Nexus
for development

Financing Renewable Energy in South East Asia: Insights from Practitioners

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This report was authored by Helene Shao, with the support of Claire Dufour, Asha Harvey, and Zita de Pooter.

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The following report compiles a variety of diverse resources including desktop research, informant and stakeholder interviews, as well as insights from an interactive workshop attended by 65 entrepreneurs and financiers organised in Phnom Penh on December 5th, 2017. All errors and omissions are our own.

We would like to thank in particular, for their time and contributions before and during the workshop, the teams of Agence Française de Dévelopment Cambodia, Chamroeun, Insitor Management, Mercy Corps Myanmar, Pact Myanmar, Palladium Cambodia, Prasac, S3IDF, SunFuder, Uberis and Vision Fund Cambodia.

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INTRODUCTION

Sustainable development in South East Asia (SEA) is hindered by dependence on conventional energy sources such as fossil fuel –oil, coal, and natural gas – all of which contribute to greenhouse gas emissions and climate change. Unsustainable energy sources are quickly being made obsolete by market driven demands for climate friendly and clean solutions. Thus, renewable energy (RE) usage– particularly solar, biomass, hydro, wind, and geothermal – is projected to increase exponentially, creating a significant opportunity for the private sector to meet growing demands.

Local small and medium-sized enterprises (SMEs) and social enterprises are uniquely positioned to pioneer low-carbon development. By supplying communities with sustainable and affordable clean energy solutions, SME's and social enterprises can simultaneously address the key drivers of poverty while reducing carbon emissions. Unfortunately, RE projects and SME's often face significant political, regulatory, or technological barriers during implementation. Particularly for those enterprises in the start-up, scale-up, or growth stages, access to finance is the primary obstacle they must overcome on the path to scaling and implementing solutions in SEA.

SMEs and the entrepreneurs that run them are often unsuccessful in identifying advantageous financing tools that can maximize their business models. The following report builds upon desk research as well as key observations from the workshop, "Financing Renewable Energy in South East Asia" workshop held in Phnom Penh in December, 2017. The event was an opportunity to address the current challenges entrepreneurs face when trying to access finance in SEA (with a geographic focus on Cambodia and Myanmar). We hope that this work will educate entreprenuers on the type of financing available to them as well as serve as a reference for donors on why certain financing schemes are relevant and more successful in the RE sector and in the SEA region.

In section one, Nexus summarizes research conducted with RE entrepreneurs who were asked to describe their experience financing their business and perceptions of the barriers to accessing finance in SEA. Entrepreneur testimonies are exemplified by a brief case study which examines finance accessed by four social enterprises in the clean energy and clean water sectors. Section two provides a mapping of the financial landscape by defining five innovative schemes designed to finance RE projects, SMEs, and social enterprises in the region. Nexus then provides an analysis of financial and non-financial tools and presents an overview of the benefits, challenges, and opportunities for improvement to facilitate replicability of these solutions.

Key findings from the workshop including qualitative data, panel discussions, and breakout group discussions are also integrated and highlighted throughout this report. Additional data and research can be found in the Annexes.

SECTION 1: RENEWABLE ENERGY (RE) ENTREPRENEUR ACCESS TO FINANCE

Access to finance is limited for RE entrepreneurs in Southeast Asia. Although many entrepreneurs have already accessed some debt, equity, or grant financing, they are still faced with barriers that limit their business growth. At the workshop, Nexus asked ten entrepreneurs (who provide RE and clean water solutions) to present their businesses, share their financial needs, and discuss the challenges they have faced when accessing finance in SEA.

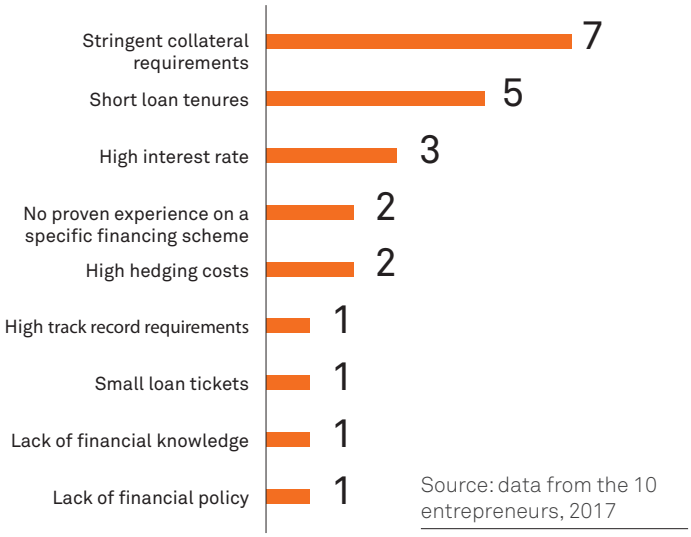
1.1 Experiences with Debt, Equity and Grants Funding

A. Debt Financing

Nexus engaged with ten clean energy and clean water entrepreneurs and nine reported experiencing significant challenges when accessing debt, equity, and grant financing in SEA.

Entrepreneurs reported that financial institutions generally have a limited technical understanding of project-based finance, resulting in a gap in services provided by local financial institutions (conventional commercial banks) to RE projects.

Top barriers to accessing debt financing for RE Entrepreneurs



Source: data from the 10 entrepreneurs, 2017

E.g.: Out of 10 entrepreneurs, 7 reported stringent collateral requirements as a barrier to access debt finance.

According to entrepreneur participants, financial institutions currently do not meet market needs for debt financing mainly because they:

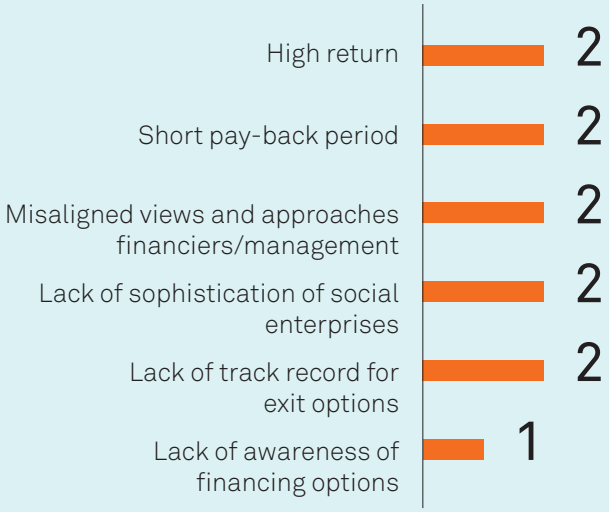
- Enforce collateral policies that are not tailored to the local market i.e., loan collateral requirements are perceived as culturally and economically irrelevant/insensitive. Ex; Land titles are almost always required as loan collaterals in Cambodia.
- Offer short-term loan tenures that do not meet local needs. On average, loan offers have a maximum tenure of one to two years while entrepreneurs reported a need for loan tenures from three to ten years.
- Charge high interest rates that are unrealistic: Annual interest rates for a bank loan in Cambodia can be up to 18%.
- Assume high financial literacy: Financial institutions commonly rely on financial documentation and information that require high levels of financial literacy with little room for flexibility.

B. Equity

When asked to identify which financing solutions they had accessed the most, entrepreneurs indicated utilizing equity. However, when accessing equity finance from for-profit funds such as commercial private equity funds, entrepreneurs observed that financiers...

- Expect high returns on investments which can be unrealistic for RE entrepreneurs. Commercial private equity funds are looking for a market risk-adjusted Internal Rate of Return (IRR) of around 35% as they consider RE investments (particularly in frontier markets and markets with political instability) to be of high risk.
- Ask for short payback periods with little flexibility. RE entrepreneurs need longer pay-back periods as projects often do not generate sufficient cash-flow in order to meet the short pay-back period required by commercial investors.
- Approach business strategies from a different perspective, tolerance for risk, and return expectations that may not align with the RE entrepreneur. Investors first assess the feasibility and viability of a project to decide whether to invest and/or modify a business idea. Entrepreneurs can be reluctant to adjust their initial business models, especially when they have strong buy-in from the communities they serve. For example, some energy providers may choose to take an equity share or transfer project ownership to the community. In the equity raising process, is is important to ensure that risk and return (including financial, social, and environmental) expectations are aligned to ensure success.
- Have a commercial approach to impact investing. Even when focused on impact, some investors prioritize financial profitability over social returns on their investments. If selling to a base of pyramid customers, it's unrealistic for an impact investor to expect commercial level returns. This would mean that the social enterprise would be obliged to charge higher prices to deliver that return, which might not be viable in that market nor aligned with the social enterprise's mission.

RE Entrepreneurs barriers to accessing equity financing



Source: data from the 10 entrepreneurs, 2017

C. Grants

When discussing access to grant financing, entrepreneurs observed that public institutions such as development banks or governments:

- Implement short-term pilot programmes: Short-term and pilot investment programmes operate during a fixed period that are not designed to fund project growth.
- Require strict reporting on the use of funds: Donor requirements for deliverables and financial records are human resource intensive which can make RE entrepreneurs reluctant to apply.
- Offer limited funding for RE technologies: Strict eligibility criteria eliminates funding outside specific geographic regions or technologies which may exclude innovative project ideas.

1.2 Barriers to Access to Financing in South East Asia

In addition to the previous section which focuses on challenges related to specific financial tools, Nexus identified the following barriers which are common to SEA, and Cambodia and Myanmar in particular.

On the demand-side:

- Limited knowledge of key finance terms: RE entrepreneurs may not have mastered the 'finance language' needed to effectively communicate with financiers. Additional building of financial capacity and literacy could prepare entrepreneurs to keep and clearly explain their financial statements to investors.
- Limited knowledge of alternative financing solutions: Apart from traditional debt, equity or grants, there are other sources of financing available for RE entrepreneurs in the region,

On the supply side:

- Lack of debt financing products dedicated to RE projects and end-users: Financial institutions do not directly provide adequate financial products to RE entrepreneurs, nor do they provide end-consumer finance (RE customers).
- High cost of capital: Due to the perception of RE investments being high risk and technical, investors are extremely diligent when assessing potential investment opportunities in the sector. Due diligence assessments are costly and even if the results do not prohibit

On the demand-side: (continue)

including concessional finance, patient capital, output-based grant, and crowdfunding. Despite the large spectrum of financial instruments available, many RE entrepreneurs are not always aware of their options for funding.

- Informal business practices: Most Small and Medium Enterprises (SMEs) operate informally which can make communication with investors difficult. They often have no adequate operational and financial records and limited transparency in their business practices.

On the supply side: (continue)

the investment, these high costs are eventually incorporated into the cost of capital.

- Unclear policies: Funding organisations need to work with their respective national governments to implement stable legal regulations and policies on SME financing and RE investments.

Overall, the commercial sophistication of social enterprises in the region is low. Many need to advance the commercial and financial aspects of their business model (including their supply chain, financial modelling, governance and organisational processes) to give investors confidence that the enterprise can absorb investment and utilise the funding effectively.

1.3 Case studies: Financing Clean Energy and Water Social Enterprises

A. Clean Energy

solar home

SolarHome is a social enterprise that installs integrated solar energy and appliance units in customer homes in rural Myanmar.

Products and services offered:	solar home systems and pay-as-you-go (PAYG) payments
Finance accessed:	equity, debt
Finance needed:	debt, convertible debt
Finance barriers:	• Commercial debt investors require 2-3 years track record • Availability of grants in PAYG space is skewed towards Africa • Limited ability to hedge currency risk • Uncertainty about subsidy programmes • Unclear visibility on exit opportunities

EcoSun Energy & Environment

EcoSun is a social enterprise that provides energy solutions to rural communities in Cambodia.

Products and services offered:	solar home systems, mini-grid and on-grid systems, solar pumps, street lights, clean cookstoves
Finance accessed:	equity
Finance needed:	debt
Finance barriers:	• High loan collateral requirements (land titles or mortgages) • Less amount of loan disbursed than planned • Short periods of time (2 or 3 years) • High interest rates on loans from local banks or microfinance institutions: 14.4% to 18% per year

A. Clean Energy

Mandalay Yoma builds and operates highly advanced solar mini-grids that provide households and businesses in remote areas in Myanmar with 24/7 green electricity.

Finance accessed:	equity, grant
Finance needed:	debt, equity
Finance barriers:	• High interest rates from local banks, short loan periods and high collateral requirements • Local equity investors look for high returns

ATEC is a biogas digester social enterprise based in Cambodia that supplies pre-fabricated bio-digestors to rural farming households.

Finance accessed:	equity, result-based grant
Finance needed:	debt in the future
Finance barriers:	• In the equity raising process, the risk and return profile expectations are not always aligned between the entrepreneur and the impact investors • The level of impact of the social and environmental return is sometimes not factored into investors' decisions and expected financial returns • Commercial sophistication of social enterprise is often low

B. Clean Water

Based in Indonesia, Nazava provides safe and affordable drinking water for all.

Products and services offered:	household water filter
Finance accessed:	equity, debt, grant
Finance needed:	debt, carbon finance
Finance barriers:	• Unfamiliarity with the concept of impact investing • Lack of benchmark for exit options • Stringent loan collateral requirements • Short debt tenure

TerraClear provides clean drinking water for everyone in Laos.

Products and services offered:	water filter
Finance accessed:	equity, debt, grant, carbon finance
Finance needed:	debt, carbon finance
Finance barriers:	• High collateral requirements • High interest rates • Pay back requirements • Lack of sophistication of social enterprise model

SECTION 2: MAPPING THE FINANCIAL LANDSCAPE

The financial landscape for RE entrepreneurs based in SEA includes innovative financial schemes[1]. Our methodology identified a non-exhaustive list of approximately 100 financing schemes currently being applied in SEA (See Annexes). These schemes represent a range of financiers, various financing instruments, and different ways in which financial tools have been applied to the RE sectors. Based on the analysis of these schemes, a list of 16 financial and non-financial tools appropriate to RE entrepreneurs' financial needs have been determined[2].

In the following section, Nexus provides a deep dive into five tools and five financing schemes. We summarize here an analysis of the benefits, challenges, and suggestions for ways to improve these tools based off discussions with practitioners during the workshop. Finally, we present the successes, challenges, and replicability of five innovative financial schemes.

2.1 Innovative Financial Schemes Used by RE Entrepreneurs

A. Patient Capital

DEFINITION: Patient capital is any capital that is invested for the long-term, usually from five to ten years. It can take the form of a equity or debt product. Patient capital is not a grant, but usually expects a below market-rate financial return.

Benefits

- Long-term capital investing gives RE entrepreneurs flexibility and time to define their business strategies such as building growth and sustainability, and relieves the pressure of having to deliver financial returns in the short-term.
- Helps RE entrepreneurs access traditional financing sources such as:
  - › equity from commercial private equity funds that are more willing to invest knowing that longer-term investment has already been secured.
  - › loans from commercial banks that are more willing to lend as the business grows, becomes more stable, and can generate cash-flows for debt service.

Challenges

- Though patient capital seems to meet RE entrepreneurs' financial needs, the number of investments made available to finance innovative RE projects currently remains low.
- Providing patient capital means that RE entrepreneurs will have to trade in part of the ownership of their business to investors. Investors will thus have a (significant) role in the management decisions depending on the amount of their ownership rights.

Suggestions for Improvement

- For more innovative projects, RE entrepreneurs could split up their commercial and impact activities to attract different types of investors such as venture capitalists and impact investors.
- More support intermediaries are needed to help find financing partners that align with the needs and vision of the entrepreneur.

[1] See Annex B for an overview of the financing schemes identified.
[2] See Annex C for the list of tools.

B. Output-based grant

DEFINITION: A donor disburses a grant to the beneficiary (entrepreneur) upon verifying completion or delivery of pre-agreed results.

Benefits

- Donors have a high level of oversight and sense of partnership given that funding is tied to achievement and verification of pre-agreed results.
- By disbursing the grant to the beneficiaries, donors send a positive signal to other investors that the beneficiaries can successfully carry out their projects, and thus other investors may be attracted to invest in them.

Challenges

- The process of defining the 'output' may be challenging: it is easier to measure quantifiable outputs (such as the volume of stoves sold or the volume of water connections installed) than more general development impacts (e.g. health improvement or reduction to indoor air pollution) however, quantifiable outputs do not necessarily reflect the targeted impact (e.g. selling doesn't guarantee usage).
- RE entrepreneurs will need to pre-finance the costs to achieve the expected results therefore they will likely require other funding sources.

Suggestions for Improvement

- To achieve development impact, the output should be aligned with the beneficiaries' goal.
- Donors should consider giving a part of the grant upfront to cover the pre-investment costs and disbursing the remaining part of the grant when the pre-agreed milestones are reached. This option should be proactively built into the contract by donors.

C. Fundraising platform

DEFINITION: Entrepreneurs raise funds from a pool of investors using one or more online platforms to finance their projects. Fundraising mechanisms can take the form of a crowdfunding platform, in which case investors are mostly individuals, or a private placement platform where investors are institutional investors.

Benefits	• Offers entrepreneurs diverse sources of funding. • In addition to funding, RE entrepreneurs are also given public exposure. If an online fundraising campaign proves to be successful, entrepreneurs can boost their growth beyond the initial funds raised as well as attract other investors. • Fundraising platforms give "power to the people" as they enable 'small' investors to find and invest in projects often based on their personal preferences, risk tolerance, and the popularity of the project. Entrepreneurs can leverage this direct connection to tell their story.
Challenges	• RE entrepreneurs should anticipate high expectations for public transparency and be aware of the reputational risk in case the fundraising campaign or project fails.
Suggestions for Improvement	• National policies can be put in place to provide structure and regulations to enable individuals to make such investments (e.g. allow unaccredited investors to invest through these portals).

D. Technical assistance

DEFINITION: Technical assistance combines technical support and administrative assistance by providing entrepreneurs with the expertise and resources to reach specific learning objectives, resolve targeted problems, or foster development of a project or organisation.

Benefits	• Technical assistance can cover a wide range of areas: legal, tax, finance, governance, management and can be done through trainings but also mentorship. • Financiers help beneficiaries refine their business models, perform market studies, or help to fundraise. • After receiving technical assistance investees can work to reduce the risks investors identify. Addressing risk perceptions can significantly increase the likelihood that they and other entrepreneurs are given access to additional funding.
Challenges	• While technical assistance is mainly provided by financiers, it can also be provided by a third-party, such as a consulting company, that is financed through a grant. In this case, to receive the technical assistance grant, investees must justify their need for technical assistance and report to grantors which can be time consuming. • To be efficient, technical assistance should be tailored to the local context.
Suggestions for Improvement	• Peer-to-peer learning enables entrepreneurs to learn from and with each other. Entrepreneurs exchange knowledge by sharing their achievements and challenges while comparing their experiences to that of their peers.

E. Mobile phone payments

DEFINITION: Banks offer payment solutions that allow clients to utilize mobile phone devices to pay back their loans.

Benefits	• Using mobile phone payment is an easy, fast, and secure solution for borrowers to pay back their loans and for lenders to collect their debt. • Reduced risk of cash robbery than traditional debt collection methods and lower risk for internal fraud as the transfer of cash is immaterial and recorded. • Accessible to those in rural or remote areas without physical access to formal banking institutions. people living in remote areas who are not close to a bank.
Challenges	• Users must have access to a mobile phone. • For those users who are not technologically literate, the end-user experience can be complex.

2.2 Implementing Innovative Financial Schemes

The following schemes were presented and discussed during the workshop. We have tried to represent a diverse range of initiatives both from the public and private sector and that use one or more of the tools and strategies showcased above and in the Annexes.

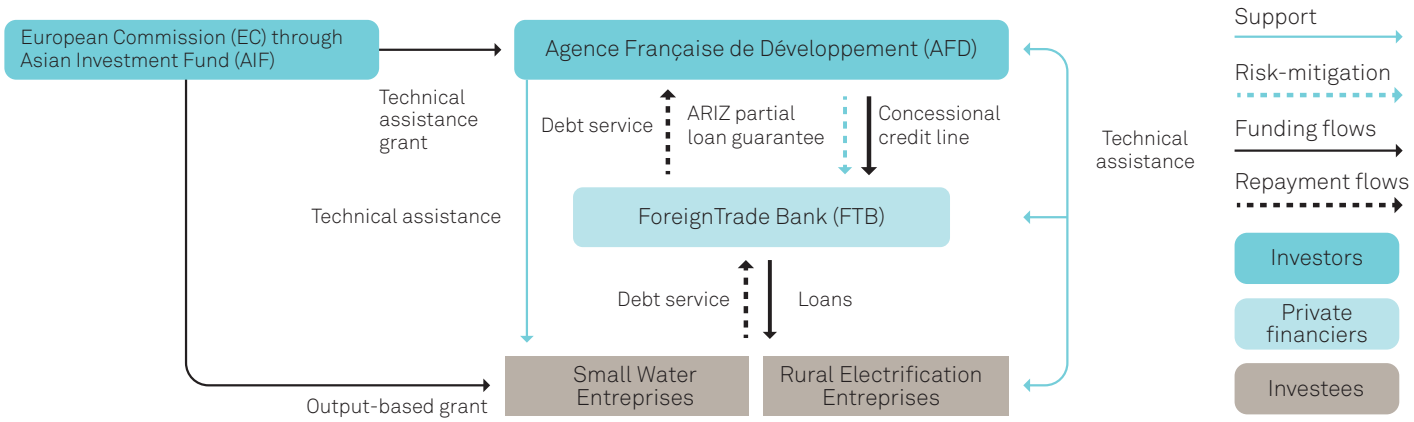
The discussion sought to inform donors on the successes of and challenges faced by the following schemes.

A. AFD Technical Assistance to Local Banks and Social Enterprises in the Water and Energy Sectors

In 2014 Agence française de développement (AFD) partnered with a local commercial bank Foreign Trade Bank (FTB) to launch a program to facilitate investment in the electricity and water sectors in rural areas in Cambodia. FTB received a 15 million USD concessional line of credit to support finance rural electrification enterprises (REEs) and small water enterprises (SWEs) in Cambodia. AFD also provided a partial loan guarantee mechanism to FTB to help offset the risks perceived by the bank and to lend to REEs and SWEs. The technical assistance will help FTB develop a suite of financial offerings for REEs and SWEs, expand its portfolio of water and electrification projects, and perform due diligence evaluations to ensure that the new business line is sustainable.

REEs and SWEs will be provided with technical and financial guidance on FTB loan applications and investment-readiness. Investees will also develop management and business operations skills while enhancing their business practices through trainings on financial and technical issues related to their sectors.

Simultaneously, the European Commission provides both a technical assistance grant to AFD and an output-based grant directly to SWEs to incentivise them to grow and provide better water connections to rural areas in Cambodia.



Characteristics: Financial and non-financial tools used:

This scheme combines a wide range of tools:

- Concessional finance: AFD's concessional line of credit benefits both FTB as well as REEs and SWEs.
  - For FTB, the concessional financial conditions include below-market interest rates, a longer maturity, and grace period.
  - For REEs and SWEs, the concessional financial conditions include capped interest rates and lower collateral requirements.
- Loan guarantee: AFD's partial loan guarantee helps FTB to offset the risks of investing in new markets (electricity and water) sectors and covers up to 50% of FTB's final loan loss in the event that a loan defaults.
- Technical assistance: At FTB level, the technical assistance includes training on anti-money laundering or compliance. At REEs and SWEs level, the technical assistance includes a feasibility study of the project or due diligence for the company.
- Output-based grant: The grant will be disbursed to SWEs once the water connection is achieved and verified by an independent auditor.

Successes	• Increased funding for REEs and SWEs: FTB has almost completely disbursed the concessional credit line. This was done by leveraging a pre-existing list of clients identified through a World Bank programme as well as a call for proposals to source new clients. • Increased access to debt financing to fund REEs and SWEs as they are more investment ready and FTB is more considerate of their financial capacity.
Challenges	• The evolution of national policies creates instability in the electricity sector and delays the loan disbursement timeline.
Replicability	• Extend to other commercial banks in Cambodia: Any local bank willing to agree to fixed conditions can enter into partnership with AFD. • Extend to other sectors: AFD and their local bank partners can consider providing financing to SMEs operating in other sectors. • Extend to other countries: Cambodia is the pilot country in Asia for AFD's innovative financial scheme and given the successes this model could be extended to other countries.

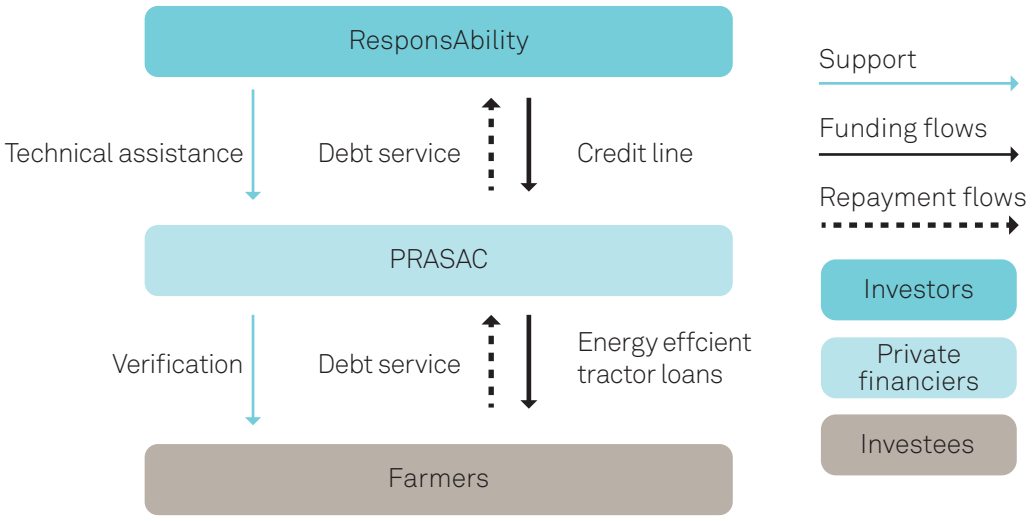
Philippe Steimetz,
AFD Country Director
for Cambodia

'We were looking to identify any commercial bank that was ready to work with SMEs and decrease the level of collateral requirements and to transfer the concessional conditions to the end-users.'

B. ResponsAbility Scheme & PRASAC

PRASAC, a leading microfinance institution in Cambodia, received 20 million USD from the green lending facility, responsAbility a fund focused on climate financing. Launched in 2016, the PRASAC & responsAbility green lending programme aims to offer financing in the areas of energy efficiency and renewable energy. The funding enables PRASAC to offer loans that improve energy efficiency and extend the use of renewable energy to low-income households and farmers.

Currently, PRASAC offers loans to farmers in Cambodia to purchase tractors or tillers that are verified to meet 20% energy-saving criteria.



Characteristics: Financial and non-financial tools used:

- Dedicated loan: PRASAC designed a financial product dedicated to financing a specific purpose. The financial product has to meet an existing market demand and be profitable and sustainable in the long term.
- Technical assistance: ResponsAbility provides technical assistance in the form of a market study and technology expertise to PRASAC in order to assess market readiness and technology eligibility before PRASAC launches the new financial product.
- Mobile phone payments: PRASAC's wide range of mobile phone payment services facilitate farmers to pay back their loans.

Successes

- The dedicated energy-efficient tractor and tiller loans enable rural farmers use of an energy efficient product that reduces greenhouse gas emissions as well as operating costs to the business.
- Market studies have helped assess potential markets for PRASAC investment, and to identify demand for a specific technology. Currently, the loans offered under the PRASAC-responsAbility green lending programme are:
  - › sustainable given that PRASAC launches financial products designed to cover the costs related to loan management
  - › profitable, given that PRASAC generates profits on this loan portfolio
- PRASAC does not recommend a technology provider during the loan application process thus relieving liability for equipment maintenance services. For example: if the technology stops working, PRASAC will not be held responsible and therefore avoids loan default due to technological issues. So far, PRASAC has not recorded any loan default for their energy efficient tractor and tiller loans.

Challenges

- PRASAC and other microfinance institutions acknowledge that maintaining a positive reputation is a major risk given the expectation that they deliver financial and social results to their investors while simultaneously ensuring that customers have the capacity to pay back the loans.
- The microfinance sector in Cambodia is increasingly regulated (e.g. minimum capital requirement for licensing). Implementing new national directives can take time and may conflict with the design of a specific program between banks and donors or investors.
- Verification of how the loan was used is an essential but costly task under PRASAC's mandate.

Replicability

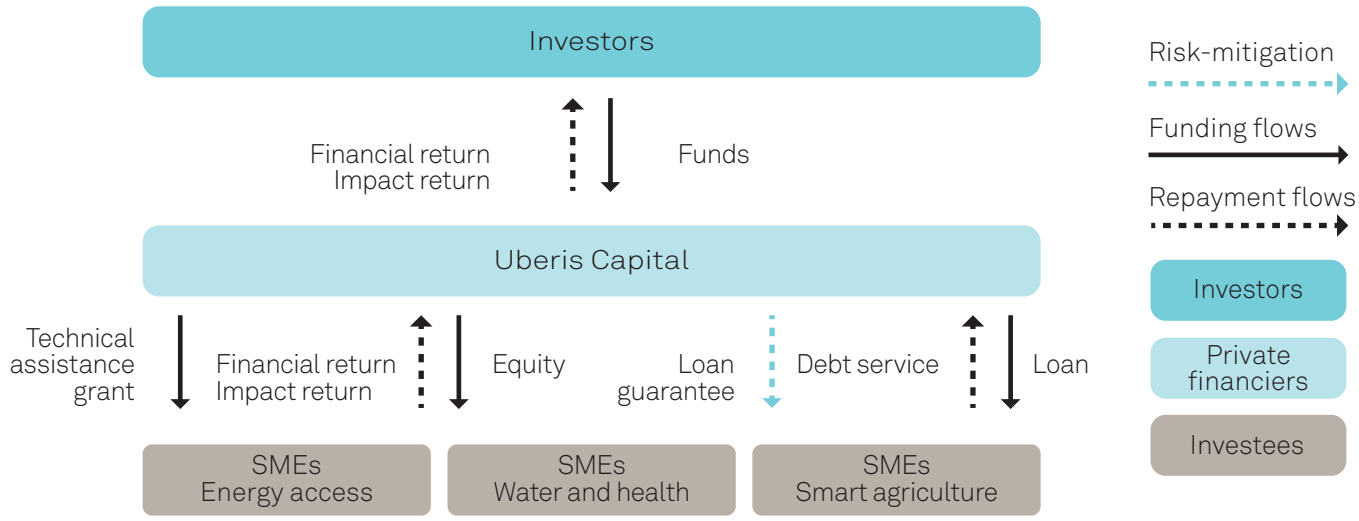
- To extend to other sectors, PRASAC would need to design a new loan dedicated to a specific technology that meets PRASAC & responsAbility eligibility criteria and local market demand while demonstrating that the product demand will be both sustainable and profitable for PRASAC.

Sovannsoksitha Pen, VP & Manager of Marketing & Communications, PRASAC

'To design a new financial product, we need to assess the sustainability and profitability as we have to take into account the cost of funding that is needed to pay back our lender.'

C. Uberis Capital

Uberis Capital is an impact investment fund that offers financing and a range of hands-on technical assistance to early-stage and mission-driven SMEs that serve poor communities in developing countries in Southeast Asia. Uberis Capital manages three funds, invests in debt, equity, quasi-equity, and grants. The funds target social enterprises that operate in smart agriculture, energy access, water, and health sectors.



Characteristics: Financial and Characteristics: Financial and non-financial tools used:

Uberis uses several tools to bridge the finance gaps to entrepreneurs:

- Patient capital: Uberis invests for between five to seven years and looks for opportunities to assume majority or significant minority shareholder position which affords influence in the shareholding structure of investee companies.
- Mezzanine finance: Uberis can invest quasi-equity in SMEs.
- Co-investment: They source suitable private and institutional co-investors and advises on instrument structures that maximize growth and impact potential.
- Technical assistance: Uberis is quite "hands-on", they help investees structure their financial reports or perform market studies.

Successes

- Successfully manages its debt financing portfolio. According to the fund manager, the borrowers have paid back their loans, both principal and interests.
- Technical assistance and support provided on business models, legal registrations, taxes, or other financial skills.
- Reduced risk mechanism (guarantee mechanism for the investors) attracted more funding from European investors to finance program in Southeast Asia despite the risks.

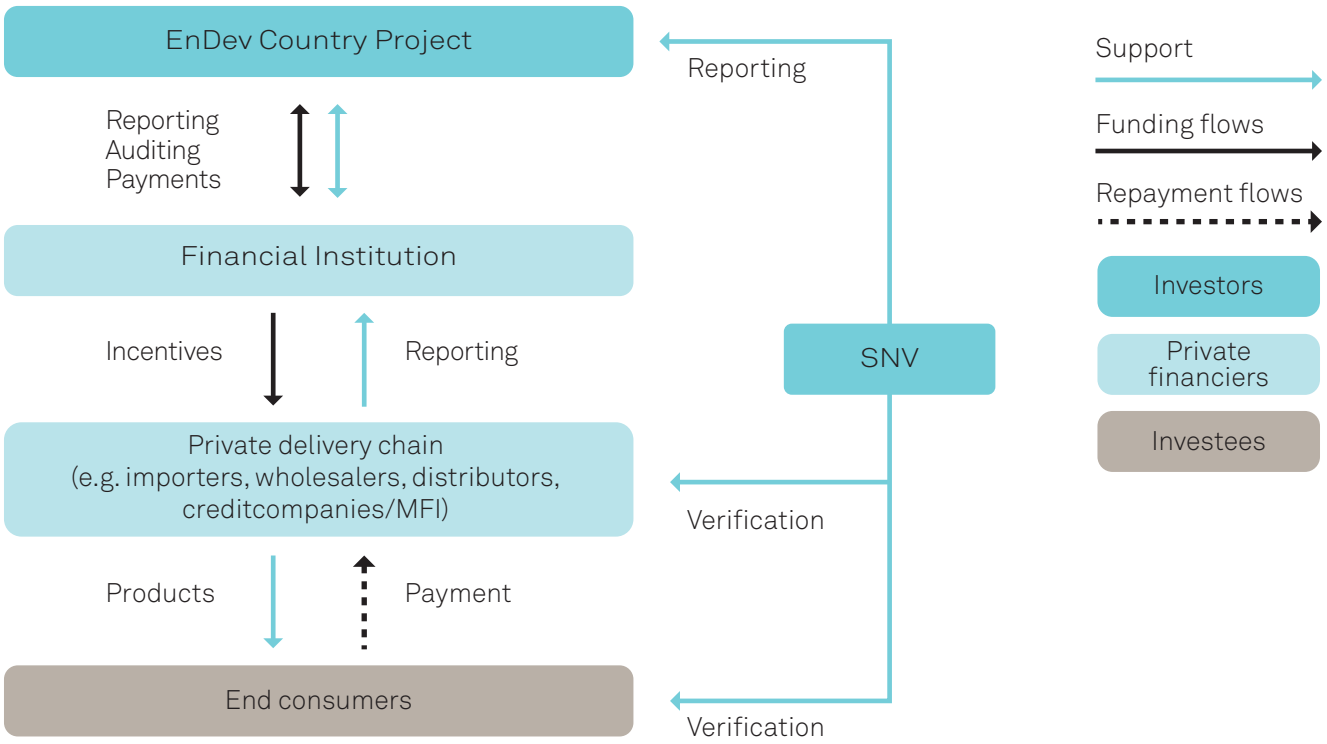
Challenges	• Equity investment are more risky, successful exits are rare. • Difficult to find businesses with audited financial statements and a sound business plan with realistic underlying assumptions. • Misalignment of the business strategy between financiers and the management team can create internal tensions that impact business operations and slow down business growth.
Replicability	• Uberis Capital is already preparing to launch additional funds; The Transition Capital fund will target high potential innovation start-ups and the Expansion Capital fund will target SMEs in Southeast Asia in diverse sectors such as energy access, water treatment, or clean water.

Sov Leang, Shareholder & Partner, Uberis Capital

'Entrepreneurs don't speak the same language as financiers.... Most of the time, entrepreneurs have great ideas, but they have to speak the language of finance.'

D. SNV: The Mekong Stove Auction

SNV's innovative trading platform, The Mekong Stove Auction facilitates the mutually beneficial sale of clean cookstoves from suppliers to local distributors and retailers in Laos, Vietnam and Cambodia. Local distributors and retailers bid on stoves and buy at very competitive prices. The market mechanism guarantees the stove suppliers a determined price of the stove regardless of the winning bidding price and subsidises the difference between the guaranteed price and the auction price.



Characteristics: Financial and non-financial tools used:

In this innovative financial scheme, the main tool used is an output-based grant. The grant is disbursed to the local distributors or retailers once the stove is sold to the end-consumer after verification by an independent auditor.

Successes

- The auction platform, price guarantee, and the output-based-grant mechanisms have incentivised stove producers and distributors to enter frontier markets and disseminate the use of clean cookstoves in the targeted countries. The auction mechanism is a win-win strategy for both stove suppliers, local distributors, and retailers. Stove suppliers do not need to invest in direct relationships with local distributors or retailers as the auction platform plays the role of facilitator and connector, thus saving operating and investment costs.
- Without such a scheme, most local distributors and retailers cannot afford to purchase directly from international stove suppliers due to lack of working capital as well as perceived high risk to invest in the market for clean cookstoves. In addition, local distributors and retailers receive a cash incentive for each stove sold to the end-consumers.
- The distribution of clean cookstoves throughout Laos, Vietnam, and Cambodia reduces air pollution and improves health conditions.

Challenges	• Stove suppliers are responsible for the costs of transport of the stoves to the targeted country. They assume the risk that a percentage of clean cookstoves may be lost, damaged, destroyed, stolen, or deteriorate in condition during transit. Any unsold stoves also require transportation. • As the clean cookstoves come with a minimum one-year guarantee, producers must have at least one local representative in the target country that can receive phone calls and manage any after-sales service issues that are raised by either distributors or consumers.
Replicability	• The auction market mechanism could be used to sell other products in the energy and WASH sectors where demand and supply exists but there are barriers to entry on both sides.

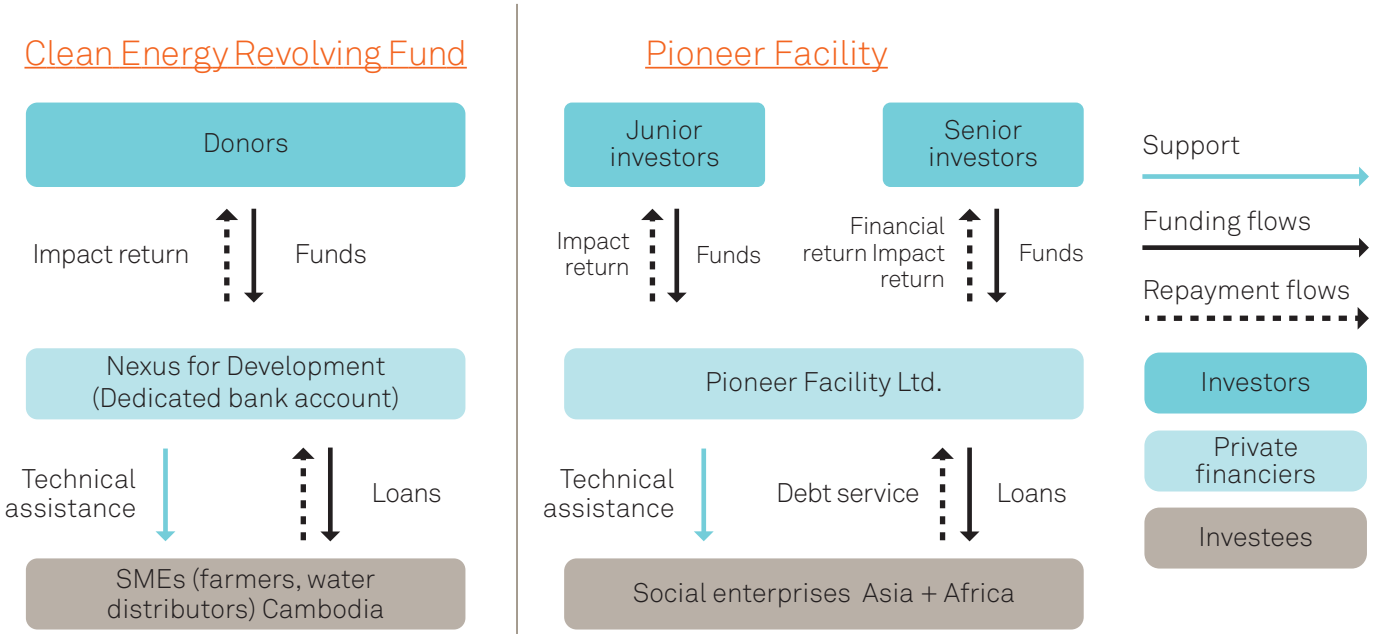
Bastiaan Teune, Sector Leader Energy Vietnam/ Global Cookstoves Coordinator

‘Business is not only about finance, there is also a huge part {based on} relationships.’

E. Nexus for Development: The Clean Energy Revolving Fund (CERF) and the Pioneer Facility

Nexus for Development manages the CERF to provide uncollateralized loans to small to medium sized farms can switch to clean energy technology. The fund works closely with local solar energy technology distributors and mainly supports solar water pumps and on-grid solar systems for fruit, spice, and livestock farms in Cambodia.

The Pioneer Facility provides affordable uncollateralized working capital loans to social enterprises selling clean energy and water technologies that benefit low-income populations in Southeast Asia. In addition to financing, Nexus supports the funded enterprises through technical assistance.



Characteristics: Financial and non-financial tools used include:

- Concessional finance: is applied as Nexus requires low to no collateral and offers a grace period.
- Revolving credit facility: loans repaid are reinvested in the fund in order to issue new loans.
- Technical assistance: Nexus supports its investee companies through technical assistance by helping them to set up financial statements and develop their own monitoring and evaluation system in order to increase their ability to secure further funding from impact investors.

Successes

- The CERF provides loans to agri-businesses in Cambodia to reduce their carbon footprint and save operating costs as clean energy technology utilize natural and more cost effective energy resources such as solar energy.
- Though financial literacy amongst farmers is generally low, the loan portfolio of the CERF has been performing well with only one default of payment recorded so far.
- While perhaps too early to report successes, the current pipeline of the Pioneer Facility shows great appetite for uncollateralised and relatively affordable loans.

Challenges

- Sustainability of funds may be challenging due to the absence of collateral.
- Due diligence costs performed on the investee companies may be high relative to the size of each loan, especially in the case of the CERF where investees do not have any recorded financial data and loans are small.
- The Pioneer Facility will have to prove its sustainability while remaining flexible to provide appropriate loans to the targeted companies.

Replicability

- Extend to other countries in Southeast Asia: Nexus is assessing the potential replicability of the CERF in Myanmar.

Claire Dufour, Executive Director, Nexus for Development

'In Cambodia, the CERF finances farmers who don't speak the language of finance, so we provide hands on services to help them present their numbers in a way that is readable for an investment committee.'

CONCLUSION

RE entrepreneurs and financiers greatly appreciated the workshop as it provided a unique opportunity to exchange insights and experiences with other stakeholders in the sector. The Financing Renewable Energy in Southeast Asia workshop was uniquely designed to cater to the attendees. The discussions and events specifically focused on identifying gaps in existing financial tools and specific barriers experienced that limit access to finance in the region.

Several trends throughout the region were discussed during the conference. From the entrepreneur perspective, challenges to accessing finance are often linked to the lack of flexibility from traditional financiers and the limited suitability of products offered. Entrepreneurs also identified not being aware of or understanding existing financial options. From the investor perspective, the main barriers to providing finance to entrepreneurs include the lack of financial literacy and a misalignment of risk and return expectations.

Overall, the attendees were generally optimistic towards seeing more financing options in the region. There have been several successful and innovative financing schemes developed that can serve as a model to be replicated in new geographies and sectors. These schemes and any new ones would still have to be tailored to geography and sector due to the inherent uncertainty in most developing regions. In any regards, additional capital is needed to continue supporting the work of energy entrepreneurs.

Following the event success, Nexus will continue to create opportunities for dialogue to foster mutual understanding and improved collaboration among like-minded entrepreneurs and financiers. Nexus will continue mapping and monitoring financing schemes for clean energy in the region, and hopes to inspire innovation and ultimately increase investments for the benefit of energy entrepreneurs working for the sustainable development of SEA.

ANNEXES

A. Methodology

The selection of the financial schemes was based on specific criteria. The selected financial schemes met the following qualifications:

social enterprises or small and medium-sized enterprises

- Targeted social enterprises are for-profit organizations that deliver basic services and seek strong environmental or social impacts.
- Targeted small and medium-sized enterprises are for-profit organizations that create positive impacts on the environment or on the low-income populations.

in start-up, scale-up, or growth stage

- Start-up stage: the business model is designed, the initial products are tested and developed, and the first sales are achieved.
- Scale-up stage: the business model begins to be sustainable and can be scaled in terms of market access, revenues or team members.
- Growth stage: the business gains market shares, is expanding geographically, diversifying, and standardizing its core products.

working in clean energy, clean water, clean cooking and sanitation

- Clean energy: solar energy technology and biogas technology, etc.
- Clean water: water filter and water connections
- Clean cooking: clean cookstove
- Sanitation: latrine

currently operating in Cambodia, Myanmar, Vietnam, Laos, The Philippines, Indonesia or Malaysia.

B. Mapping

Using this methodology, a non-exhaustive list of 98 existing financial schemes were identified.

ORGANISATION	FINANCIAL SCHEMES
CROWDFUNDING	
Impact Investment Exchange	IIX Impact Partners
Indiegogo	Indiegogo
Kiva	Kiva
TosFund	TosFund
DEVELOPMENT BANK PROGRAMME / GOVERNMENT FUND	
AFD – FTB	Finance Programme for Small Water and Rural Electrification Enterprises
AFD – Public Bank Mandari	Cooperation for financing renewable energy and energy efficiency projects
Belgian Investment Company for Developing Countries	
Cambodia government and Electricite Du Cambodge	Rural Electricity Fund
Development bank of Philippines	Climate Change and Carbon Financing Facility
Development bank of Philippines	Financing Programme for the Water Supply Sector
Development bank of Philippines	Green Lending Programme
Development bank of Philippines	New and Renewable Energy Projects
IFAD	Accelerating Inclusive Markets for Smallholders Projects
International Financial Corporation	Lighting Myanmar Programme
International Financial Corporation	Vietnam Energy Efficiency and Cleaner Production Financing Programme
KfW & Partners	Fund Solutions for Climate Finance
Malaysia Government	Credit Guarantee Corporation
Ministry for Foreign Affairs of Finland	Energy and Environment Partnership Mekong Programme Phase II
Ministry of Agriculture, Forestry, and Fishery, SNV Netherlands Development organisation	National Biodigester Programme III

Ministry of National Development Planning and Ministry of Finance	Indonesia Climate Change Trust Fund
Ministry of Natural Resources and Environment	Vietnam Environmental Protection Fund
Ministry of Planning and Investment	Vietnam Green Growth Strategy Facility
National Foundation for Science and Technology Development	Loan programme
Palladium	Investing in Infrastructure
SNV Netherlands Development organisation and Energising Development	The Mekong Stove Auction
Strategic Climate Fund (SCF) under the Climate Investment Fund	Scaling Up Renewable Energy in low Income Countries Programme
Swiss Secretariat for Economic Affairs and the Vietnam Cleaner Production Centre	Vietnam Green Credit Trust Fund
UNIDO and Ministry of Environment and Ministry of Agriculture, Forestry and Fisheries	Reduction of GHG Emission through Promotion of Commercial Biogas Plants
UNIDO and Ministry of Environment and Ministry of Agriculture, Forestry and Fisheries	Building Adaptive Capacity through the Scaling-up of Renewable Energy Technologies in Rural Cambodia
United Nations Capital Development Fund	Shift Challenge Fund - CleanStart energy access window challenge
Vietnam Development Bank and Ministry of Finance	National / Province Credit Guarantee Funds
Vietnam's Ministry of Agricultural and Rural Development and SNV Netherlands Development organisation	Vietnam Biogas Programme
World Bank's Climate Technology Programme	Vietnam Climate Innovation Centre
FINANCIAL INSTITUTION	
Alalay sa Kaunlaran	Green Energy Loan
AMRET	Microfinance
Bank BDP Bali	KKP-E
Bank Negara Malaysia	
Bank Pembangunan Malaysia Berhad	High Technology Fund
Bank of Philippines Islands	Sustainable Energy Finance Programme
Chamroeun	Microfinance
Hattha Kaksekar	Microfinance
Kredit Microfinance Institution	Microfinance

Land Bank of the Philippines	Bringing Inclusive Growth in Every Household Through National Electrification Support Services Programme
Land Bank of the Philippines	Credit Line For Energy Efficiency and Climate Protection
Land Bank of the Philippines	H2OPE (Water Programme for Everyone) / Water District Loan Programme
Land Bank of the Philippines	Renewable Energy For Wiser and Accelerated Resource Development Programme
Lanka Orix Leasing Company Microcredit	Microfinance
Malaysia's SME Bank	SME Development Scheme
People's Credit and Finance Corporation	Micro-Energy Credit Programme
PRASAC	Biodigester and Latrine Loans
PRASAC	Greenlending Programme with responsAbility
VisionFund	Microfinance
IMPACT / PRIVATE / VENTURE FUND (FOR-PROFIT)	
Aavishkaar	Aavishkaar Frontier Fund
Abraaj Capital	Clean energy platform
Andaman Capital Partners	
Angel Investment Network Indonesia	ANGIN Impact Investing
Armstrong Asset Management	
Arun LLC	Social Investment Fund for Cambodia
Bamboo Capital Partners	Oasis Fund
Berkeley Energy	Renewable Energy Asia Fund II
Dragon Capital	Mekong Brahmaputra Clean Development Fund
Golden Rock Capital	
Impact Investment Exchange	IIX Growth Fund
Insitor Asia Impact Fund	Insitor Impact Fund
Insitor Asia Impact Fund	Insitor Seed Fund
Kinara Indonesia	
Lotus Fund	
Malaysia Debt Ventures	Green Technology Financing Scheme
Maybank	Clean Energy Master Fund
Patamar Capital	Livelihood Impact Fund
Prudential Financial	Impact investment fund

responsAbility	Global Climate Partnership Fund
responsAbility	Global Energy Access Fund
Sunfunder	Beyond The Grid Fund
Sunfunder	Solar Empowerment Fund
Truestone Impact Investment	Truestone Impact Fund
Uberis Capital	Uberis Impact Fund
Village Capital	
IMPACT / PRIVATE / VENTURE FUND (NON-PROFIT)	
Capital 4 Development Partners	Capital 4 Development Asia Fund
Changefusion	Change Ventures
Foundation for Sustainable Society	Social Entreprise Fund
Foundation for the Philippine Environment	
Global Innovation Fund	
LGT	LGT Impact Ventures
Mercy Corps	Myanmar Stoves Campaign
Mercy Corps	Social Venture Fund
Nexus for Development	Clean Energy Revolving Fund
Nexus for Development	Climate Finance Revolving Fund
Nexus for Development	Pioneer Facility
Oikocredit	
Oxfam	Inclusive Impact Investment
PACT	Ahlin Yaung Fund
Partnership for change	
Peace and Equity Foundation	Peace and Equity Holding
Phitrust Asia	
Proximity Designs	Proximity Finance
Proximity Designs	Yetagon credit
Synergy Social Ventures Limited	

Financing Renewable Energy in Southeast Asia

A selection of funding schemes for social enterprises in the renewable energy sector

Equity
Debt
Grant
For-profit fund
Financial institution
Development bank programme or government fund
Non-profit fund

Cambodia

1 Finance Programme for Small Water and Rural Electrification Enterprises by AFD- FTB (also loan guarantee, output-based grant))
2 Social Investment Fund for Cambodia by Arun LLC
3 WASH and Clean Energy loans by Chamroeun
3 Clean Energy Revolving Fund by Nexus for Development
5 Investing in Infrastructure by Palladium (output-based grant)
6 Green lending programme by PRASAC-responsAbility

Indonesia

7 Aavishkaar Frontier Fund by Aavishkaar
8 Cooperation for Financing Renewable Energy and Energy Efficiency projects by AFD - Public Bank Mandari
9 Capital 4 Development Asia Fund by C4D Partners (ex-ICCO Investments) (also equity)
10 Social Venture Fund by MercyCorps (also debt and mezzanine)

Lao PDR

11 The Stove Auction Mekong by EnDev - SNV (output-based grant)
12 Energy and Environment Partnership Mekong Programme by Finland Government (output-based grant)

Lao PDR

13 Clean Engergy Platform by Abraaj Capital (also grant)
14 High Technology Fund by Bank Pembangunan Malaysia Berhad
15 Green Technology Financing Scheme by Malaysia Debt Ventures (also mezzanine)
16 SME Deelopment Scheme by Malaysia's SME Bank

South East Asia

29 Renewable Energy Asia Fund II by Berkeley Energy
30 Insitor Impact / Seed Fund by Insitor Management (also debt and mezzanine)
31 Crowdfunding by Kiva
32 Pioneer Facility by Nexus for Development
33 Global Energy Access Fund by responsAbility
34 Uberis Impact Fund by Uberis Capital (also debt and grant)

Vietnam

25 Mekong Brahmaputra Clean Development Fund by Dragon Capital
26 Vietnam Green Credit Trust Fund by Vietnam Cleaner Production Centre-SECO (also loan guarantee, output-based grant)
27 Vietnam Environment Protection Fund by Vietnam Government
28 Vietnam Climate Innovation Centre by World Bank (also grant)

Myanmar

17 Oasis Fund by Bamboo Capital Partners
18 IIX Growth Fund by Impact Investment Exchange (also mezzanine)
19 Yetagon Credit / Proximity Finance by Proximity Designs
20 Shift Challenge Fund - Clean Start Energy Access Window Challenge by UNCDF (also debt)

Philippines

21 Green Energy Loan by ASKI
22 New and Renewable Energy Projects by Development Bank of Philippines
23 Foundation for the Philippine Environment (also debt)
24 Peace and Equity Holding by Peace and Equity Foundation (also debt and grant)

Nexus for development

C. Tools

Based on the analysis of the selected financial schemes, a non-exhaustive list of recurrent financial and non-financial tools was determined.

TOOL	DEFINITION
Concessional finance	Loans with below-market financial conditions (e.g. lower interest rates, longer grace periods, low or no collateral requirements)
Dedicated loan	Loans only dedicated to renewable energy investments (e.g. solar energy loan, energy efficiency tractor loan)
First-loss capital	Capital which is the last to be repaid in the event of default (e.g. junior equity or subordinated loans)
Mezzanine finance	Debt that can be converted into equity over a defined time period (e.g. convertible loans)
Patient capital	Long-term investment made to support the development of the SME
Carbon finance	Long-term and additional source of revenues received upon achievement of certified climate change outcomes
Co-investment	Capital provided alongside other investors in order to make larger investments
Fundraising platform	Large pool of investors pooling resources to fund a project
Loan guarantee	Responsibility of the guarantor to repay the SME loans in the event of default
Output-based grant	Non-repayable money disbursed only upon achievement and verification of pre-agreed results
Project finance	Loans with specific financial terms and conditions adapted to capital-intensive investments (e.g. longer maturities, grace periods, repayment by cash flow generation, limited recourse loans)
Revolving credit facility	Loans which can be withdrawn, repaid, and redrawn
Syndicated loan	Pool of lenders investing together to provide larger loans under the same terms and conditions
Majority or significant minority shareholder position	Active involvement of the investors in the SME's governance
Mobile phone payment	Loan pay-back facilitated by mobile phone payment for people living in remote areas
Technical assistance	Non-financial support provided to the SME (e.g. capacity building, training, pre/post-investment support on legal structure, financial reporting, business plan)

ABOUT NEXUS

Nexus opens doors for development. We are a unique network and finance partner making low-carbon solutions count towards the Global Goals.

Nexus work as a hub for resource connectivity, bridging funding and technical gaps for project developers, social entrepreneurs, and non-governmental organizations in Asia and Africa.

At Nexus, we help our members scale up their projects by connecting them to innovative funding sources; we partner with impact investors, donors and corporations to administer specialized debt funds and help development projects access carbon finance.

We provide technical resources and support to grow operations and deliver positive environmental impacts.

Nexus main office is in Cambodia and we have representations in Vietnam, Malaysia and Spain.

www.nexusfordevelopment.org

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