assessed needs of the project, with content tailored to the specific requirements of the specific activities.
- **Strengthen communication with project participants.** Ensure proper follow-up for the project to understand the effect of project implementation; develop, maintain and enhance relationships; and promote cooperation and exchanges between the Centre and participating countries.

Lessons Learned from Implementation of ICT in Shanghai

- **Seize development opportunities and implement a development strategy.** Implement the leading informatization development strategy and make every effort with regard to all aspects of informatization construction. The Government attaches great importance to overall planning and comprehensive promotion, which effectively guarantees the healthy, orderly and rapid development of Shanghai’s informatization.
- **Improve institutional mechanisms and strengthen organizational leadership.** Shanghai has a unified information industry and organization leading the promotion of informatization in the city. It has

successively established several functional service organizations and various industry or professional associations in the field of information technology. In order to form a joint force and safeguard important areas of informatization and major project construction, Shanghai has also established a number of relevant parties, including network and information security, radio management, and social credit system construction. These working mechanisms are fully promoting informatization.

- Focus on policy guidance and key projects.** Based on development strategy guidance and institutional mechanism innovation, Shanghai's informatization construction has strengthened the work of policy guidance and key projects. In order to ensure the implementation of informatization construction, Shanghai incorporated the key informatization construction projects with a large project investment, high technological content, and economic and social benefits into the city's annual major projects and practical projects for the private sector.
- Promote pilot testing and achieve "leapfrog" development.** In the process of informatization construction, Shanghai conscientiously implemented the national requirements for the initial development, carried out a series of pilot works, promoted several leading development projects, and realized a number of reform and innovation achievements.
- Encourage government to take the lead in demonstration projects, with wide consultation with relevant stakeholders.** Shanghai is striving to promote e-government construction and the transformation of government functions and service efficiency.



Powering Villages' Sustainability: Small Hydropower Development in South and South East Asia

SSDC Partner	International Network on Small Hydro Power (INSHP)
Countries Involved	China, Lao People's Democratic Republic, Nepal and other countries in South and South East Asia
Overview	<p>Small hydropower (SHP) is a renewable source of energy with vast untapped global potential. Given its small scale, it can play an especially important role in developing countries. Many countries in South and South East Asia possess substantial SHP potential but this potential remains untapped.</p> <p>Through this project, SHP technology was shared by China with countries in South and South East Asia. The project involved training in SHP for relevant stakeholders, facilitating study tours to promote SHP, and compiling relevant research and materials.</p>
Results Achieved	<ul style="list-style-type: none"> • A number of training and capacity-building workshops were successfully carried out to deepen cooperation between the energy sectors in participating countries. • Multiple study tours and missions were arranged to facilitate the sharing of experiences and technologies. • Reports on the state of SHP in various countries were produced and shared.
Lessons Learned	<ul style="list-style-type: none"> • Capacity-building for professionals is vital. This can include training in project implementation, use of equipment and policy consultation as well as on-the-job training. • Promote and facilitate the sharing of information, planning and standards. • Promote project sustainability through mechanisms such as innovative modes of investment and financing. • Facilitate and strengthen communication between key stakeholders. • Work with SSDC to discuss and incorporate changes to project design as and when needed.

Overview

Small hydropower (SHP) is a renewable source of energy with a vast untapped global potential. Given its small scale, in many developing countries, it plays an important role in electrifying remote, rural communities. South and South East Asia, in particular, possess substantial SHP potential that remains untapped. In Nepal, for example, high rainfall and rugged topography account for an estimated 1,430

MW of untapped SHP potential. Similarly, the Lao People's Democratic Republic has an abundant SHP potential capacity of 800 MW for SHP plants up to 15 MW. Expanding SHP has the potential to assist in providing rural and remote communities with access to electricity.

Extensive opportunities for SHP development in the region are hampered by myriad challenges. In Nepal, issues related to lack of political stability present



numerous obstacles in the form of complicated, uncertain, and prolonged processes and procedures. Meanwhile, small and pico hydropower projects in the Lao People's Democratic Republic offer limited commercial opportunities, making it difficult to attract public and private investors. For this reason, few actors aside from government and multilateral agencies are involved in off-grid electrification efforts.

In the region more generally, the World Small Hydro Power Development Report 2013 notes that an estimated 80 per cent of SHP in South and South East Asia remains untapped. Challenges include lack of trained local personnel familiar with the operation and management of SHP plants, lengthy and complex policy procedures, and limited awareness among government officials.

China has the largest installed SHP capacity in the world. Driven by rural electrification programmes aimed at developing villages in remote, mountainous areas, SHP now provides energy to 300 million people. It is a proven and mature technology in China, with both public and private investors supporting

its development. The International Network on Small Hydro Power (INSHP) is a public, non-profit organization under the auspices of the United Nations Industrial Development Organization (UNIDO), the Ministry of Water Resources of China and the Ministry of Commerce of China. The International Center on Small Hydro Power (ICSHP) is its headquarters. The INSHP mandate is to promote SHP development worldwide. Through numerous South-South cooperation activities, China's practice and experience in SHP have been shared in over 50 developing countries.

This project was designed to share SHP technology and know-how with countries in South and South East Asia. The project achieved this through:

- providing training in SHP technology for representatives from the region;
- facilitating study tours for representatives from the region to China, and for delegations from INSHP to partner countries; and
- compiling SHP reports and training manuals.

Results

Training and Capacity-building

Across the life of the project, a number of training and capacity-building workshops were successfully carried out:

- A training workshop on SHP technology for the region brought together 32 officials and technical staff from 12 countries in the region. The training deepened cooperation between the energy sectors of participating countries including sharing of SHP country reports. The training also included site visits and on-site investigations to observe China's SHP plant construction and management.
- A seminar on SHP development for the region brought together representatives from countries, academia, and equipment and design firms. It provided an opportunity for participants to discuss and exchange experiences, share their countries' SHP development contexts and requirements, and assess country limitations.
- The 7th Hydropower for Today Forum was organized under the theme of small hydropower and green development. The Forum called upon all agencies relating to hydropower to support the promotion of replicable and sustainable models of SHP. It further served as a platform where stakeholders from the public and private sectors as well as members of research entities and NGOs were able to share best practices and lessons learned from on-the-ground SHP experiences.
- a delegation from Nepal to ICSHP in China, which served to strengthen relationships between ICSHP and Nepalese counterparts, demonstrate successful Chinese technology and expertise with the potential to be used in Nepal, and promote understanding of Chinese experience in SHP development;
- technical visit by engineers from Nepal to ICSHP in China, which included study tours to SHP stations and manufacturing bases;
- ICSHP mission to the Lao People's Democratic Republic; and
- ICSHP consultation mission related to SHP development to the Lao People's Democratic Republic and Nepal in order to meet with key stakeholders and share experiences.

Reports and Training Manuals

The following reports were developed as part of the project:

Study Tours and Missions

INSHP organized multiple study tours and missions to share experiences and technologies. They included:

- SHP Report on China – providing a comprehensive compilation of all relevant data available on SHP in China;
- Training Material on SHP – ICSHP undertook research and compiled information on the latest trends regarding SHP to support knowledge-sharing and access to the latest information in China;
- Country Report on South and South East Asia – Representatives from countries in the region were offered the opportunity to share their recent developments and SHP regulatory frameworks. Reports were produced and made available in Afghanistan, Cambodia, India, Indonesia, the Lao People's Democratic Republic, Malaysia, Nepal, Pakistan, the Philippines, Sri Lanka and Thailand;
- Report on World SHP Development – aimed at identifying the development status and potential resources for SHP around the world.

Lessons Learned

- **Undertake capacity-building for professionals.** Strengthen the knowledge-sharing and training among professional and technical personnel for SHP, including technical expertise, equipment application, project development, policy consultation, investment and financing, on-the-job training and on-site teaching.
- **Promote and facilitate the provision of information, planning and standards.** Establish and improve databases regarding water conservancy, hydrology and meteorology to promote and facilitate SHP project development. Stipulate scientific and reasonable river basin planning for SHP and establish development mechanisms at both the national and regional levels. Compile an international standard of SHP project development applicable for countries of the global South.
- **Ensure sustainable project development.** Explore innovative modes of investment and financing for SHP project development in Southern countries. Develop SHP demonstration projects, replicate successful experiences of project development and construction, and promote scaled-up development of SHP projects.
- **Facilitate and strengthen communication with stakeholders.** Strengthen multi-level communication and cooperation among international organizations, government, NGOs, scientific institutions and other related stakeholders. It is essential to have face-to-face interviews with stakeholders to understand issues such as local policies and technologies. Such interviews can be undertaken during the on-site survey or carried out at training workshops.
- **Changes to project design supported by SSDC.** Follow-up activities and advocacy work should be taken into consideration during project design. Activities could be diversified but with a common target.



Shiwang'andu Small Hydro Power Project

Promoting Africa’s Broadcast Television Dubbing Skills

SSDC Partner	China-Africa Business Council (CABC)
Countries Involved	China, the United Republic of Tanzania and other African countries
Overview	<p>Africa is experiencing a period of rapid development during which the development of the cultural industry is especially urgent. An important part of this is the development of a local television industry. Dubbing of foreign-language programmes is important not only to make television shows accessible to local communities but also for the growth and promotion of the television industry as a whole.</p> <p>Demand for translation and dubbing has increased year after year in the United Republic of Tanzania; however, there is a lack of trained professionals. Through this project, skills and technology were shared between China and the United Republic of Tanzania and then with other African countries.</p>
Results Achieved	<p>Well -established dubbing training standards were created and training was shared.</p> <p>The success of the China-United Republic of Tanzania project was noted by other African countries, which then expressed their desire to have that experience transferred.</p> <p>A cohort of professionally trained voice actors now exists in the United Republic of Tanzania. The project also trained a group of sound engineers.</p> <p>A batch of foreign-language programmes have been dubbed into Swahili and broadcast.</p>
Lessons Learned	<p>Project success can depend on many factors that may be outside of the project team’s control, for example whether students are granted visas to attend training in China.</p> <p>Training materials should be considered living documents and adapted to the needs and skill levels of the students.</p>

Overview

Africa is experiencing a period of rapid development during which the development of the cultural industry is especially urgent. An important part of this is the development of a local broadcast television industry.

Dubbing of programmes is important to make foreign television accessible to local communities; it is also necessary for the promotion of the television industry as a whole. Currently, dubbing in most African countries faces two challenges: the lack of professional voice actors and actresses and the lack of professional dubbing technology.

As a country with rapid development of the cultural industry, the United Republic of Tanzania has experienced demand for translation and dubbing that has increased year by year; however, there exists a lack of trained professionals. The United Republic of Tanzania faces three main problems if it is to improve dubbing professionalism: (a) lack of professional equipment; (b) lack of professional dubbing technology talent; and (c) lack of professional voice actors.

Professional dubbing and recording constitute a high-technology industry. China has developed a system of technology and experience in this field through research, innovation and continuous exploration. Through this project, the China-Africa Business Council (CABC) was able to share this technology and experience with the United Republic of Tanzania.

Established in 2006, CABC has actively encouraged the Chinese companies to conduct training programmes, enhance technical and cultural exchanges, create more jobs for women and promote charity works in various African countries. It is comprised of over 700 member companies that are active in 51 countries, investing in 38 countries, and conducting cultural and technical exchanges with 30 countries.

StarTimes Co., Ltd. is a member of CABC and has an active presence in media and technology in Africa. Founded in 1988, StarTimes group is now one of

the most influential technology providers, network operators and content providers in the country. It began its African business in 2002 and has been working closely with governments in Africa to jointly promote digitalization and informatization. To date, StarTimes Co., Ltd. has established subsidiaries in 30 African countries.

CABC, together with StarTimes, has come up with a pragmatic plan to help to improve the capacity of voice acting and its relevant technologies in Africa. This programme first conducts research on the broadcasting and dubbing industries in the United Republic of Tanzania to identify the dubbing technologies that suit the local context. Then it selects 10 to 15 trainees among the voice actors and actresses in the United Republic of Tanzania and offers them a six-month training course, which makes full use of China's technologies; technical experts and voice actors are invited to provide students with professional knowledge and skills. Upon finishing the training, workshops are hosted to summarize the training experience and promote the successful experiences to other African countries.

This project was a collaboration between CABC, StarTimes Co., Ltd., national television authorities and other relevant agencies in the United Republic of Tanzania. It was designed to improve the level of dubbing and recording technology in the United Republic of Tanzania and develop the skills of professional voice actors and sound recording artists. It achieved this through:

- undertaking a feasibility study in the United Republic of Tanzania; and
- providing training and workshops in China for students from the United Republic of Tanzania.

Results

The project has had many positive results including the promotion of training, recognition in other African countries, the creation of training standards, training of professional voices and recording engineers, creation of dubbing works and templates, and the promotion of

cultural and technological exchanges between China and African countries.

- **Well-established dubbing training standards were established, and training experience was shared.** Through one-year dubbing training programmes, the training courses accumulated rich local experience in communication, enrolment and technical training at the African government level and provided valuable lessons for other regions in Africa to enhance dubbing skills and organize training. During the teaching process, a set of well-established training standards for local language dubbing techniques were developed and can be replicated for dubbing training in other parts of Africa.
- **Such successful experience was recognized by more African countries.** The successful voice technology training in the United Republic of Tanzania gained recognition from the Governments of other African countries. Cultural officials in Nigeria, Zambia and other countries expressed their desire to learn from the experience of the United Republic of Tanzania and receive training in voice technology and other broadcasting and television sectors from China.
- **The project trained a cohort of professional voice actors in the United Republic of Tanzania who mastered international standard voice dubbing skills.** The project also trained a group of sound engineers who mastered basic sound engineer skills and two professional Swahili sound engineers. Through the programme, participants received technical guidance and access to practical opportunities in dubbing and recording. After returning from China, they disseminated the technologies and theories learned to enhance the overall voice and recording industry.

- **Through the programme, a batch of Swahili-language dubbing works have been created.**

These works were mainly those created by students as part of a practical learning process. By the end of December 2017, the students had dubbed 19 complete TV series, nine films, two cartoons and one documentary. After refinement, these practice works met broadcast requirements and some were subsequently broadcast in Africa.

Finally, the programme acted as a platform for cultural exchanges between China and Africa.

Lessons Learned

- **The choice of students is based on availability of visas.** Students need to study in China for nearly a year, and obtaining a long-term visa is dependent on factors such as age, level of education and prior work experience. Short-term visas for three months are available if students do not meet the above requirements. Finally, trainees had to come in groups to China.
- **Students had limited experience in professionalized dubbing, which meant that the curriculum needed to be updated and refined.** The training starts with the basic courses and also corrects trainees incorrect existing dubbing techniques. Many of the Tanzanian trainees had not engaged in dubbing before; however, they had excellent voices and some experience in sound work, such as prior work as performers or presenters. Nevertheless, the voice methods of performers and moderators are different, and there were difficulties with the training. Teachers needed to correct their pronunciation, starting from zero. For future training, the curriculum needs to be developed and modified based on the prior experience of the trainees.

Tanzani Second Dubbing Contest



Performance at the "Seventh African Digital Television Development Forum"

Exchange and Cooperation of Technology and Management on High-value-added Vegetables

SSDC Partner	Mountain-River-Lake Regional Sustainable Development of Jiangxi Province (MRLSD)
Countries Involved	China and Kenya
Overview	<p>Agriculture has an important role to play in job creation and poverty alleviation in Kenya. The cultivation of high-value-added products such as tomatoes, cucumbers and other vegetables can be an effective means of addressing poverty.</p> <p>Owing to the delicate nature of the crop, high-value-added vegetables are often grown using irrigation. Such technology may not be available to local communities. In addition, these crops are highly susceptible to disease and disease control methods may not be known.</p> <p>China has developed advanced horticulture technologies. Through this project, such technologies were transferred to Kenya.</p>
Results Achieved	<p>Kenyan stakeholders were trained in horticulture techniques and learned first-hand from Chinese counterparts.</p> <p>Experience was transferred from China to government officials, civil society organizations and academia in Kenya through seminars.</p> <p>A situation analysis was carried out to assess the local context and identify potential challenges and opportunities.</p> <p>Plans for a demonstration model farm were established, drawing from experience in China.</p>

Overview

Agriculture has an important role to play in job creation and poverty alleviation in Kenya. Successful cases of poverty alleviation in rural areas show that the production of high-value-added products such as tomatoes, cucumbers and other vegetables would be an effective way to address those issues.

Suba District is one of the twelve districts in Nyanza Province. It is located in the southwestern part of Kenya along Lake Victoria. The District has increasing poverty and inequality due to population growth and environmental degradation. It does, however, have moderate temperatures, abundant sunshine and adequate water resources, making it suitable

for planting various vegetables. In this context, the Government of Kenya has promoted the farming of high-value-added vegetables such as tomatoes and cucumbers as a strategy to increase incomes, reduce environmental pollution and promote sustainable community development. Owing to the delicate nature of the crop, high-value-added vegetables are grown mainly using irrigation, which can be prohibitively costly for local communities. Short-term rotations with other horticultural or food crops are sometimes practiced but are limited by input resources and lack of technical knowledge. Such crops are also highly susceptible to diseases.

Recommended control measures include use of chemicals, crop rotation and other cultural practices.

However, use of these methods by small-scale growers in Suba District is greatly hampered owing to the high cost of using chemicals and lack of the crop husbandry techniques. The introduction and use of disease-resistant cultivars coupled with rational disease management could be instrumental in alleviating disease constraints in the local production of tomatoes and cucumbers. In addition, the application of the latest greenhouse technology would be of benefit to local communities.

China has advanced horticulture technologies that it is willing to share with others. The project was designed to transfer some successful techniques and technologies from China to Kenya. MRLSD partnered with OSIENALA (Friends of Lake Victoria) and other related institutions to enhance Kenya's capacity to cultivate high-value-added vegetables.

The project achieved this through:

- providing training and the opportunity for China and Kenya to share experiences;
- organizing a delegation from MRLSD to visit Kenya to work with local stakeholders to identify challenges and potential solutions; and
- developing a small-scale demonstration project in Kenya.

Results

In November 2014, MRLSD arranged for three participants from OSIENALA to take part in a four-day training course in Nanchang, Jiangxi Province. The training course finished with an experience-sharing seminar. The training course also included several field visits to a number of local rural cooperatives that were successfully growing high-value-added vegetables. The local agricultural technicians shared their experience in how to improve the quality and yield of vegetables and how to sell products with the help of local government.

In October 2015, a three-person delegation from MRLSD visited Kenya. During the mission, MRLSD met

with OSIENALA and other stakeholders to undertake a situation analysis and identify challenges and opportunities. The partners also identified a site for a demonstration model farm to cultivate vegetables and held a workshop to discuss planning and management, drawing from experience in China.

In August 2016, OSIENALA organized a seminar for officials from government, civil society and academia in Kenya to further share the experience from China.



Field visit to vegetable greenhouse

Technical Cooperation for Environmentally Friendly Pesticide Formulation in South Africa and Sudan

SSDC Partner	Nantong Pesticide Formulation Development Centre (NPFC)
Countries Involved	China, South Africa and Sudan
Overview	<p>South Africa and Sudan are both agrarian countries where the use of pesticides is a necessary tool to protect crops from damage and human and animal lives from vector-borne and other diseases. Local manufacturing of pesticides is limited. Pesticides that are imported from abroad are often older formulations that can be highly toxic. These pesticides can also have serious environmental impacts and pose hazards to food safety and the health of applicators, workers and farmers.</p> <p>There is an urgent need to introduce new, modern and safer agrochemicals into Southern countries. However, countries can lack access owing to high costs and patent protections.</p> <p>Through this project, Chinese stakeholders worked with in-country counterparts to develop and transfer environmentally friendly pesticide formulations to South Africa and Sudan.</p>
Results Achieved	<p>Representatives from South Africa and Sudan visited China to learn about pesticide formulations and receive training.</p> <p>Representatives from China undertook study tours to Australia and the United States of America to gather information, which could then be shared with South Africa and Sudan.</p> <p>New environmentally friendly pesticide formulations were developed for use in the two countries.</p>

Overview

Sudan is an agrarian country where the use of pesticides has become a necessary tool to protect both crops from pest damage and human and animal lives from vector-borne and other diseases. However, there are at present no local pesticide manufacturing plants. All pesticides are imported from abroad; however, these are often highly toxic agrochemicals based on older, unsafe pesticide formulations of varying toxicity. These older pesticides can have serious environmental impacts and are also hazardous to food safety and the health of applicators, workers and farmers. The situation in South Africa is very similar.

Research and development (R&D) in agrochemicals in

Northern countries, especially in Western Europe, Japan and the United States of America, has played a key role in bringing highly active, broad spectrum, less toxic pesticide formulations to the market. These have vastly reduced the problems associated with the production and use of pesticides. However, these benefits have largely accrued in developed countries. There is an urgent need to introduce and promote environmentally friendly and safe formulations in developing countries; however, many of them have limited access to them due to high costs and patent protections.

The Nantong Pesticide Formulation Development Centre (NPFC) undertook two separate but similar projects to address these issues. In Sudan, NPFC worked in partnership with the Senal Agricultural

Industry and Chemical Company Ltd. Sudan (SAICC) and in South Africa with the Villa Crop Protection Academy (VCPA), under the Ministry of Agriculture of South Africa. In both cases, the projects were designed to establish a pesticide formulation plant based on environmentally friendly bio-pesticides and their water-based formulation technologies. This technology would be shared by the Nantong Pesticide Formulation Development Centre from China. The plant would produce products with the potential to replace older polluting pesticide formulations on the market and promote the development of a green crop protection industry in South Africa and Sudan. The project has benefits for environmental protection, food safety and human health while increasing the agricultural productivity.

Results

The project achieved the following results in Sudan:

- Two representatives from NPFC visited Sudan to collect information on pesticide formulations currently used in the country. During the mission, a study on the feasibility of establishing an environmentally friendly water-based pesticide formulation plant was completed.
- Two staff from Sudan were trained by NPFC in pesticide capsule suspension (CS) formulation.
- Three pesticide formulations were developed by NPFC for potential use in Sudan. The pesticides were found to have a good efficiency level and low toxicity and be able to be produced at low cost. The pesticides were subsequently transferred to Sudan.

The project achieved the following results in South Africa:

- Two representatives from NPFC visited South Africa to collect information on pesticide formulations currently used in the country. During the mission, a study on the feasibility of establishing an environmentally friendly water-based pesticide formulation plant was completed.

- Representatives from NPFC undertook study tours to Australia and the United States to gather relevant information on the formulation of environmentally friendly pesticides. Information gained during those visits was shared with other countries of the South.
- Two staff from South Africa were trained at NPFC in water-dispersible granule formulation.
- A recipe for environmentally friendly pesticide was developed by NPFC for potential use in South Africa. The pesticide was found to be effective and with low toxicity. It was subsequently transferred to South Africa.



Technical Cooperation for Environmentally Friendly Pesticide Formulation in Sudan



Technical Cooperation for Environmentally Friendly Pesticide Formulation in South Africa

Promoting Prefabricated Housing in Liberia

SSDC Partner	China-Africa Business Council (CABC)
Countries Involved	China and Liberia
Overview	<p>Due to a variety of factors, the demand for housing in Africa grows by 15 to 20 per cent each year. Challenges to increasing supply include high construction costs, lack of technologies suitable for local contexts, limited local materials and lack of skilled workers.</p> <p>Prefabricated housing is one product that can be used to address this issue. In this project, cooperation between two private-sector enterprises enabled the transfer of prefabricated housing technology from China to Liberia.</p>
Results Achieved	<p>Sharing of information between Chinese and Liberian partners through study visits, workshops, and training programmes.</p> <p>Transfer of prefabricated housing technology, ensuring that the technology was adapted to the local needs and context.</p> <p>Opportunities provided for ongoing local employment.</p>
Lessons Learned	<p>Projects should begin with a feasibility study to understand the local context.</p> <p>Ongoing communication between the project team and stakeholders is vital.</p> <p>Meetings to exchange experience are important to discuss project progress, exchange views and make real-time improvements to the project as required.</p>

Overview

Due to rapid urbanization, rapid population growth and other factors, demand for housing in Africa grows by 15 to 20 per cent each year. Housing development in Africa faces multiple challenges including high construction costs, lack of technologies suitable for local contexts, limited materials needed for construction, and lack of skilled labourers and technicians.

Prefabricated homes, or prefabs, are specialized types of prefabricated buildings that are manufactured off-site in standard sections. These sections can then be easily shipped and assembled on-site. The design of many prefab houses makes building assembly easy to teach and learn and does not require heavy equipment. Compared with traditional construction methods, assembly time can be reduced by 50 per cent

and costs by 40 per cent. For African countries such as Liberia, with prolonged wet seasons, this technology can reduce construction periods and cut costs, easing pressure on housing demand.

Established in 2006, the China-Africa Business Council (CABC) was one of the first non-governmental organizations to facilitate economic and cultural exchange between China and countries in Africa. It encourages Chinese companies to conduct training programmes, enhance technical and cultural exchanges, create jobs for local communities with a focus on women, and promote charity work. The Beijing Hengtong Innovation Luxwood Technology Co., Ltd. is a member of CABC and a leading company in prefab housing.

CABC, Beijing Hengtong Innovation Luxwood



Promoting Prefabricated Housing in Liberia

Technology Co., Ltd. and the Ministry of State for Presidential Affairs of Liberia collaborated on this project to promote and transfer prefab housing technology from China to Liberia, build local capacity and improve local housing standards. The project achieved this through:

- conducting research on prefab housing in Liberia;
- demonstrating the construction of prefab housing; and
- organizing workshops and training for local officials and technicians in the technology.

Results

The project achieved the following results:

- a two-month feasibility study in Liberia conducted by the private-sector partner in 2017;
- successful organization of a China-Liberia rapid-assembly low-cost-housing technical seminar in Beijing, during which partners shared information on the construction technology.

Participants noted that the technology being used in Liberia could also be shared with other African countries; and

- four-day training session in the prefab housing technology at a factory in Beijing.

Experience

- **The project helped to solve the housing problem with newly developed housing technology.** Based on the feasibility study, the technology was adjusted to the local context. It overcomes obstacles related to construction in Liberia and promotes the speed and comfortableness of locally built houses and buildings, saves on building construction costs, and meets the need for rapidly built, low-cost houses with standardized, serialized and complete low-cost-assembly housing technology. By doing this, it works to ensure local people's livelihood stability and development.
- **The project served as an entry point for Chinese enterprises to go into the Liberian building market.** The technology was well recognized by the Government of Liberia. As a result, memorandums/agreements of

cooperation in new city development projects, relocation projects, high-grade villas, housing, etc., continued to be signed.

- **The project drove development of prefabricated buildings in Liberia.** The popularization of this project will contribute to driving the development of the Liberia prefabricated building market, providing opportunities to learn prefabricated building technology and more employment opportunities for local government departments, construction workers and students.

Lessons Learned

Overall, the rapid-assembly low-cost housing project in Liberia proceeded smoothly. The plan for each implementation step was reasonable, and some successful experiences can be used for reference for subsequent projects.

- **Work survey plays a key role in project implementation.** Previous research created an in-depth understanding of the economic situation, housing needs, local housing

characteristics, construction material supply and condition of local construction technicians in Liberia, which indicated a direction for the project to research and develop a rapid-assembly low-cost house fit for Liberia.

- **Interaction during the project implementation supports project achievement.** The project team actively invited personnel in all fields in Liberia to participate in systematic technical training for local construction technicians to expose them to the housing technology, which enables rapid promotion of publicity at the local level.
- **Carry out experience-exchange meetings in time to make project achievements more practical.** During the implementation of the Liberia project, the project team held two experience-exchange meetings and invited people from all fields in Liberia and the Chinese construction technicians to participate to exchange views on the project so that the project could be improved in real time and make the results of the project more practical.



Affordable Housing Technology for Developing Countries

SSDC Partner	International Centre for Materials Technology Promotion (ICM)
Countries Involved	Bahrain, China, Morocco and Sudan
Overview	<p>In many countries, it can be difficult for low-income individuals and families to move from rental accommodation to home ownership. The light steel structure system, a technology developed in China, is one effective way to construct affordable social housing and help to meet needs in developing countries. The system provides low-cost, safe, environmentally friendly and permanent houses quickly.</p> <p>Through this project, light-steel-structure-system technology was transferred from China to Bahrain, Morocco and Sudan.</p>
Results Achieved	<p>Expert teams from China completed field visits in Bahrain, Morocco and Sudan to investigate local building conditions.</p> <p>A technology transfer workshop was held in Bahrain to present and share the technology with representatives from the Middle East and Africa.</p> <p>Two prototype houses were constructed in Bahrain.</p> <p>A local training centre, the International Smart Building Centre, is being established in Bahrain to facilitate further transfer of skills and technology and provide local training and employment.</p> <p>A new standard for a light steel housing system was formulated in Bahrain.</p>
Lessons Learned	Training workshops were found to be a fast and efficient way to enhance technology innovation ability of engineers. Given this, future training for other actors such as researchers, managers and policymakers should be considered.

Overview

In many countries, it can be difficult for low-income individuals and families to move from rental accommodation to home ownership. This is equally true for low-income families in Bahrain, Morocco and Sudan. There is a need in these countries for adequate affordable houses to tackle a growing housing problem. For example:

- In Bahrain as many as 45,000 families are registered with the Government, having either applied for low-cost housing loans or for State-provided accommodation. The Government of

Bahrain is working to provide housing for these low-income citizens and has been looking for proposals to shorten the long waiting lists for those seeking State assistance in obtaining a home.

- Morocco is carrying out a country-wide “Slum-Free City” programme. However, there are limited choices for building materials since the building components are mainly clay bricks and concrete blocks of poor quality.

The situation in Sudan is similar to that in Bahrain and Morocco. In all three countries, there is an urgent need

to build high-quality houses rapidly and at low cost.

The light-steel-structure-system technology developed in China and promoted by the International Centre for Materials Technology Promotion (ICM) is one effective way to construct affordable housing and thereby help to meet needs in developing countries. The system provides low-cost, safe, environmentally friendly and permanent houses quickly. It takes only seven days to construct the main structure for a detached dwelling of 200 m² with a structural safety guarantee period of 95 years. Dwellings are specially designed to enable rapid building of new towns or for post-disaster rehabilitation. In addition, approximately 90 per cent of the materials used can be recycled.

This project was specifically designed to make use of local material resources and employ local labour, thereby providing employment opportunities. The system is designed so that unskilled workers are able to learn the manufacturing technique and construction procedure quickly and easily with minimal training. The project cooperated with local enterprises to set up production lines and introduce suitable manufacturing techniques, equipment and advanced management experience.

The project was operationalized in multiple ways:

- undertaking feasibility studies in the three countries to ensure adaptation to local contexts;
- transfer of light-steel-structure-system technology from China to local counterparts;
- building of two demonstration prototype houses in Bahrain under the supervision of the Ministry of Housing of Bahrain;
- working with local authorities in Bahrain to develop and implement relevant building standards; and
- providing training for engineers from Bahrain in China.

Results

The International Centre for Materials Technology Promotion (ICM) organized field visits to Bahrain,

Morocco and Sudan for an expert team to investigate the local building conditions and available building materials. Feasibility studies were also carried out to identify housing solutions to address the growing housing problem in each country. Following this mapping and assessment of the advantages and disadvantages of different options, ICM provided housing systems and building components tailored to the demands of each country context.

A technology transfer workshop was held in Bahrain to present and share the affordable housing technology with representatives from countries in the Middle East and Africa.

Two prototype houses using the smart light-steel-structure system were completed in Bahrain as a demonstration of the technique. To date, thousands of people have visited the houses. During the construction period, a 40-day on-site training programme for engineers from Bahrain and Morocco was held. Participants benefited from gaining general knowledge as well as specific training in affordable housing technology and the latest building systems.

A local training centre, known as the International Smart Building Centre, is being established in Bahrain to facilitate the future transfer of this technology and provide training and local employment. This centre will act as a hub for demonstrations and training as well as facilitate the transfer of Chinese know-how to other countries of the global South.

With cooperation from the University of Bahrain, a new standard for a light-steel-housing system was formulated in Bahrain based on existing international practices.

Lessons Learned

During this project, the training workshop has been found to be a fast and efficient way to enhance the technology innovation ability of engineers. Thus, similar training should also be carried out for more people, such as researchers, managers and officials as well as policymakers, to enhance the effect of technology transfer.

Building Efficiency and Research and Development of Energy-efficient Walling Systems Tailored for Viet Nam and Cambodia

SSDC Partner	International Centre for Materials Technology Promotion (ICM)
Countries Involved	Cambodia, China and Viet Nam
Overview	<p>Energy consumption in buildings accounts for more than 30 per cent of total energy consumption, making the building industry one of the industries with the highest energy consumption. Heat insulation in buildings is one vital mechanism to save energy and improve building function and living conditions. Viet Nam and Cambodia are two countries that face challenges despite both having tropical and semi-tropical climate zones in that they lack heat-insulation walling systems.</p> <p>In this project, heat insulation technology developed by ICM in China was transferred to Cambodia and Viet Nam upon request from the Governments of these countries.</p>
Results Achieved	<p>Chinese experts trained stakeholders in Cambodia and Viet Nam in the preparation of insulation so that products could be produced locally.</p> <p>ICM, in collaboration with local partners, undertook research and development activities to ensure that materials developed were appropriate for the local context.</p> <p>A demonstration production line was developed in Viet Nam.</p> <p>Building standards for new insulation technology were developed in Viet Nam.</p>
Lessons Learned	Projects should consider longer time frames to enhance project impact and enable follow-up work such as commercialization of technologies as well as development and management of production lines.

Overview

Energy consumption in buildings accounts for more than 30 per cent of total energy consumption, making the building industry one of the industries with the highest energy consumption. Heat insulation in buildings is one vital mechanism to save energy and improve building function and living conditions. External insulation and inner insulation for exterior walls are two common insulation methods used

in Asia, with inner insulation for exterior walls well developed in China.

Viet Nam and Cambodia are two countries that face challenges despite both having tropical and semi-tropical climate zones in that they lack heat-insulation walling systems.

In recent decades, the building industry in Viet Nam has developed rapidly; however, there has been a shortage of insulation on the market. At the same

A small-grant project entitled "Comprehensive Utilization of Wastes and Sustainable Development in Building Materials Sector for Asian Countries along the Belt and Road"



time, the Government of Viet Nam has published a series of new policies to encourage the development of building materials. Thus, heat-insulation walling-material technology is crucial to the growth of the building sector of Viet Nam.

The situation in Cambodia is even worse. There is no concept of the importance of heat insulation and energy efficiency on the part of the Government or the general population. As a result, many people live in badly conditioned houses with very high temperatures and poor ventilation. At the same time, higher-income Cambodians use air conditioners 24 hours a day without any awareness of energy consumption or climate change issues.

The International Centre for Materials Technology Promotion (ICM) is one of the leading organizations undertaking research in energy-saving building materials in China. It has made great achievements in research and the application of the inner insulation of exterior wall systems as well as new three-dimensional fibre foamed concrete technology. ICM received requests from the Governments of Viet Nam and Cambodia to transfer technology from China to their countries. The energy-efficient walling system

transferred to each country will be tailored to different building structures and features in the tropical and semi-tropical zones of Viet Nam and Cambodia.

The project incorporated the following activities:

- technology transfer workshops at ICM headquarters in China to train Vietnamese and Cambodian engineers in energy-saving walling materials;
- a feasibility study by Chinese experts in Viet Nam and Cambodia to investigate local research and development conditions, materials available locally, prices of materials, and the feasibility of setting up building material lines;
- joint research and development activities in each country;
- establishment of production lines for manufacturing common energy-efficient walling materials and new products tailored to local conditions; and
- development of new building standards.

Results

Workshops and Training

ICM developed foamed concrete technology and new three-dimensional fibre foamed concrete technology based on building needs in Viet Nam. Two researchers from the Viet Nam Institute for Building Materials (VIBM) were then trained at ICM. The training focused on the preparation of heat-insulation foamed concrete and industrial manufacturing technologies. Following that training, VIBM was able to successfully reproduce the foamed concrete and began construction on a production line.

Experts from ICM visited VIBM to provide further advice and support including additional lectures and training. During the mission, the two teams discussed challenges that were arising and jointly developed solutions and suggestions. ICM then arranged another workshop in China to transfer knowledge on establishing production lines for foamed concrete.

Similarly, a delegation from ICM visited Cambodia to undertake a feasibility study, train Cambodian engineers on cement and foamed concrete technology, and provide technical guidance on industrial production.

Research and Development

ICM, in partnership with local partners, undertook research and development activities to ensure that insulation materials were developed that were appropriate for local contexts.

Establishment of Production Lines

ICM worked with VIBM to design an economically viable, environmentally friendly demonstration production line. The production line was developed based on existing Chinese expertise and experiences. A demonstration building was then constructed using the foamed concrete from the production line to demonstrate its feasibility.

Building Standards

ICM worked with VIBM and local governments to

formulate building standards for the new foamed concrete technology. Standards were developed based on previous experience in China.

Lessons Learned

A continuous SSDC project or longer project period is important to enhance the effect of the project. After this project, the foreign partners hope that ICM can make additional efforts to help them to promote the commercialization of technology as well as operate and manage the production line for foamed concrete.

ICM has been working with them to promote the cooperation but more progress could be achieved under a continuous SSDC project.



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Chapter III

The Future of SSDC

SSDC recently completed a 10-year evaluation. The evaluation found that SSDC:

- was relevant and aligned with the principles of South-South cooperation;
- represented good value for money and judicious use of resources;
- had strong management arrangements with an effective and competent team of professionals;
- activities had impact and had brought positive change for beneficiaries;
- had high prospects for sustainability; and
- addressed cross-cutting issues such as gender and environment.

In addition, the evaluation suggested stronger monitoring and evaluation, knowledge management and communication functions. It also suggested a greater emphasis on two-directional sharing of experiences so that Chinese partners could also learn from counterparts in partner countries.

The outcome of the evaluation is being used to design the next phase of the project. This includes how to best link SSDC to the 2030 Agenda for Sustainable Development, the Belt and Road Initiative and other global development frameworks.

Moving forward, there is scope for the next phase of the project to:

- expand the existing technical network and partners beyond China so that SSDC becomes a globally focused platform to facilitate and implement South-South and triangular cooperation projects in support of the achievement of the SDGs; and
- upgrade the existing small-grant programme to include action-oriented and sector-specific research as well as pilot projects based on analysis of demand and enable the scaling up of knowledge-sharing and technology transfer.

Given the wide thematic scope of SSDC, the project has already contributed to addressing several SDGs. SSDC

has directly contributed to SDG 6 (clean water and sanitation), SDG 7 (affordable and clean energy), SDG 8 (decent work and economic growth), SDG 9 (industry, innovation and infrastructure), SDG 11 (sustainable cities and communities), SDG 13 (climate action) and SDG 17 (partnerships for the goals).

As the next phase is developed and implemented, SSDC will, as always, act as a platform to promote successful South-South cooperation experiences and practices and build development capacity in the global South.



SSDC Project has promoted the development of value-added bamboo industry in Africa



UNOSSC at a Glance

The United Nations Office for South-South Cooperation (UNOSSC), hosted by UNDP since 1974, was established by the United Nations General Assembly with a mandate to advocate for and coordinate South-South and triangular cooperation on a global and UN system wide basis. UNOSSC receives policy directives and guidance from the General Assembly and through its subsidiary body, the High-level Committee on South-South Cooperation. UNOSSC submits its strategic planning frameworks to the UNDP, UNFPA and UNOPS Executive Board for approval and funding. The Director reports to the UNDP Administrator and has also been appointed Envoy of the Secretary-General on South-South Cooperation.

CICETE at a Glance

Under the Ministry of Commerce, the China International Center for Economic and Technical Exchanges (CICETE) was founded in 1983 with the approval of the State Council.

CICETE's main function, delegated by the Ministry, is to coordinate the cooperation between China and UNDP, UNIDO including executing their assisted programs to China, and to manage projects of general goods supply, South-South Cooperation Assistance Fund projects, capacity building projects under the China-Aid programme to other developing countries. Since its establishment, CICETE has witnessed an extraordinary history over three decades, during which it deems its responsibility to promote economic and technical exchanges between China and other countries and makes great contributions to economic and social development in China and recipient countries.



United Nations
Office for South-South Cooperation