

# REPIC



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State Secretariat for Economic Affairs SECO

Swiss Agency for Development and Cooperation SDC

Federal Office for the Environment FOEN

Swiss Federal Office of Energy SFOE



Interdepartmental Platform for Renewable Energy, Energy and Resource Efficiency  
Promotion in Developing and Transition Countries

## REPIC Annual Report 2022

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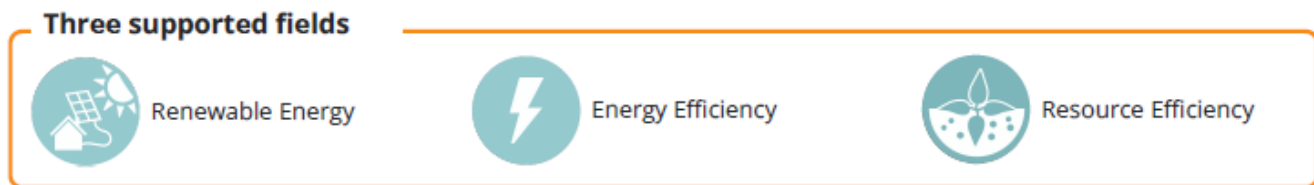
## Cover pictures:

Amongst the projects that ended in 2022, four of them aimed to optimize resource efficiency. They highlighted the necessity and the added-value to collect, sort and reuse different types of waste, from old plastic to electrical and electronic devices and organic waste. The plastic waste was sorted, treated and transformed into new objects. Electrical and electronic devices were fixed when possible or dismantled and recycled. Finally, organic waste was turned into energy, bio-char and compost. These four projects created a total of 170 jobs and benefited to close to one million people.

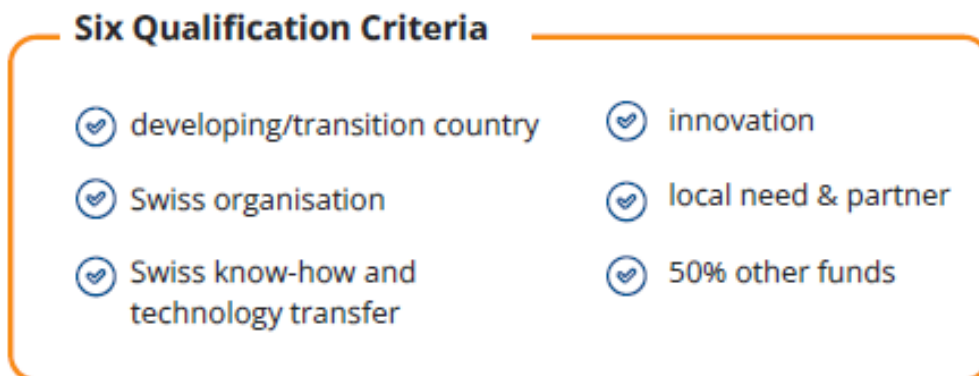
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# 1. REPIC, for who and why?

**REPIC** (**R**enewable Energy, **E**nergy and Resource Efficiency **P**romotion in **I**nternational **C**ooperation) is an interdepartmental platform created in 2004 by four Federal Offices: The State Secretariat for Economic Affairs (SECO), The Swiss Agency for Development and Cooperation (SDC), The Federal Office for the Environment (FOEN) and, The Swiss Federal Office of Energy (SFOE).



REPIC platform's main objective is the Swiss knowledge and technology transfer for the promotion of renewable energy, energy and resource efficiency in developing and transition countries. The platform is aligned with the United Nations (UN) 2030 [Agenda for Sustainable Development and the Sustainable Development Goals](#) (SDGs). The content of the platform focuses on project promotion, information sharing, communication and coordination with the promoters as well as with the relevant financial organisations and networks.



REPIC projects must have a sustainable impact (ecological, economic and social) and reach as many people as possible. The REPIC themes mentioned above determine the ecological orientation of the projects. The developed products and/or services as well as the financing and business model have to be competitive from the planning to the implementing phase to anticipate replication. Another requirement is to generate local income and/or secure jobs to improve local living conditions. In this way, REPIC contributes to concrete effects corresponding to the three dimensions of sustainability. Until 2022, REPIC exclusively supported pilot projects in their pre-commercialisation phase. Since mid-2022, the new "REPIC Rollout" instrument is in place to support projects in the early commercialisation phase.

The REPIC Management Agency helps to increase the projects' chances of success by advising, supporting and networking the various players involved. In many cases, the local Swiss embassy also supports the projects, for example by facilitating contact with key national stakeholders.

Networking, including the interdepartmental collaboration of the four federal offices that support the platform, is also an important element for REPIC. Exchanges with other organisations and promotional programmes such as the SECO Startup Fund, the SDC's Climate, DRR and Environment Section, the FOEN's Technology Fund and Environmental Technology Promotion, the SFOE's P+D (pilot, demonstration and lighthouse programme) and SuisseEnergie programmes, and the SCBF (Swiss Capacity Building Facility) further strengthen the targeted promotion of projects.

REPIC makes a significant contribution to a coherent Swiss approach to the promotion of renewable energies and energy and resource efficiency in developing and transition countries.



## 2. What happened in 2022?

### The REPIC management Agency is now a consortium

To answer high demand and further development of the REPIC Platform, the four federal offices have put out to tender a 6th REPIC phase, starting in April 2022, including the new REPIC Rollout instrument. At the beginning of 2022, the NET Nowak Energie & Technologie AG and South Pole Carbon Asset Management AG consortium won the tender. Their expertise and experience provided optimum coverage of existing and new requirements. Anita Fasel has taken over the role of REPIC coordinator from Stefan Nowak.

### Meeting of the REPIC Platform strategic management team

The directors of the SECO, SDC, FOEN and SFOE offices underlined the constructive collaboration of all the REPIC players. They also welcomed the enhanced coordination with various promotional instruments such as the SECO Startup Fund, the Technology Fund or the FOEN's promotion of environmental technologies and the SFOE's P+D and SuisseEnergie programmes.

### Launching REPIC Rollout

The new REPIC Rollout instrument was launched during a dedicated Webinar [1]. In addition to support of up to CHF 150,000 for pilot projects, REPIC Rollout offers up to CHF 500,000 for projects in the early commercialisation phase. Requests for support for projects in the deployment phase have proved to be significant. By the first submission deadline in October 2022, the Management Agency had received 10 proposals.

### REPIC Annual Event

The central theme of REPIC's annual event was successful marketing in growth markets. It took place in Bern on 30 November 2022 and was attended by 80 participants [2]. Members of the REPIC community were able to share their experiences of market development in transition and developing countries and take advantage of the event to enrich their network.

April 2022



July 2022



September 2022



Novembre 2022



### 3. Projects supported by REPIC

In 2022, the number of requests increased by more than 50% compared with the previous year. The REPIC Platform processed a total of 54 applications. 13 were accepted and 15 projects were officially launched (including two accepted in 2021).

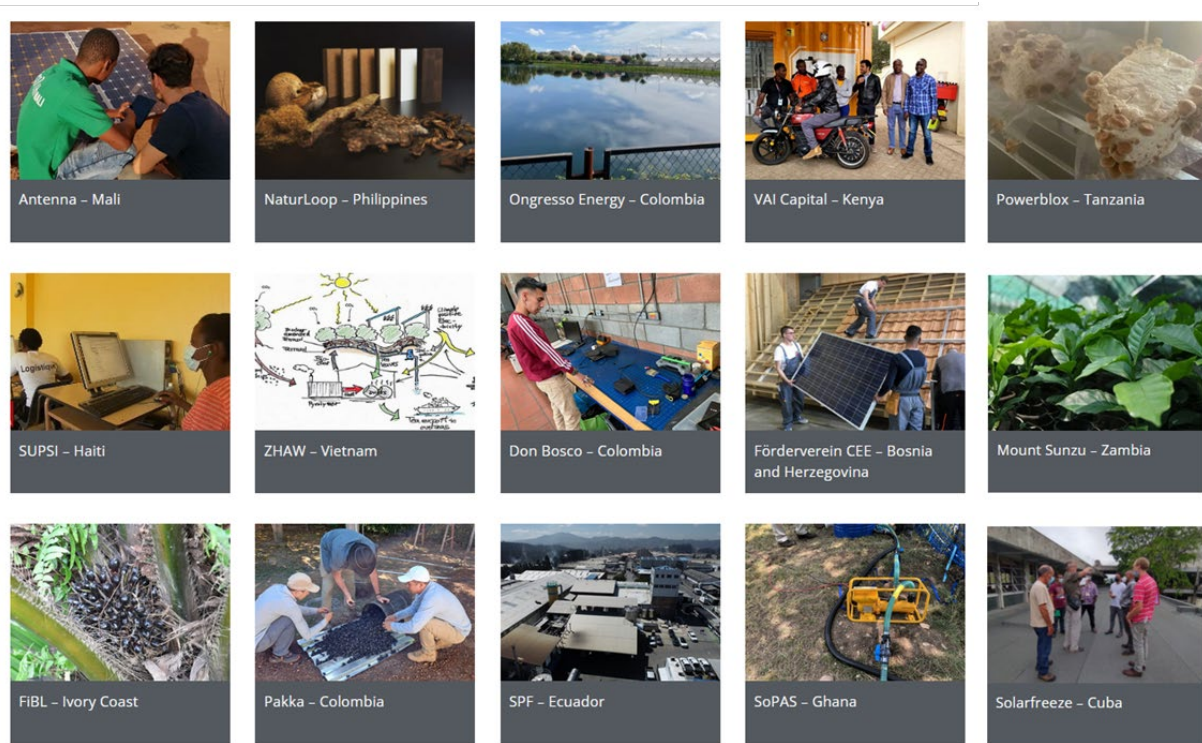


Fig.1: The 15 REPIC projects launched in 2022 are in the fields of photovoltaics (5), energy efficiency (4) and resource efficiency (4), which is in line with the trend of recent years. In addition, a solar thermal energy project and a cross-thematic project have also been launched.

Between 2004 and the end of 2022, the number of projects supported rose sharply to a total of 196 (fig.2). Under the [Portfolio](#) tab on the REPIC website, all current and completed projects are presented in German, French and English (see chapter 10).

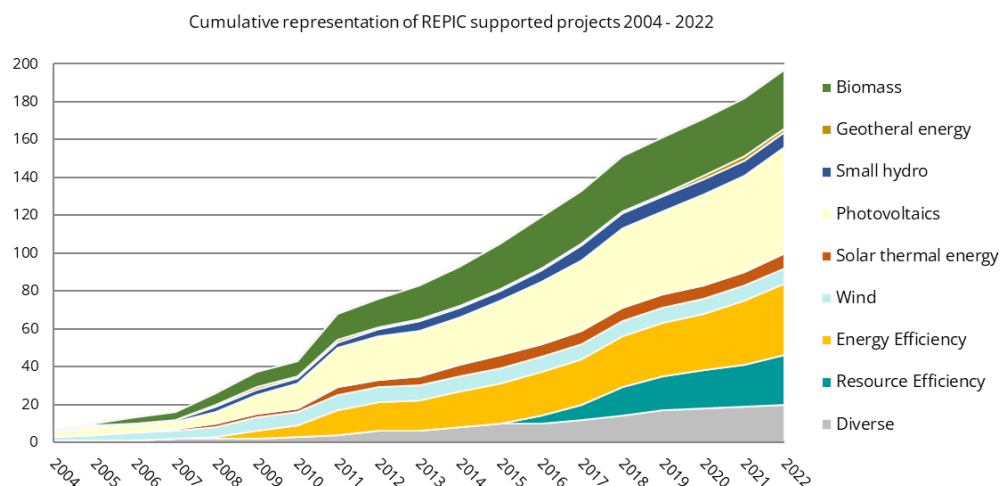


Fig. 2: Cumulative view of projects supported since 2004. In 2023, REPIC will have supported more than 200 projects.

Supported REPIC projects around the world – 2018-2022:

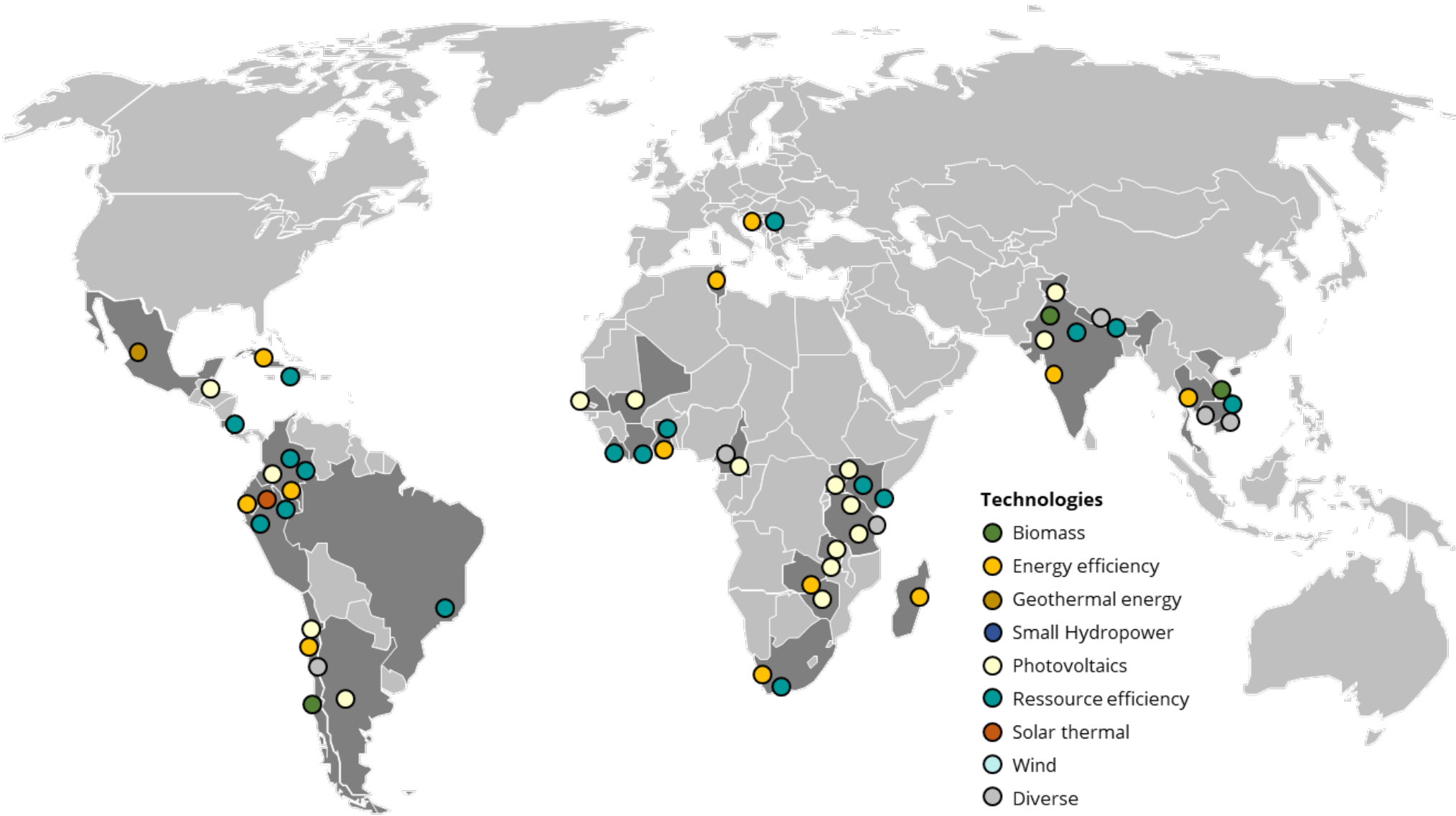


Fig. 3: Geographical distribution of the REPIC supported projects between 2018 and 2022. Per country and technology.

## 4. Successful projects

The Management Agency's monitoring showed that 58% of the projects completed by 2022 had achieved all the objectives initially set, 32% had partially achieved their goals and 10% were unsuccessful. Succeeding in the multiplication phase after the end of the pilot tests represents an additional major challenge. 38% of the projects completed since 2018 have achieved scaling up, while it is not yet possible to know whether multiplication will take place in 44% of the projects. In 18%, there will be no multiplication.

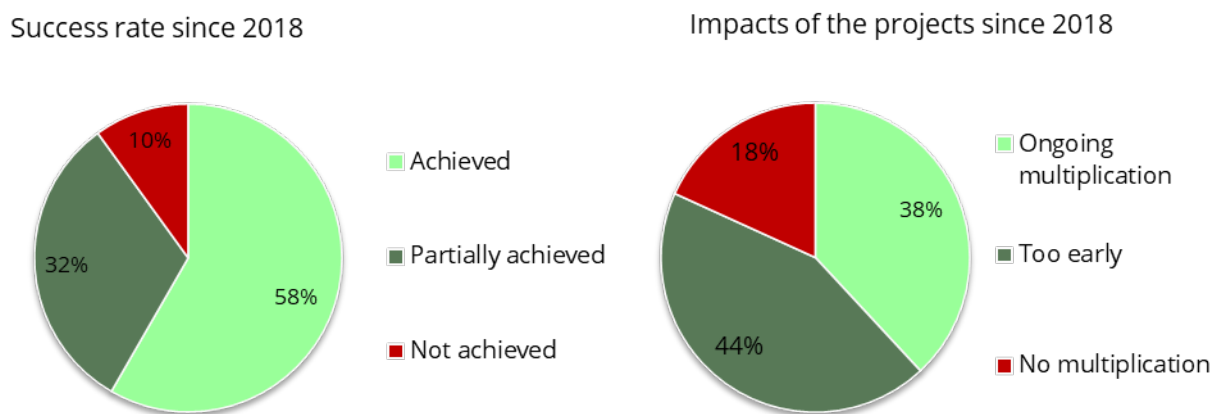


Fig. 4: Success rates and effects of REPIC projects since 2018. Compared with recent years, the success rate of project results has increased slightly. The multiplication rate, on the other hand, has fallen by around 5% compared with the 2015-2019 period.

The results must be evaluated according to the REPIC approach and in the context of project implementation. REPIC specifically supports pilot projects in their pre-commercial phase. These projects often entail technical and economic risks and have difficulty attracting commercial investors at this stage. Furthermore, the framework conditions in developing and transition countries present numerous challenges (economic, political, climatic, etc.). Thanks to the Managing Agency's many years of experience, combined with the skills of the four federal offices, the results show good risk management and appropriate support right through to the completion of projects and their multiplication phase, while accepting a few failures. In addition to the risks inherent in REPIC projects, the year 2022 was impacted by the consequences of the COVID-19 pandemic. Despite the known health effects, the situation also provided an opportunity to test new ways of implementing the projects. Various communication and e-learning tools were adopted and optimised during this period. The examples below provide concrete examples of projects that are well on the way to multiplication, having taken place during the 2018-2022 period. In addition to their economic success, the ecological and social aspects remain central themes of these REPIC projects in order to respect the three dimensions of sustainability.



## Projects on their way toward multiplication



### Myclimate – Kenya

In Kenya, the [myclimate project](#) completed in 2018 in collaboration with its local partner Taka Taka Solutions is a good example of successful scaling up. [Taka Taka Solutions](#) gradually increased the quantities of waste collected after the end of the REPIC project to reach 60 tonnes per day. 60% of this waste is organic matter transformed into high-quality compost.



### Swiss Fresh Water – Senegal

Swiss Fresh Water's solar-powered water treatment facilities provide some 100,000 people in [Senegal](#) and [Bolivia](#) with access to affordable drinking water. In addition to the economic and ecological aspects, the positive impact on the living conditions of the local populations is particularly high.



### Ressect – Kenya

The [Ressect](#) pilot project in Kenya has demonstrated the concept of recycling organic waste and producing insect-based food. Organic waste is used to feed larvae, which are in turn transformed into animal feed. Their excrement is transformed into compost. Collaboration with various partners is essential if the project is to move towards commercialisation. The collaboration with SUSTAIN Switzerland, for example, has paved the way for the sale of dried insect larvae as an ingredient in sustainable fish feed.



### SoPAS – Ghana

The Berne University of Applied Sciences developed a [solar water pump](#) in 2011 and launched its first pilot tests in India in 2012. The Solar Pump Association (SoPAs) and ennos have continued to improve the machine over the years. A great deal of experience has been gained in various developing countries. In order to move on to the marketing phase, a reliable partner was found for production in India, Jain Irrigation Ltd. The quality of the pumps and Switzerland's ongoing support over the years have laid a solid foundation for marketing. Today, the pumps are distributed worldwide through an extensive network of reliable sales and service partners.





### dss+ – Peru

In Peru, dss+ has built a [pilot plant](#) to recover waste from coffee production. Working with local partners such as the national association of coffee producers (APPCACAO/OROVERDE), the solution is perfectly adapted to local conditions. The installation produces useful energy for drying coffee cherries, as well as vegetal charcoal to improve crop soils. This innovative approach is enabling new business models to be put in place.

## Quotes

« Thanks to REPIC, we were able to set up the first pilot plant for the upcycling of organic waste into insect-based animal feed in Kenya. Working with the University of Nakuru, we were able to raise local awareness of the circular economy and the reuse of resources. REPIC's initial funding has enabled us to demonstrate that insect breeding, organic waste recycling and animal feed production work as a local system. »

[Levin Schmid, Founder, Ressect](#)

« Biochar is trending. We can see it in the various REPIC projects, in many small and large start-ups and above all in companies' decarbonisation strategies. In my opinion, REPIC projects have made a substantial contribution to the implementation of various technologies in developing and emerging countries over the past seven years. »

[Hannes Zellweger, Deputy Director Sustainability Services Switzerland, dss+](#)

## 5. What impacts?

To demonstrate REPIC's usefulness in a quantitative way and to monitor its development over time, impact indicators have been systematically collected since 2018 for all completed projects. Values from 50 projects have thus been included in the monitoring. The figures presented here correspond to the sum of the 50 projects, without including third-party funds (see accompanying text).

**252'000 t CO<sub>2</sub> eq.**

The reduction of 252 kt CO<sub>2</sub> eq. corresponds to the average emissions of around 18'000 people in Switzerland.

**4'250 t of waste**

This reduction has been achieved by recovering, recycling and composting waste. 4'250 tonnes correspond to the amount of waste generated by 25'300 people in sub-Saharan Africa every year.

**18'200 MWh/year**

Production of electricity from renewable energy sources: this corresponds to the production of electricity from photovoltaic panels covering an area of 12.5 football pitches.

**CHF 3,3 million**

For the CHF 2.17 million of REPIC support allocated, CHF 3.3 million of third-party funds have been raised to co-finance projects in 2022.

**2'300'000 people impacted**

Around 2'300'000 people benefit from REPIC projects in developing countries and countries in transition.

**3'400 people trained**

In total, 3'400 people have been trained in the fields of renewable energy and energy and resource efficiency. Nearly 700 new jobs have also been created.

REPIC projects address 15 of the 17 sustainable development goals set by the UN, and generally aim to have as broad an impact as possible. In particular, REPIC promotes Goal 1 "No Poverty", Goal 7 "Clean and Affordable Energy", Goal 8 "Decent Work and Economic Growth", Goal 12 "Responsible Consumption and Production" and Goal 13 "Action on Climate Change".



Fig 5: The wheel of the UN's sustainable development goals. REPIC projects address 15 of the 17 goals set for 2030.

To date, REPIC has helped to promote pilot projects which generally focus on technical and/or economic proof of concept, know-how transfer or preparation for multiplication. The development of financing models and preparation for multiplication are central points. However, as the figures above show, the concrete effects of REPIC projects in the field can also be quantified. REPIC's new deployment instrument Rollout, which supports the first commercialisation phase, should enable even greater results to be generated in the future.

## 6. Information and communication

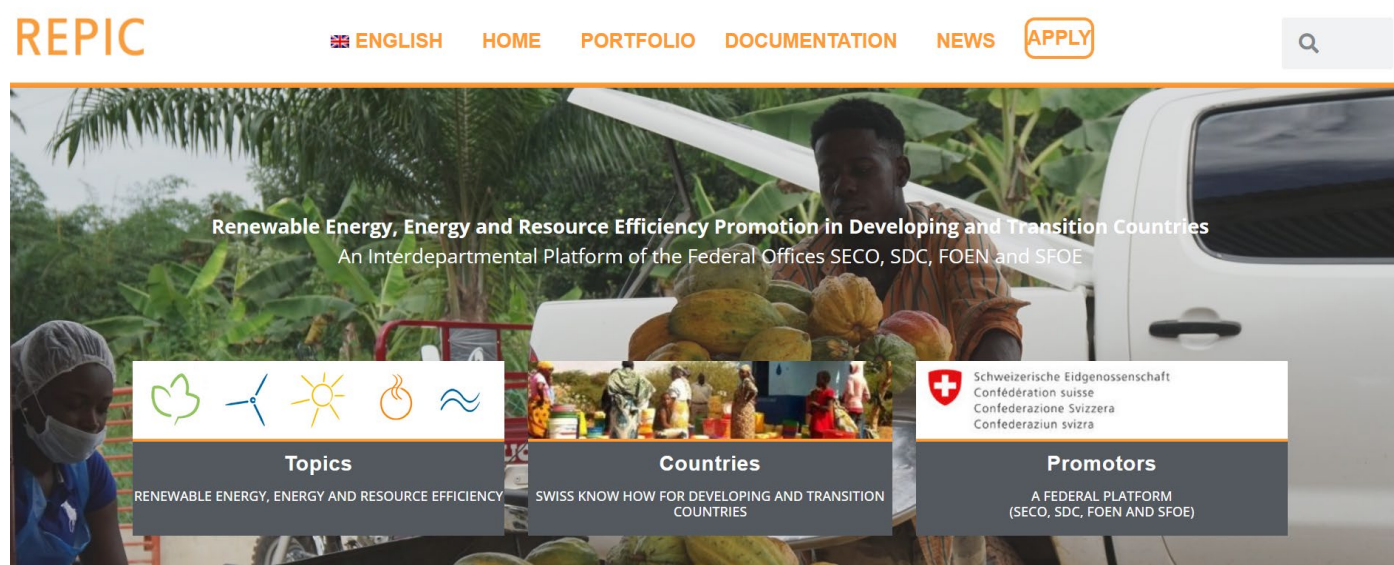
REPIC's communication is based around three central points:

- Communication about successful projects
- Assist and help the project leader with their networking tasks
- Work on a better public perception of REPIC's activities

In 2022, the REPIC Management Agency strengthened its communication as follows:

### REPIC Website ([www.repic.ch](http://www.repic.ch)) [3]

The REPIC internet page has been updated and adapted for a more intuitive experience. The button "APPLY" allows to access all information related to the application process. The "portfolio" gives a short introduction to every project in German, in French and in English. It is regularly used to connect project leaders.



### Newsletter [4]

The REPIC newsletter has been made accessible in web version. It is therefore available on smartphone, tablet and computer screen. The newsletter is now published in German, French and English.



Abb. 1: Anita Fasel (REPIC), Susanne Grossmann (Seco Start-up Fund), Simone Riley (Technologiefonds)

## LinkedIn [5]

The social network LinkedIn is regularly used as a communication channel for REPIC. Posts related to ongoing projects are particularly appreciated and help REPIC actors with similar projects connect with each other. The page has a total of 350 followers.

## Events

Two events were successfully organised in 2022. A webinar introduced the new financing instrument "REPIC Rollout" on September 15<sup>th</sup> to over 30 participants. Ten project submissions followed the event. On November 30<sup>th</sup>, the REPIC yearly event took place in Bern. 80 people attended the event and learnt about ongoing projects.

The three central points for communication and information will continuously be strengthened next year, on the website, on LinkedIn, throughout the newsletter and with networking events.



## 7. What's next?

Once again, this year, the practical experience gained from the REPIC Platform's pilot projects has shown that it is possible to meet concrete challenges by proposing relevant responses within the framework of development cooperation. They are adapted to local framework conditions, established partnerships and technical and economic issues. The innovative approach characteristic of REPIC projects naturally entails risks that often slow down commercial investment. REPIC enables the projects it supports to demonstrate the technological feasibility, the envisaged business models or to test sales of goods and services in collaboration with local partners. Successful pilot projects lay the foundations for the multiplication and replication phase. In order for the effects initiated during the pilot phase to reach a larger scale, it is essential to make a successful transition to the commercial phase.

Even when a pilot project is promising, access to capital for the commercial phase is not guaranteed. The results obtained do not always allow an accurate assessment of the risks. REPIC's decision is now to support successful pilot projects in their transition to the commercialisation phase. The REPIC Rollout instrument closes a recognised funding gap and achieves larger-scale effects through upscaling. For the period 2023-2025, REPIC is focusing on the support and implementation of Rollout projects. In this context, key elements such as the additionality and the mobilisation of private third-party funds must be guaranteed in order to avoid disrupting the market. In addition, innovative content and a sustainable approach remain central to the projects selected. With the first Rollout contracts due to be formalised shortly, the criteria and conditions for support will be further refined. With its targeted bottom-up approach, REPIC is a unique instrument for promoting innovation for Swiss companies and start-ups, in collaboration with partners in transition and developing countries.

## 8. Projects presentation

The REPIC 2022 projects are described in detail below and classified by theme: renewable energy, energy efficiency and resource efficiency.



© Nouvelle Planète



© Nouvelle Planète

### Partners

Nouvelle Planète, Lausanne  
[www.nouvelle-planete.ch](http://www.nouvelle-planete.ch)  
Philippe Randin

Project Type: Pilot project  
Technology: Biomass  
Country: Vietnam  
Project Status: Ongoing  
Project Start: 2021  
End of Project: 2023  
Contract: 2021.09

### Swiss Contribution

Nouvelle Planète is a Swiss non-profit organization founded in 1986, which maintains a neutral stance, specifically in terms of religion and politics. Its supports small-scale projects in the field of resource efficiency and has many years of experience building domestic biogas installations.

### Description

Nouvelle Planète is replicating the REPIC project 2015.07, completed in 2016, for 321 households (1,300 people). The project's aim is to provide households with biogas plants and to convey the technical know-how necessary for plant maintenance. The target group consists partly of poor households or households close to the poverty line, unable to set up these installations because of the high initial cost. Thus, these households will only finance 15-35% of the initial costs. Climate Services will calculate the project's CO2 savings, so that part of the financing can be done through carbon offsetting funds.

### Results

A local coordinator has been hired to explain the project's details to 500 families in five villages. In September 2022, 275 families had completed their registration for a bio-gas plant. The technical aspects of the project have been reviewed and validated by a Swiss specialist. General demand is higher than initially expected.

## Waste to Energy Bio-CNG Project Patiala



© Renergon



© Renergon

### Partners

Renergon International AG, Lengwil

[www.renergon.com](http://www.renergon.com)

Karl-Heinz Restle, Manuel Zak

Project Type: Pilot project

Technology: Biomass

Country: India

Project Status: Ongoing

Project Start: 2019

End of Project: 2023

Contract: 2018.14

### Swiss Contribution

Founded in 2010, Renergon International Ltd. has proven experience in solid waste fermentation. The entire project planning and plant design, as well as the biogas plant's construction supervision and commissioning are ensured by Renergon, in close cooperation with „Cities Innovative Biofuels Ltd.“, the Indian partner. In addition, the knowledge sharing and technology transfer take place through the education and training of the partner company's employees.

### Description

A solid waste fermentation plant will be installed near Patiala, which will treat cattle manure and rice straw, recovered within a maximum radius of 5 km. Renergon's solid waste fermentation (dry digestion in fermenter boxes) does not require a mixable and pumpable substrate liquid blend, which greatly minimises the need for water when treating organic waste. The biogas produced is to be processed into bio-CNG (compressed natural gas) through gas treatment and stored in gas cylinders. The use of rice straw mitigates the massive disposal problem on site (burning straw in the fields) and thus ensures a huge improvement in air quality. Furthermore, a valuable multi-nutrient and humus fertilizer is produced in the form of marketable composts.

### Results

In July 2019, Renergon handed over the first technical drawings and the specifications for planning the work on site to the Indian partner. A site of 20,000 m<sup>2</sup> was acquired for the installation of the plant and a composting area. In the meantime, all official approvals for the project have been obtained and classified in the best possible category. Main construction work is nearly completed and all machinery have been delivered. The roof of the yard shaft is still to be built as well as some insulation and electrical wiring. The delays were due to supply-chain and delivery perturbations caused by the pandemic. The project is expected to be completed in November 2023.

## Swiss Fine Dust Filters for Chilean Wood Stoves



© Belmont Energie Raum



© Belmont Energie Raum

### Partners

OekoSolve AG

[www.oekosolve.ch](http://www.oekosolve.ch)

Daniel Jud

Belmont Energie Raum GmbH

Bernhard Eggen (project management)

Project Type: Pilot project

Technology: Biomass

Country: Chile

Project Status: Completed

Project Start: 2019

End of Project: 2022

Contract: 2019.06

### Documentation

[Video in German](#)

[Video in Spanish](#)

[Final report in German](#)

### Swiss Contribution

OekoSolve Ltd. has been developing and producing electrostatic fine dust filters for over ten years. Dust filters in various performance classes have been continuously optimized over the years. Simple handling, operational reliability and easy maintenance are central elements of these electrostatic precipitators. Mr. Bernhard Egger, Project Manager, is a proven energy expert with many years of entrepreneurial experience.

### Description

Air pollution in southern Chile's cities – especially from fine dust particles caused by wood-fired systems used for heating and cooking – is a current problem. In cooperation with the city of Coyhaique, twin city with Bern, the "Agencia de Sostenibilidad Energética", the University of Santiago, the developers of a fine dust filter type yet to be marketed, and other local partners, it is planned to use the proven OekoTube electrostatic filters from the Swiss company OekoSolve Ltd., mainly in a low-income neighbourhood. Based on the achieved results and experience gained, a concept for the filters' market launch was developed by the project partners and an accompanying group, with representatives from the private sector and various authorities.

### Results

The 40 fine dust filters used show a 70% reduction in fine dust emissions when operated properly, which represents a good value for old furnaces. To prevent improper operation of the furnaces (mott fires) or insufficient maintenance of the filters, the additional measurement of the flue gas temperature and a newly developed monitoring tool are effective measures. In order to optimise costs, part of the filter production and assembly take place directly in Chile. In addition, a multiplication strategy has been developed and the relevant actors have been informed in a workshop with the participation of the Swiss Embassy.

### Impacts

The project will save 400 kg of fine dust emission per year and 170 t of CO<sub>2</sub> per year by preventing the conversion to fossil firing. With the developed multiplication strategy, the aim is to increase the number of filters up to 1000, in a 3-step process.



## District Heating Systems as a Solution for Air Pollution in Southern Chile's Cities



© EBP



© EBP

### Partners

EBP Schweiz AG, Zollikon  
[www.ebp.ch](http://www.ebp.ch) / [www.ebpchile.cl](http://www.ebpchile.cl)  
Roger Walter

Project Type: Pilot project  
Technology: Biomass  
Country: Chile  
Project Status: Completed  
Project Start: 2017  
End of Project: 2022  
Contract: 2017.02

### Swiss Contribution

EBP Schweiz AG has proven long-term experience in the renewable energy and energy efficiency fields within the building sector. EBP Chile is linked very closely with major local stakeholders from industry and national authorities. Further experienced Swiss project partners are: Dr. Eicher Consulting GmbH, Belmont Energie Raum GmbH and INES Energieplanung GmbH.

### Description

Most buildings are heated with wood in southern Chile's cities. A large amount of poor quality firewood with high moisture content is burned in inefficient wood-burning plants. This results in massive air pollution.

Due to the growing use of fossil fuels for heat production, greenhouse gas (GHG) emissions are greatly increasing. One of the key solutions in improving this situation is the operation of district heating systems based on renewable energies. This project includes the elaboration of a handbook, outlining the different processes in detail; from the concept to the commissioning of district heating systems.

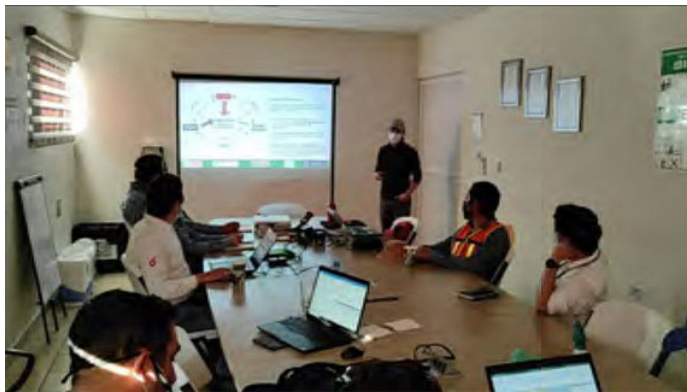
### Results

The economic and technical feasibility of district heating to supply twelve buildings on the campus of the University of Valdivia has been demonstrated. The [district heating manual](#) was published in collaboration with various ministries and organisations. The tender for the realisation of the district heating could not be launched, and resulted in the adaptation of the project. The focus is now on district heating in the city of Talca, in collaboration with the newly established Oficina Nacional de Energía Distrital (ONED) and the [GEF](#) loan programme "Acelerando la Inversión en Sistemas de Energía Distrital Eficientes y Renovables". In 2022, the technical, legal and environmental basis was developed with the relevant stakeholders and the project was submitted to the GEF programme.

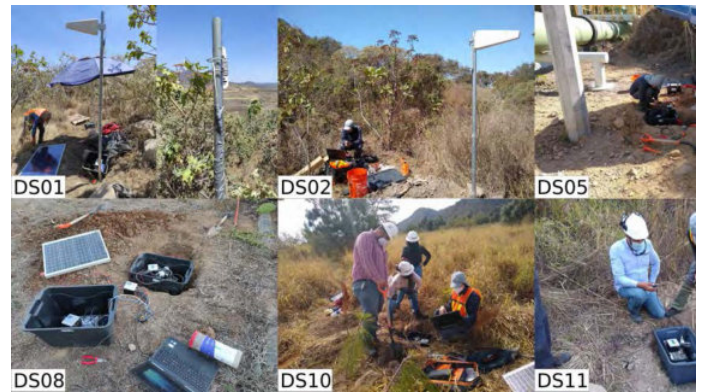
### Impacts

The project has qualified for the 2nd round of the GEF programme and a corresponding application has been submitted. There is a realistic chance of significant project support. Under the leadership of the Ministry of Energy, the legal framework for heating networks is being adapted. The manual for heating networks is now also used by the Ministry of Sustainable Development in Colombia, as a basis for activities in this field.

## The Domo San Pedro Geothermal Simulation (DOS PEGAS)



© University of Geneva



© University of Geneva

### Partners

University of Geneva  
[www.unige.ch/sciences/terre/en/earth-sciences-department](http://www.unige.ch/sciences/terre/en/earth-sciences-department)  
Matteo Lupi

Project Type: Pilot project  
Technology: Geothermal  
Country: Mexico  
Project Status: Ongoing  
Project Start: 2020  
End of Project: 2023  
Contract: 2020.05

### Swiss Contribution

The department of Earth Sciences at the University of Geneva is dedicated to the advancement of fundamental research as well as to its application to societal problems, such as the management of natural resources, the identification of risks posed by natural hazards, and the consequences of human activities on the environment. The group of Crustal Deformation and Fluid Flow investigates crustal processes combining geophysical and numerical methods with geological observations.

### Description

The Domo San Pedro Geothermal field, Mexico, is a high-enthalpy geothermal system with an installed capacity of 35 MW. Grupo Dragon, the operator exploiting the geothermal field drilled already nine wells ranging from about 1500m to 3000m depth. Grupo Dragon is planning to expand its production with the drilling of two additional wells, and to measure the linked seismic activity for a better risk assessment.

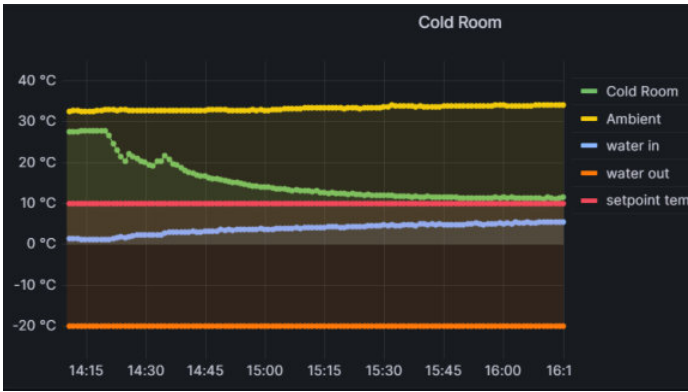
The University of Geneva aims to transfer to Grupo Dragon and to the Mexican geothermal community the know-how on how to effectively use affordable passive seismic methods in a geothermal context. DOS PEGAS will deploy 20 seismic stations (provided by UNIGE) to monitor seismic activity during stimulation and further acquisition of passive seismic data.

### Results

In 2021, 20 seismic measuring stations were placed close to the power plant and in the surrounding area and put into operation. In addition, 3 workshops were held on site to ensure the know-how transfer on the operation of the stations, the data acquisition and the evaluation. A first detailed interpretation of the measurement results took place in 2022 with the local partners and UNIGE.



© Antenna Fondation



© Antenna Fondation

Partners

Antenna Foundation  
[www.antenna.ch](http://www.antenna.ch)  
Olivier Starkenmann  
EcoTech Mali

Project Type: Pilot project  
Technology: Energy efficiency  
Country: Mali  
Project Status: Ongoing  
Project Start: 2022  
End of Project: 2024  
Contract: 2022.14

Swiss Contribution

The Energy Unit of the Antenna Foundation is committed to reduce energy poverty by offering innovative and affordable renewable energy solutions. Thanks to its experience in agri-solar technologies supporting crop production, transformation and conservation, it aims to transmit its technical, commercial and managing know-how in developing regions. Together with the swiss-malian company EcoTech Mali, they ensure the proper implementation of the project.

Description

Mali has been experiencing significant food insecurity for many years. Local conflicts, economic and social crisis as well as drought and floods are many factors contributing to the country's vulnerability. In an attempt to respond to this complex problem, the Antenna Foundation plans to make five solar-powered cold rooms accessible to Malian farmers' cooperatives in order to facilitate the conservation of crops and seeds. Thanks to the better preservation of the products made possible by refrigeration, yields can be significantly improved. In order to ensure that the cold rooms are used correctly by the owners and local farmers, training will be provided throughout the project. Regular data collection will facilitate the replication of similar projects.





© Förderverein CEE



© Förderverein CEE

### Partners

Förderverein Umwelt- und  
Energiezentrum Tuzla, Basel  
Jürg Heldstab

[www.tuzla.ch](http://www.tuzla.ch)

Formation Centre, Polybau, Uzwil.

[www.polybau.ch](http://www.polybau.ch)

Project Type: Education and Quality  
Control  
Technology: Photovoltaics  
Country: Bosnia and Herzegovina  
Project Status: Ongoing  
Project Start: 2023  
End of Project: 2025  
Contract: 2022.13

### Swiss Contribution

The Swiss Association for Development of the Ecology and Energy Centre Tuzla (CEE) is an experienced institution in the field of technical and financial support in Eastern Europe. The Polybau Education Centre offers a complete training program for energy professionals, from vocational education up to higher level professional training. The project partners have been working together for several years and guarantee a steady transfer of know-how and knowledge.

### Description

The project aims to complete the electrical engineering, building and insulation specialization training programs in two vocational schools in Tuzla. Innovative modules focusing on solar technologies will be provided to both teachers and students. Further training courses will also be offered.

Meanwhile, public relations work will be promoted with local authorities to encourage photovoltaic energy. The new energy law in Bosnia and Herzegovina will be inspired from the Swiss implementing regulations. In addition to a reinforced recognition of the professionals in the field, this approach will strengthen the institutional framework around the development of solar technologies (ie. Promoting solar panel fitting, encouraging power production buyouts, etc.).



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### Partners

Scuola universitaria professionale della Svizzera italiana (SUPSI)

<https://www.supsi.ch/home.html>

Vasco Medici

ISTEAH – Haiti

<https://www.isteah.edu.ht/>

Geninov, Haiti

<https://geninov.com/>

Project Type:	Education and Quality Control
Technology:	Photovoltaics
Country:	Haiti
Project Status:	Ongoing
Project Start:	2022
End of Project:	2024
Contract:	2022.11

### Swiss Contribution

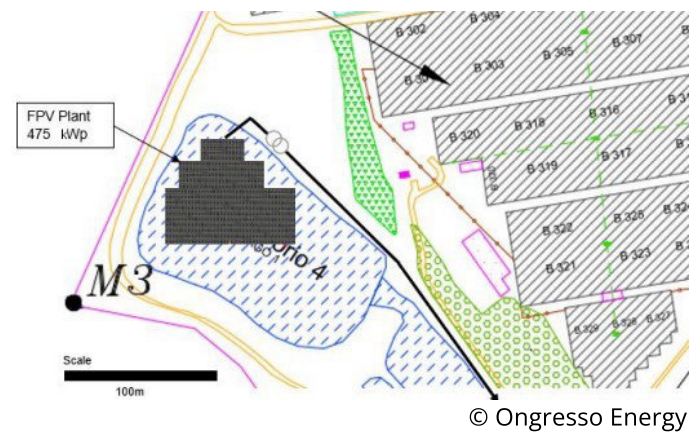
The Institute of Applied Sustainability to the Built Environment (ISAAC), based in the University of Applied Sciences of Southern Switzerland (SUPSI) will work to reinforce the training programs in the field of photovoltaics in Haiti. The professors Vasco Medici and Domenico Chianese coordinate the construction of a Center for Experimentation and Energy Skills (CECER) in close collaboration with the Institute of Sciences, Technologies and Advanced Studies in Haiti (ISTEAH) and the engineering firm Géninov, in Port-au-Prince.

### Description

Haiti suffers from great energy insecurity, despite its obvious potential. In order to overcome this key challenge, it is essential that the Haitian population is trained in design, installation and maintenance of micro-grids. To this end, the SUPSI project plans to build a specialized center on the ISTEAH site to ensure the theoretical and practical training of future engineers in the field of renewable energies. Two equipped laboratories will allow students to put their theoretical knowledge into practice. Professional training in the field of photovoltaics and energy storage will also be strengthened through courses that will be taught in six satellite campuses across the country. A first training cycle will take place in the second part of the project to assess the quality of the infrastructures and teachings.



Floating photovoltaics for flower production



Partners

Ongresso Energy AG, Appenzell,  
[www.ongresso-energy.com](http://www.ongresso-energy.com),  
Ulrich Hinterberger

Project Type: Pilot project  
Technology: Photovoltaics  
Country: Colombia  
Project Status: Ongoing  
Project Start: 2022  
End of Project: 2023  
Contract: 2022.10

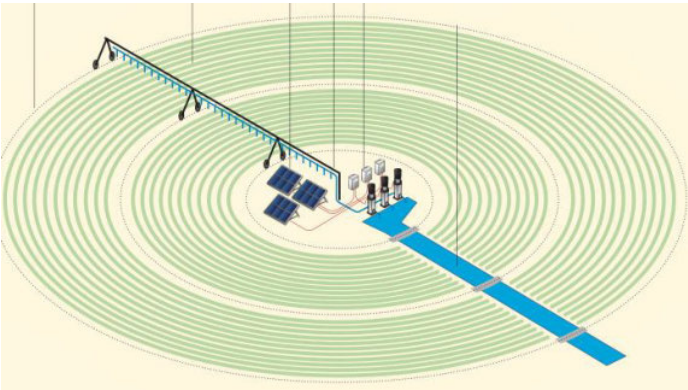
Swiss Contribution

Ongresso Energy is a Swiss company specialized in energy production and innovative solutions integrating solar power. The combined experience of its team members in project development, civil, environmental and energy engineering guarantees a strong base for the design as well as the implementation of the project in Colombia.

Description

Colombian fresh flower producers are willing to generate some of their electricity locally and in a sustainable way. After studying the local context, floating photovoltaics (FPV) appeared like the most suitable solution. One first production site was selected to test a FPV installation of 475 kWp on an irrigation pond. In order to make the FPV solution economically viable and create local jobs, the project aims to partially localize the value chain (e.g. by producing the floating devices locally). This will pave the way for a sustainable replication of the FPV solution in the longer run.

26/73



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Partners

Mount Sunzu Switzerland Ltd,  
Wallisellen  
[www.mountsunzu.com](http://www.mountsunzu.com)  
Luca & Yanik Costa;  
JF Irrigation Ltd, Sambia

Project Type: Pilot project  
Technology: Photovoltaics  
Country: Zambia  
Project Status: Ongoing  
Project Start: 2022  
End of Project: 2024  
Contract: 2022.04

Swiss Contribution

Irrigation systems are the largest single energy consumers on commercial farms in Africa. Photovoltaic know-how in Africa has so far been limited, mainly to smaller off-grid systems, or several MW large grid-connected PV systems that feed all the generated electricity into the grid. With the help of ewz’s know-how (electricity supplier, Zürich), Mount Sunzu Switzerland Ltd. aims to supply most of the electricity for the new irrigation system it is building on its coffee farm by using PV power. As a PV installation implies greater energy supply fluctuation, the irrigation system needs to be optimised to irrigate the fields at all times. An intelligent control system will complete the installation.

Description

It is planned to operate the Mount Sunzu Farm’s new irrigation system for its coffee fields with PV electricity for the most part within this project’s framework. So far, mainly diesel generators have been used in northern Zambia, due to the unreliable electricity grid. The project team is trying to replace these completely. A 90 kW PV system is to be built for this purpose which will be connected to the power grid. This will provide the necessary drive energy for the entire irrigation system.



© Zenna



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### Partners

Zenna AG, Murg

[www.zenna.ch](http://www.zenna.ch)

Lukas Küffer

Project Type: Pilot project

Technology: Photovoltaics

Country: Belize

Project Status: Ongoing

Project Start: 2021

End of Project: 2023

Contract: 2021.07

### Swiss Contribution

ZENNA is a consulting company specialising in photovoltaics and has over 10 years experience. In collaboration with [ZHAW Zurich University of Applied Sciences](#), [AMPS GmbH Batteries](#), [Welcome Solar Energy Solutions Belize Ltd. SESB](#), the [cdw Foundation – energy in ideas](#) and the [Ministry of Public Utilities, Energy and Logistics \(MPUEL\)](#), Belize, ZENNA will implement the project plan.

### Description

Remote households outside of solar-powered electric mini-grids without financing options for a solar home system usually rely on diesel generators for electricity production. Within the scope of this project, a mobile battery pack with 2nd-life battery cells from e-mobility will be developed. In La Gracia, a battery pack charging and delivery service will be implemented as an extension of the existing solar-electric mini-grid (see [REPIC 2015.9](#)). E-pickups will be used for the delivery service to the remote households around La Gracia. As an addition to the existing mini-grid and a basis for the delivery service, a carport with a photovoltaic roof will be built in the centre of La Gracia.

### Results

The first battery packs and their peripherals (inverters, controllers) were successfully tested in Belize. A show system was set up at the local partner SESB, which was also presented to representatives of the local energy supplier Belize Electricity Limited and the Ministry of Energy (Energy Unit). The e-pickup for battery deliveries has received approval in Belize and is now ready. The correct billing of electricity purchases is ensured at the customers' premises through new electricity meters.





© Fastenopfer



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### Partners

Fastenopfer, Lucerne

[www.fastenopfer.ch](http://www.fastenopfer.ch)

David Knecht

Project Type: Pilot project  
Technology: Photovoltaics  
Country: Colombia  
Project Status: Ongoing  
Project Start: 2020  
End of Project: 2023  
Contract: 2020.07

### Swiss Contribution

The Swiss NGO Fastenopfer has proven expertise in developing and accompanying community owned financial structures, an important element of its interventions in 14 countries since the 1990s.

### Description

For rural farming communities, the instability of electrical energy has become a bottleneck in the implementation of new technology necessary for production, conservation and food processing. The project seeks to prove that a community-centred development approach using energy as a driver of change improves living conditions. This will be implemented in three Colombian indigenous territories: Palma Alta, Hilarquito and Tamirco, belonging to the Pijao people. Selected solar energy solutions (cooling, incubator, water pumping and electric fences) linked to productive processes will be installed as pilot projects. In parallel, local capacities for the administration and maintenance of these energy services will be built. Based on these experiences, it is planned to develop integrated and inclusive business models for clean energy services. A linkage will be done with an adapted version of an already existing community-owned micro-finance structure (fondo rotatorio) allowing scaling-up and replication at regional levels with a special focus on youth and women.

### Results

The field studies (baseline study and energy diagnosis) could be carried out in spite of the pandemic. A change of plan in Palma Alta resulted in the substitution of the solar cooling system by a shredder and pellet solar system powered by PV generated electricity. The other planned applications (solar water pumps, cooling, shredder and pellet machine, electric pasture fences) could be built and put into operation. In addition, 12 energy managers were trained for the administration and operation of the energy services, and the business models for multiplication were created.



Photovoltaic Solar Cooperative Model for Low-Income Households



© Ecosys



© Ecosys

Partners

Ecosys SA, Chavannes-des-Bois  
[www.ecosys.com](http://www.ecosys.com)  
David Maradan

Project Type: Pilot project  
Technology: Photovoltaics  
Country: Chile  
Project Status: Ongoing  
Project Start: 2020  
End of Project: 2023  
Contract: 2020.06

Swiss Contribution

Ecosys has extensive expertise in applied economic and environmental re- search. The main Swiss know-how transfer is the technical and financial set-up of photovoltaic projects with cooperative governance.

Description

The lack of access to reliable, sustainable and modern energy services at an af- fordable cost has important consequences for the health and purchasing power of low-income Chilean households. Therefore, the need to test and de- velop new models which take into account the energy poverty context is vital. In the frame of this project, a 30 to 40 kW photovoltaic installation will be set up for a cooperative of households and very small enterprises (VSEs).

Results

To this day, 30 households and very small enterprises have been selected to take part to the cooperative. Frame conditions for financial and technical prof- itability of the solar plant have been determined and a site was chosen for the plant to be built on.



© Swissenergy-Solutions



© Swissenergy-Solutions

Partners

Swissenergy-Solutions International GmbH, Grimsuat  
[www.swissenergy-solutions.com](http://www.swissenergy-solutions.com)  
Sylvain Grange

Project Type: Infrastructure oriented Project

Technology: Photovoltaics

Country: Zimbabwe

Project Status: Ongoing

Project Start: 2018

End of Project: 2024

Contract: 2018.09

Swiss Contribution

Swissenergy-Solutions Ltd. offers its combined services in electrical engineering, mechanical engineering and renewable energy project management in Africa. Its South African subsidiary handles logistics, quality assurance and operation management issues throughout periods of construction. ABB and the Swiss Pump Company Ltd. are part of the equipment suppliers.

Description

Zimbabwe has been devastated by 40 years of chronic economic crises. This project proposes to help farmers and schools in Zimbabwe, the two pillars of a possible exit from the crisis, by securing water access. Swissenergy-Solutions Ltd., through the creation of an association known as ZIMREA (Zimbabwe Renewable Energy Association), will grant mini-credits for renewable energy and energy efficiency projects. Three specific projects (Falcon College, Bryden Country School and a farm in Kadoma) were selected to start this program. Pumping systems, powered by photovoltaic modules, will be installed. Collaborations with schools offer the opportunity to set up awareness training for students. Free block courses will also be provided to volunteer farmers in order to train them in new technologies, particularly in the field of water pumping.

Results

The AREFA association has been registered. The local team responsible for the installation of the PV plants has been formed and trained. Swissenergy-Solutions has prepared firm commercial offers (with implementation plans and costed potential savings) for the photovoltaic and pumping solutions. Many Zimbabweans have contacted the Swiss partner to express their interest in participating in the project. The material for the first two projects is ready to be delivered. Lessons have been prepared in the schools and can be delivered as soon as the systems have been installed. Planned work has been delayed due to the COVID pandemic.

## Renting Solar-recharged, Smart & Affordable Power Banks



© hiLyte



© hiLyte

### Partners

hiLyte Sàrl, Neuchâtel  
[www.hilyte-power.com](http://www.hilyte-power.com)  
Briac Barthes, David Lambelet

Project Type: Pilot project  
Technology: Photovoltaics  
Country: Tanzania  
Project Status: Completed  
Project Start: 2021  
End of Project: 2022  
Contract: 2021.06

### Documentation

[Final report](#)

### Swiss Contribution

hiLyte Sàrl was founded in 2017 and is developing innovative energy systems for off-grid applications with a special target on Sub-Saharan Africa. hiLyte has the vision to commercialize solutions that are clean, affordable and deliver power on-demand.

### Description

The first goal of this REPIC project is to set up a local production of hiLyte Cubes, including an adequate distribution model, train local people and create new jobs. In a second time, technical and economic concepts should be tested on a larger scale. Finally, the project aims to reach profitability for hiLyte Tanzania and attract impact investors for further expansion.

### Results

In 2021, the distribution network for the rental of hiLyte Cubes was gradually rolled out and extended. A rental and monitoring platform was put into operation and the development work on hiLyte Cubes continued. Discussions with other villages interested in the project were initiated. By the end of 2021, approximately 250 hiLyte Cubes were rented each day, providing 1,250 people with an improved electricity supply. Commercial development activities for a new hiLyte Cube model and the search for a circuit board producer have slowed down the implementation of the project. In late 2021/early 2022, the region was affected by a massive drought. Tens of thousands of animals died. The local population was thus deprived of its livelihood. Many residents migrated or had no means to rent hiLyte cubes. Combined with the COVID impacts, this led to the end of the project.





© EPFL



© EPFL

### Partners

EPFL Neuchâtel  
<http://pvlab.epfl.ch>  
Nicolas Wyrsc

Project Type: Pilot project  
Technology: Photovoltaics  
Country: Senegal  
Project Status: Completed  
Project Start: 2017  
End of Project: 2020  
Contract: 2017.05

### Documentation

[Final report](#) (in French)

### Swiss Contribution

The EPFL's PV Lab in Neuchâtel has been dealing with the development of photovoltaic (PV) technologies since 1985. Photovoltaic modules development and investigation of their degradation mechanisms are also part of the laboratory's work areas.

### Description

Despite its high potential, solar energy's implementation in Senegal has progressed very little. Reasons for this include the unsatisfactory reliability of photovoltaic systems, which often contain untested material and/or material of insufficient quality.

### Results

In this project, an independent quality and testing centre for photovoltaics (Centre de Test de Systèmes Solaires CT2S) was built in Dakar and inaugurated on June 24 2019. The tests offered will allow for the verification of the quality of PV products. Training for future staff and online training are now in place.

### Impacts

The range for testing photovoltaic modules has been expanded for testing other components such as batteries, charge controllers and inverters. A PV system on the roof with storage in batteries provides a large part of the centre's electricity and serves as a practical example for the training activities. As a result, 98 people have been trained and 3 jobs have been created.

In addition, the CT2S test centre is participating in an European Union Horizon 2020 project.

In the near future, the testing obligation imposed on all solar equipment could come into force in Senegal and would lead to a strong increase in demand for the centre's activities.



© First Climate



© HINS ENERGÍA

### Partners

First Climate AG, Zurich  
www.firstclimate.com  
Urs Brodmann

Project Type: Pilot project  
Technology: Photovoltaics  
Country: Argentina  
Project Status: Completed  
Project Start: 2020  
End of Project: 2022  
Contract: 2020.10

### Documentation

[Final report](#)

### Swiss Contribution

First Climate Switzerland is a service provider in the fields of climate change mitigation, renewable energy and sustainable development. Swiss know-how transfer will include First Climate's expertise related to renewable energy financing and implementation, as well as access to international climate and carbon finance.

### Description

The grid connection of many rural communities in Argentina is too weak to support the country's increasing electricity demand, leading to an unstable power supply and an increasing need for back-up diesel generators. As the expansion of centrally supplied electricity grids is expensive, First Climate and the local partners HINS work together to contribute to the broad implementation of decentralized renewable energy solutions in rural areas.

### Results

Both pilot plants were built as planned with the participation of the respective municipalities. However, there was a slight setback with regard to financing through carbon credits, as the bilateral agreement between Argentina and Switzerland did not materialise. Discussions are currently underway with Gold Standard with a plan to financing further projects through the sale of CO2 certificates in the future.

### Impacts

The REPIC project contributed to the installation of 2 PV systems with a combined power of 146.5 kWp. Together, the systems generate about 247,000 kWh of clean energy yearly, which saves about 62 tonnes of CO2 emissions. Both systems currently supply about 98 households. In addition, 5 new jobs were created and a total of 13 people were trained so that the maintenance of the plants can be guaranteed.





© Antenna Foundation



© Antenna Foundation

### Partners

Antenna Foundation, Geneva

[www.antenna.ch](http://www.antenna.ch)

Joël Jeanloz

Project Type: Pilot project

Technology: Photovoltaics

Country: Cameroon

Project Status: Completed

Project Start: 2020

End of Project: 2022

Contract: 2020.08

### Documentation

[Final Report](#)

### Swiss Contribution

The Antenna Foundation has over 30 years of experience in development co-operation and has created affordable photovoltaic applications, suitable business and financing models, well-functioning distribution systems, as well as other projects. African Solar Generation ASG, a Swiss-Cameroonian company with many years of experience, is the partner company in Cameroon.

### Description

Autonomous photovoltaic systems with battery storage are already widespread in developing and emerging countries. However, lead or lithium batteries are usually used with these systems. Such batteries' operating conditions are very demanding; often with high temperatures and humidity, which frequently lead to negative effects on service life. At the same time, many regions lack functioning e-waste management and recycling systems for these technical components.

Within this pilot project's framework, innovative, environmentally friendly and robust salt battery storage systems from the Swiss company Innovenergy are being used. These storage systems have already proven themselves in a wide range of applications. This project will provide important, collective operating experience for further dissemination of this technology in demanding climatic conditions.

### Results

A 61kWp photovoltaic system was built and is now in operation. Specific training could take place. Great general interest was shown towards the salt battery technology. A small hospital as well as a farm could be electrified and the Don Bosco Association is planning to use salt batteries in Ghana.

### Impacts

The installation replaces around 17 000 kWh of power, initially produced by a diesel generator. This corresponds to an equivalent of 17tCO<sub>2</sub> saved per year. Part of the electricity formerly purchased from the network has been substituted by the local installation. In total, 140 people are benefiting from this reliable electricity source. Until the end of the project in 2022, 8 additional salt batteries were used in other projects. Finally, batteries had also been ordered for other installations in Cameroun, Niger, Togo, Burkina Faso and in Benin.



© Power-Blox



© Power-Blox

### Partners

Power-Blox AG, Frick  
[www.power-blox.com](http://www.power-blox.com)  
Alessandro Medici

Project Type: Pilot project  
Technology: Photovoltaics  
Country: Mali  
Project Status: Completed  
Project Start: 2018  
End of Project: 2022  
Contract: 2018.13

### Documentation

[Final report](#)

### Swiss Contribution

Power-Blox produces and distributes intelligent swarm electrification solutions for off-grid and on-grid requirements. It has developed a technology enabling automated and decentralized power regulation and storage within the grid. The system is self-learning and self-configuring; it regulates power production, storage and distribution in the grid intelligently and autonomously.

### Description

Power-Blox has already electrified 30 houses in Mali in collaboration with its local partner FlexGrid and has gained initial experience. In addition to technical improvements, the project aims to reduce the cost of electricity and to validate the financing and business model developed for the multiplication phase within the local context.

### Results

The project allow the electrification of four villages in Mali and one more in Rwanda. The technical setup was further optimised and a monitoring system was introduced.

### Impacts

The installed PV systems have a combined capacity of 10 kWp and produce about 16'500 kWh of clean energy per year. This is enough to supply 1,680 people with electricity and save about 96 tonnes of annual CO2 emissions. In addition, 8 people received appropriate training to ensure maintenance. In total, 10 new jobs were created.



© Shanti



© Shanti

### Partners

Verein Shanti-Schweiz, Buchs SG

[www.shanti-schweiz.ch](http://www.shanti-schweiz.ch)

Jakob Schaub

Project Type: Education and Quality Control

Technology: Photovoltaics

Country: Bangladesh

Project Status: Completed

Project Start: 2017

End of Project: 2022

Contract: 2017.15

### Documentation

[Final report](#)

### Swiss Contribution

The Shanti-Switzerland Association, founded in 2005, has many years of experience in educating electricians in Bangladesh. In cooperation with local partners and based on the dual Swiss model, five 2-year electrician apprenticeships' in theory and practice, have been completed in northwest Bangladesh since 2007.

### Description

At the request of the local NGO RSUF, another electrician's school will be built in the Rajbari district, one of the poorest areas of Bangladesh, as part of the project. About 25 apprentices will receive good general education, as well as electrical training in theory and practice in the 2-year courses, with a focus on renewable energies. Trained electricians are in great demand, find a job quickly and are able to build their own livelihood in the near future with their new earning potential.

### Results

Together with local companies, the project partners have built a school campus with a school, internship facilities, offices, a material magazine and accommodations, including a water supply. The power supply is ensured by the school's own grid-connected photovoltaic power system. The energy supply is supplemented with a biogas plant. The Radrapur school's existing training materials were adapted and the 2-year pilot course was conducted with newly trained teachers. At the beginning of 2022, four women and 21 men completed vocational training. In February 2022, the next course was already started with 29 participants.

### Impacts

The school's graduates are highly sought-after specialists and, with the support of the school's owner and operator NGO RSUF, quickly find jobs or start their own businesses. These trained professionals have the skills to realise installations in the renewable energy field, as well as for traditional electrical installations. This work secures income and improves living conditions. For better financial support for future training, discussions are being held with local companies that benefit from the training in order to achieve partial financing of the school. An application for state participation has also been submitted.





© PurePower Solutions



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### Partners

PurePower Solutions GmbH, Fehraltorf  
Werner Frei

Project Type: Education and Quality  
Control

Technology: Photovoltaics

Country: Ghana

Project Status: Completed

Project Start: 2017

End of Project: 2022

Contract: 2017.08

### Swiss Contribution

PurePower Solutions GmbH has been implementing the Swiss dual education system, linking theoretical approaches with practical experience in the north of Ghana. Swiss technology was used for the practical part.

### Description

In the first phase of the project, a training and competence centre for solar technology has been built in the town of Tumu, in the Upper West Region of Ghana. The second step ensured that local installers and system designers are adequately trained so that the center can continue to operate independently after the completion of the REPIC project. For training purposes, the existing photovoltaic pilot plant was equipped with a comprehensive data acquisition and measurement system.

### Results

In the course of the project, 30 installers and 3 designers / trainers were trained. In addition, 6 PV systems were newly built and 3 repaired.

### Impacts

The turbines built as part of the courses have a total output of about 20 kW and produce about 30,000 kWh of clean electricity per year. The courses will continue to be provided in the future thanks to the newly trained staff on site.

Autonomous Microgrid Optimized



© CME



© CME

Partners

HES-SO Valais Wallis  
[www.hevs.ch/en/minisites/projects-products/dude-lab](http://www.hevs.ch/en/minisites/projects-products/dude-lab)  
Dominique Genou

Project Type: Pilot project  
Technology: Photovoltaics  
Country: Ivory Coast  
Project Status: Completed  
Project Start: 2017  
End of Project: 2022  
Contract: 2017.07

Swiss Contribution

The HES-SO (University of Applied Sciences Western Switzerland) develops algorithms for the analysis and prediction of energy consumption and production of renewable energies. It can build on Solartechnology.ch sarl’s considerable expertise; a Swiss company that specializes in solar panel installation and electric battery management.

Description

The Ivorian government aims to increase shares of renewable energies in the country’s energy mix and electrification by 2025. As part of this project, a 15 kWp photovoltaic micro-network combined with a 9.6 kWh lithium-ion battery will be installed. It will be managed by a smart box that optimizes battery charge/discharge, based on production and consumption forecasting algorithms, and above all, ensures reliable power supply off the national grid. In addition to providing electricity for campus buildings, the project will train electricians from the “Centre des Métiers de l’Electricité (CME),” near Abidjan, who will be able to install the same types of systems in rural areas in the future. Furthermore, the project will promote the training of local cooperatives on collecting revenue from the resale of electricity and facilities’ maintenance and monitoring in rural areas.

Results

The smart box and optimized battery management have been developed. The weather analysis profiles made it possible to establish scenarios for the generated power production and consumption. Although initially planned in Burkina Faso, the micro-grid and its smart box will be installed in the Ivory Coast, for security and authorization purposes. The project was stopped at the end of 2022. Administrative work will take place in 2023 to formally conclude the project.





© SPF



© SPF

### Partners

SPF Institut für Solartechnik, Rapperswil

[www.spf.ch](http://www.spf.ch)

Andreas Häberle

Universidad de Cuenca, Ecuador

Soltec, Ecuador

Project Type: Pilot project

Technology: Solar thermal

Country: Ecuador

Project Status: Ongoing

Project Start: 2022

End of Project: 2023

Contract: 2022.02

### Swiss Contribution

The Institute for Solar Technology (SPF) at the University of Applied Sciences of Eastern Switzerland (OST) is the competence centre for solar thermal energy. It was founded in 1981 and has been conducting research and teaching in the solar thermal energy field ever since. The know-how which has been built up during this time, as well as by the current staff of approximately 40 people, is largely made available to the University of Cuenca. In the past, the SPF was significantly involved in the development of various quality standards within solar thermal energy, including in new systems development and in sharing them. Among its other commitments, SPF leads Task 64 on solar process heat within the International Energy Agency Solar Heating and Cooling Programme (IEA SHC TCP).

### Description

The project's overall goal is to decarbonise Cuenca's economy. For this purpose, it is planned in the future to provide part of the required process heat in a food processing company by means of a solar thermal system and thus reduce the use of fossil fuels. This pilot project is intended to demonstrate both its technical feasibility and financial advantages. In parallel, a know-how transfer between the SPF and the University of Cuenca is ongoing. There, training and further education courses on all aspects of solar thermal energy, i.e. system design, installation and operation & maintenance are to be set up. As a final step, the public sector is to be supported in creating suitable market incentives.



© VAI Capital



© VAI Capital

Partners

VAI Capital, [www.VAI.capital](http://www.VAI.capital)  
John Tidmarsh

Project Type:	Pilot project
Technology:	Energy efficiency
Country:	Kenya
Project Status:	Ongoing
Project Start:	2022
End of Project:	2024
Contract:	2022.12

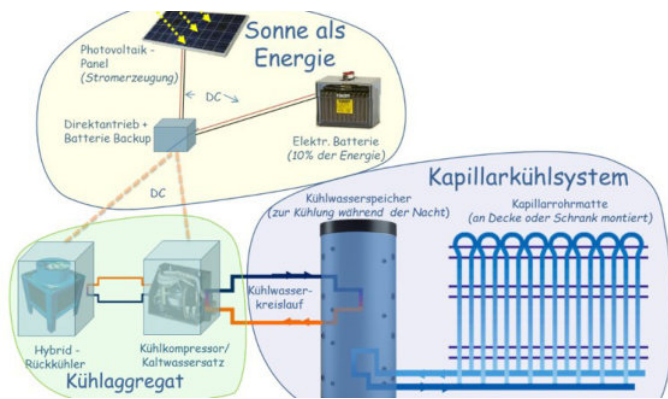
Swiss Contribution

Geneva-based VAI Capital is a financial advisory company active in low-carbon road transport solution. As the main project coordinator, it will ensure the transfer of knowledge to contribute to the development of electric mobility in Kenya. To do so, VAI will closely collaborate with local engineers and energetic projects developers based in Nairobi. The experience of VAI in financial and e-mobility advisement will allow for the development of a precise strategy in order to facilitate the replication and implementation of similar project in the future.

Description

The project aims to achieve three main objectives. First, coordination and knowledge transfer between Switzerland and Kenya will lay the theoretical foundation for a field case study. In order to exploit the potential of electric mobility, VAI wants to replace 35 thermal motorbikes with electric models for a local transport company and develop an Energy-as-a-Service model. The results will finally be presented in a full report and in a webinar to explain each step of the project, from financing to deployment.

## Climate-neutral Cooling with the Sun, Cuba



© Solarfreeze



© Solarfreeze

## Partners

Solarfreeze, Basel

[www.solarfreeze.net](http://www.solarfreeze.net)

Pierre Güntert & Ulrich Kuenzi;

Ostschweizer Fachhochschule

Rapperswil (OST)

[www.spf.ch](http://www.spf.ch)

Paul Gantenbein

Project Type: Pilot project

Technology: Energy efficiency

Country: Cuba

Project Status: Ongoing

Project Start: 2022

End of Project: 2025

Contract: 2022.03

## Swiss Contribution

Solarfreeze is an incorporated company registered in Switzerland. Both founders, Pierre Güntert and Ulrich Kuenzi, have been active in the field of solar technologies and development cooperation for many years, complimented by the best know-how and a good network in Cuba. The University of Applied Sciences of Eastern Switzerland (OST), specifically its Institute for Solar Technology (SPF), is the Swiss centre of excellence for solar heating; and in this case, cooling. SPF supports Solarfreeze in the overall system development. The initial scientific work was carried out in advance as part of a project funded by Innosuisse, which forms the basis of this REPIC project.

### Description

This project aims to develop and establish an air conditioning system that both cools and dehumidifies rooms and, moreover, can operate completely self-sufficiently and independently of electricity grids that are often prone to failure. For this purpose, the cooling compressor is to be supplied with the necessary drive energy via a PV battery system. The cold is then delivered via a water-guided capillary cooling system, which is interconnected with a cooling water storage tank. Following the first pilot plant's construction in Switzerland, the components will be successively adjusted to each other and converted according to the envisaged low-tech/low-cost approach. Later, a plant will be set up with the University of Havana, in order to make final climatic adjustments and then to be able to conduct the first training courses. Another system will then be tested in a real tropical environment. In parallel to this, the first installation companies will be founded and a financing model tailored to Cuba will be developed.





© SoPAS



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### Partners

SoPAS Solar Pump Association, Bern

[www.ennos.ch](http://www.ennos.ch)

Alois Müller & Urs Heierli

Don Bosco Jugendhilfe Weltweit

[www.donbosco.ch](http://www.donbosco.ch)

Markus Burri

Project Type: Pilot project

Technology: Energy efficiency

Country: Ghana

Project Status: Ongoing

Project Start: 2022

End of Project: 2023

Contract: 2022.01

### Swiss Contribution

The Solar Pump Association Switzerland (SoPAS) was founded in 2010 by a multidisciplinary team of engineers and marketing experts. Its aim is to disseminate innovative technologies for solar water pumps in developing countries, based on developments from the Bern University of Applied Sciences. SoPAS is well-networked with various organisations and active in several developing countries. SoPAS is working closely with Helvetas on this project.

### Description

This project is the direct successor of the REPIC project “[Retrofit for Converting Hand Pumps into Solar Pumping Systems with Tap Stations](#)” in Benin.

It is now planned to couple the solar pump with a so-called impact pump ([www.impactpumps.com](http://www.impactpumps.com)) and thus be able to tap into deeper wells. A partnership with Don Bosco Jugendhilfe Weltweit is planned so that sufficient know-how can be built up locally to commission, and then to operate, the planned solar-powered water stations. Don Bosco Jugendhilfe Weltweit has a huge network of schools and/or training centers in developing countries worldwide and brings a great deal of experience for the implementation of such courses into the project.



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### Partners

Brandes Energie AG, Zürich  
[brandes-energie.ch](https://brandes-energie.ch)  
Charlotte Spörndli

Project Type: Network  
Technology: Energy efficiency  
Country: Colombia  
Project Status: Ongoing  
Project Start: 2022  
End of Project: 2024  
Contract: 2021.11

### Swiss Contribution

Brandes Energie AG was founded in 1995 and has been active in the energy sector ever since, with a focus on Energiestadt. The office of the European Energy Award (eea) has been managed by Brandes Energie since 2001. This Energiestadt know-how, which has been built up over 20 years, will be made available in this project to the actors involved in Latin America in order to set up an equivalent platform. Brandes Energie has been a leading partner both in the development of the Energiestadt methodology and in the development and management of the European Energy Award.

### Description

The project builds on the very successful Swiss instrument for sustainable energy and climate policy in cities and communities: Energiestadt (or European Energy Award). The European Energy Award has been developed based on the Swiss instrument Energiestadt in 2001 and has since been exported to currently about 18 European and 5 non-European countries (some still in pilot phases), making it a true 'Swiss export hit'.

The aim of the project is to set-up a sustainable network of several Latin American countries working with the CE programme – the 'Latin American Energy Award (LAEA)' (working title) network. The network shall allow for exchange of experiences between the national CE programme leaders, joint learning, tapping of synergies and mutual strengthening of the national CE programmes/offices. At the end of the project, the network shall be institutionalized and have the necessary know-how and funding to continue in the long-term.





© CEAS



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### Partners

CEAS Centre Ecologique Albert  
Schweitzer, Neuchâtel  
[www.ceas.ch](http://www.ceas.ch)  
Niels Bourquin

Project Type: Pilot project  
Technology: Energy efficiency  
Country: Madagascar  
Project Status: Ongoing  
Project Start: 2022  
End of Project: 2023  
Contract: 2021.10

### Swiss Contribution

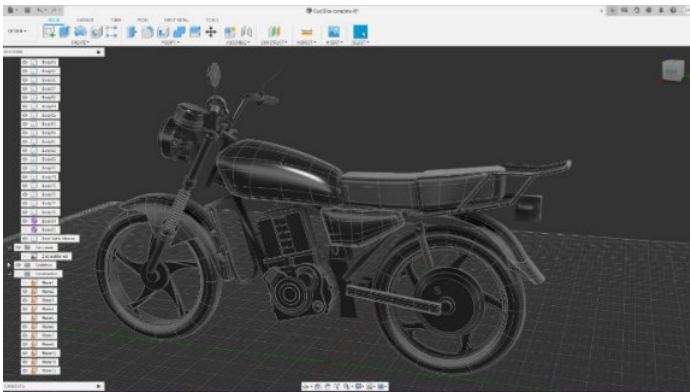
CEAS is a non-governmental organization (NGO) that has been active in development cooperation since 1980. CEAS is a recognized, benevolent organization which implements innovative and sustainable solutions in cooperation with local populations and established research institutes. CEAS aims to promote sustainable development with an ethical approach that is line with Albert Schweitzer's "Reverence for Life".

### Description

The production of essential oils in Madagascar using very inefficient manufacturing techniques consumes extremely large amounts of firewood. As part of the REPIC project, an efficient pilot distillation plant is being implemented as part of a sustainable production chain for processing ginger into essential oil in the Mandialaza community; located on the edge of the protected Anjozorobe-Angavo region. Preparation for multiplication and replication of the innovative facilities on a larger scale is an important part of the project. In a first step, the project focuses on the rural community of Mandialaza. Later, the activities will be concentrated on Atsinanana and Analanjirofo; both regions with large production capacities for essential oils.

### Results

Fireforce Technology developed a 1:10 prototype in Switzerland. In Madagascar, research and development activities related to heat exchanging technology have shown promising results. A bigger prototype (1:3) has been built and tested in Mandialaza to save some time.



© Eride GmbH



© Eride GmbH

Partners

Eride GmbH, Zürich  
[eride.africa](http://eride.africa)  
Jacob Anz

Project Type: Pilot project  
Technology: Energy efficiency  
Country: Zambia  
Project Status: Ongoing  
Project Start: 2021  
End of Project: 2023  
Contract: 2021.08

Swiss Contribution

Eride Ltd. is a young company from Zurich, whose founder, Jacob Anz, has spent much time in Zambia in recent years. Eride’s vision is to establish sustainable mobility in sub-Saharan Africa’s countries. In light of this, an electric motorcycle was designed and built which will to be launched within the local market through different business models.

Description

Eride Ltd. is planning a pilot project in Zambia that will demonstrate the feasibility, benefits and economic viability of solar-chargeable battery systems suitable for powering rural homes, in combination with an electric means of transport.

Suitable for African roads and conditions, the new system combines an affordable, electric motorcycle powered by a removable, portable lithium-ion battery. This portable battery can also be used as part of a solar home system, providing electricity for lights, television and a refrigerator inside houses and for powering a farm’s water pump. Through the Holland Greentech partner, a group of 20 smallholder farmers will be given the opportunity to use the e-motorcycle system and solar battery system to improve both their own standard of living and increase their own farms’ productivity and profitability. Afridelivery plans to replace part of its fleet of petrol-driven motorcycles with e-motorcycles. This will reduce both emissions and maintenance costs.

## 2000 Watt Certification of Symbiosis University Campus Pune



© 2000WSCA



© 2000WSCA

### Partners

2000 Watt Smart Cities Association  
(2000WSCA), Zürich

[www.2000wsc.org](http://www.2000wsc.org)

Andreas Binkert

Project Type: Pilot project  
Technology: Energy efficiency  
Country: India  
Project Status: Ongoing  
Project Start: 2021  
End of Project: 2022  
Contract: 2021.01

### Swiss Contribution

The 2000 Watt Smart Cities Association has several years of proven experience in spatial planning, urban development and site-development, as well as the implementation of energy efficiency, renewable energies and climate-friendly applications in large construction projects.

### Description

The Symbiosis International University in Pune oversees a campus with eight faculties and over 20,000 students. The University is already pursuing sustainability goals in the areas of food services, solar energy and mobility, with plans to expand the existing facilities. An overall energy concept for the university's sites remains open.

Based on the successful Swiss approach for the 2000W sites, the criteria catalogue for the 2000W sites' certification will be adapted to the Indian context as a first step. In a second step, the entire process will be implemented for the Symbiosis University campus; from recording the status quo to analyses, the development of a master plan for energy, building design, construction methods, mobility, food, waste management, etc. The project's main goal is the first successful certification of an area as a 2000W Smart City in India, followed by the establishment and multiplication of new 2000 Watt Smart Townships in Pune and throughout India.

### Results

In 2022, the campus of Symbiosis International University was audited by a Swiss auditor. Symbiosis University was awarded the first 2000-watt certificate in India. In 2023, the project will be formally completed with the partners. The cities of Mumbai and Hyderabad have shown interest for the Swiss innovative approach.





© Nereid



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Partners

Nereid SA, Geneva  
[www.nereidwater.com](http://www.nereidwater.com)  
Huy Ton Tha

Project Type: Pilot project  
Technology: Energy efficiency  
Country: South Africa  
Project Status: Ongoing  
Project Start: 2020  
End of Project: 2024  
Contract: 2020.02

Swiss Contribution

Since 2015, Nereid has developed know-how in water purification by working with various Swiss organizations such as the University of Geneva (UNIGE), the Haute École du Paysage, d’Ingénierie et d’Architecture Geneva (HES-SO HEPIA), the Geneva State Utility Company (SIG) and the Geneva Special Waste Treatment Center (CTDS).

Description

Through a combination of circumstances, including climate change, economic and demographic growth, the Western Cape’s fresh water supply is inadequate to meet the existing demand. Addressing this issue, the Nereid multi-effect humidification (MEH) desalination technology combines the use of solar thermal energy and a zero liquid discharge system, where minerals contained in sea-water are crystallized then extracted from the system. Nereid intends to set up a pilot unit in the Western Cape with a capacity of 15 m<sup>3</sup>/day. Therefore, the objective in field testing is to demonstrate that the Nereid design’s more efficient heat exchanger can produce an equivalent fresh water quantity with 40x less exchange surface than conventional MEH technology; hence, dramatically reducing costs and increasing energy efficiency.

Results

The system was assembled and tested in Switzerland. Small adjustments were implemented to optimise the operation. The plant is ready for shipment by ship. The local partner supports Nereid in South Africa materially and financially and is responsible for the distribution and maintenance of the plants. The project has been extended due to delays caused by the pandemic.





© Minergie Association



© Minergie Association

### Partners

Minergie Association, Basel

[www.minergie.ch](http://www.minergie.ch)

Andreas Meyer Primavesi

Project Type: Pilot project

Technology: Energy efficiency

Country: Chile

Project Status: Completed

Project Start: 2020

End of Project: 2022

Contract: 2020.03

### Documentation

[www.minergie.cl](http://www.minergie.cl)

[Final report](#)

### Swiss Contribution

Over the last 20 years, the Minergie certification standard has resulted in a great deal of specialized know-how and experience. The Swiss Minergie Association managed the project and was responsible for the creation of the Chilean Minergie organisation. Binz Energie an Bau Ltd. and EBP were involved with the technical aspects and provided Swiss expertise.

### Description

Chilean buildings generally have both low energy efficiency and high CO2 emissions. New technologies while not yet widespread in Chile are increasing. The Swiss building standard Minergie certifies new and renovated constructions. It guarantees a simple and efficient use of the energy resources and is showing promising results in the Chilean context.

### Results

The standard was adapted to the Chilean context. A first residential building (see photo above) has been fully certified. Another much larger one has received pre-certification. The Chilean Minergie website has been up and running since the end of 2020 and further marketing activities are underway. Extension of the project to Mexico and Colombia are in process.

### Impacts

The certified building is heated by a heat pump which is partly powered by a photovoltaic installation. It generates about 13,000 kWh of renewable energy per year. This saves the equivalent of 12t of CO2 emissions per year, when compared to the standard electricity mix.

## Solar Powered E-longtail Boat



© Zenna



© Zenna

### Partners

ZENNA AG, Murg

[www.zenna.ch](http://www.zenna.ch)

Roland Schlegel

Project Type: Pilot project

Technology: Energy efficiency

Country: Thailand

Project Status: Ongoing

Project Start: 2018

End of Project: 2023

Contract: 2019.02

### Documentation

[Final report](#)

[Zenna Newsletter 1](#)

[Zenna Newsletter 2](#)

[Video](#)

### Swiss Contribution

ZENNA is a photovoltaic systems consulting firm with over 10 years of experience. A solar boat will be built and tested in collaboration with experts from the Zurich University of Applied Sciences ZHAW, Wolf Shipyard (boat builder) and the Walenstadt Water and Electricity Utility (WEW). Furthermore, ZENNA will be supported locally by AERO Solar and Cutting Edge.

### Description

There are thousands of traditional long-tail boats on Thailand's waterways which are powered by old, polluting truck or car engines. This project's aim is to provide the proof of concept for the operation of a solar-powered longtail boat, based on a traditionally constructed boat hull. In addition to its technical suitability, the boat's economic operation shall also be demonstrated and a locally adapted financing and operating model shall be developed.

### Results

In cooperation with the various partners, the e-boat was planned and built. The aim was to build a robust and cost-optimised boat with a view to reliable and economical operation. The various functional tests and test runs were successful. After these, the boat was handed over to an operator and renter of boats in Ayutthaya to gain daily business experience.

### Impacts

The proof of technical concept was provided. With the support of the Swiss Embassy, among others, important contacts with relevant actors have been established. These include government agencies, private companies and investors. Government representatives from Bangkok, where smog pollution is very high, showed great interest. In the meantime, inquiries were received from Indonesia and Senegal for the construction of electric boats.

## Solution Approach for Climate Change at the Catchment Area “Carrefour/Léogâne”



© Caritas



© Caritas

### Partners

Caritas Switzerland, Luzern

[www.caritas.ch](http://www.caritas.ch)

Jeannette von Däniken

Project Type: Pilot project

Technology: Energy efficiency

Country: Haiti

Project Status: Completed

Project Start: 2017

End of Project: 2023

Contract: 2017.01

### Swiss Contribution

Caritas Switzerland has been active in Haiti for more than 30 years. Good local networking, as well as Caritas's proven expertise in project management, development and implementation of locally adapted business models form an important basis for this project. Lessons learned from the REPIC's "Pyrolysis Cooker, Haiti" project are channeled directly into this project.

### Description

The overall project developed and provided comprehensive solutions for the reduction of deforestation, reforestation, the use of organic waste and the improvement of agricultural soils through the use of biochar. A key element for REPIC is the establishment of a profitable production and sales chain for pyrolysis boilers and biomass pellets. An important component is the development and implementation of a locally adapted business model.

The project is co-financed by the European Union.

### Results

A production site was set up and the machines for producing the pyrolysis cookers and pellets have been installed. The first pyrolysis cookers were produced, analysed and the construction method was optimised one more time. The first training course was successfully completed with the production of around 250 cookers. A business and marketing plan was developed for series production.

33 peoples were trained in the field of renewable enegries. A detailed plan for mangrove restauration was established and 28,3 Ha of forest have been improved thanks to the distributions of 80'000 seedlings.

### Impacts

Due to the still precarious security situation, Caritas could not formally conclude its project. However, the precious collaboration work with the local actors has prepared the ground for further promotion of pyrolysis boilers, use of pellets and to raise awareness about the importance of mangrove preservation.





© Swiss Fresh Water



© Swiss Fresh Water

### Partners

Swiss Fresh Water SFW, Lausanne

[www.swissfreshwater.ch](http://www.swissfreshwater.ch)

Thomas Gajan

Project Type: Pilot project  
Technology: Energy efficiency  
Country: Bolivia  
Project Status: Completed  
Project Start: 2015  
End of Project: 2022  
Contract: 2015.05

### Documentation

[Final report](#)

### Swiss Contribution

SFW is a socially responsible, private limited company which has extensive experience in project management and water treatment. SFW has developed a solution for decentralized and low-cost clean drinking water production, based on solar energy. Following a first pilot project co-financed by REPIC, SFW is already in the multiplication phase in Senegal.

### Description

In various regions of Bolivia, the population's water supply is insufficient. In the urban zone of the Altiplano, for example, more than 60% of the inhabitants have no access to clean drinking water.

The project aims for sustainable drinking water supply improvement by:

- Local drinking water production and the construction of seven water kiosks;
- Development of a locally adapted business model; and
- Training and support of local partners (technology and business development).

### Results

Following several unexpected delays, the project was re-launched at the beginning of 2019 and maintained its original objectives. In 2019, four kiosks were put into operation and technicians were trained. At the beginning of 2020, two more water kiosks could be put into operation. The kiosk operators were trained and advised on the preparation and implementation of financial and business plans for the Swiss Fresh Water's economic operation. However, the project was hard hit by the COVID-19 impacts. Nevertheless, funds for the construction of a large kiosk with several machines were undertaken by the project's stakeholders.

### Impacts

The built infrastructure, the people who have been trained and the pledged funds for a large water kiosk with several machines provide a good basis for the project's further development. The experience gained in Bolivia will also be valuable for business development in Senegal and vice versa.



Sustainable coconut husk supply chain



© NaturLoop



© NaturLoop

Partenaire suisse

NaturLoop  
Michail Kyriazopoulos

Type de projet: Pilot project

Technologie: Resource efficiency

Pays: Philippines

Etat du projet: Ongoing

Début: 2022

Fin du projet: 2024

Contrat: 2022.15

Apport du partenaire suisse

For the last 8 years, the Swiss spinoff NaturLoop from Bern University of Applied Sciences has been developing a technology to manufacture fiberboards made of coconut husk and organic glue.

Description

In the Philippines, coconut farming generates nearly 5 million tons of organic waste each year. Due to a lack of technical and logistical means, only 5 to 10% of the coconut husks are currently recycled. To exploit this resource in a sustainable way, NaturLoop is coordinating the establishment of a pilot Consolidation Centre (CC) to transform organic waste into *Cocoboards*. This project aims to optimise a complete production chain, from the collection of coconut husks to the manufacture of building panels. By 2025, NaturLoop aims to produce 30,000m3 of *Cocoboards*. This agglomerated material is an advantageous alternative to the use of wood.

Recovery of palm oil production residues by composting



© FiBL



© FiBL

Partners

FiBL, Frick  
[www.fibl.org](http://www.fibl.org)  
Jacques G. Fuchs

Project Type: Pilot project  
Technology: Biomass, Resource efficiency  
Country: Ivory Coast  
Project Status: Ongoing  
Project Start: 2022  
End of Project: 2025  
Contract: 2022.07

Swiss Contribution

The Research Institute of Organic Agriculture based in Frick (AG) is an experienced actor in the field of industrial composting and has managed international projects for many years. The socio-economic and sustainability issues will be addressed by Coop, one of the Swiss leaders in food distribution, as part of its program for sustainable palm oil production.

Description

Palm oil is a controversial and often misunderstood good. Historically, palm tree plantations have required extensive deforestation, resulting in the disappearance of large areas of primary forest. Today, many efforts are being invested to continue producing palm oil following sustainable standards. Palm oil is a very advantageous product: it has little smell and taste and gives a special smoothness to food and cosmetic products.

This REPIC project supports the production of organic palm oil, for which the use of mineral fertilizers is forbidden. For this purpose, FiBL proposes to combine two composting systems (traditional and lombri-composting), to adapt them to the waste treatment. The resulting compost can then be used in the production of organic palm oil. The training of local partners in compost production, management and use will allow the smallholders to become more independent on the long run.



© Don Bosco Jugendhilfe Weltweit



© Don Bosco Jugendhilfe Weltweit

Partners

Don Bosco Jugendhilfe Weltweit,  
Beromünster  
Markus Burri

Project Type: Education and Quality Control  
Technology: Resource efficiency  
Country: Colombia  
Project Status: Ongoing  
Project Start: 2022  
End of Project: 2024  
Contract: 2022.06

Swiss Contribution

Don Bosco Jugendhilfe Weltweit enhances the cooperation between three experienced Swiss institutions (Ecopartner, Skat Foundation and FIBL) and the local Project office of the Salesians in Bogota. Through a training of trainers (ToT) approach, several experts in development, waste and resource management guarantee the transmission of the Swiss Know-How to the local partners.

Description

In Latin America, solid waste is generated much faster than the recycling possibilities. Although some recent efforts have been noticed in Columbia, waste is still mostly disposed in open dumps or burnt on the streets. The aim of the project is to generate an innovative and replicable training strategy in selected educational institutions. It will focus on raising awareness and provide practical training to promote sustainable management of solid and organic waste as well as electrical and electronic equipment waste (WEEE). The Bogotá and Fusagasugá sites are the pilot regions for this project.





© Pakka Fondation



© Pakka Fondation

Partners

Pakka Foundation, Zürich  
[pakkafoundation.org](http://pakkafoundation.org)  
Martin Lichtenegger  
Generation Carbon, Basel-Land  
[generation-carbon.ch](http://generation-carbon.ch)  
Martin R. Schmid

Project Type: Pilot project  
Technology: Resource efficiency  
Country: Colombia  
Project Status: Ongoing  
Project Start: 2022  
End of Project: 2025  
Contract: 2022.05

Swiss Contribution

The Zürich-based Pakka Foundation is involved in fourteen nut production units worldwide. As part of the project Pyro-Power Colombia, it collaborates closely with Generation Carbon to develop pyrolysis systems to improve organic waste management in cashew nuts plantations. The two organisations guarantee that the higher standards in term of sustainability are met.

Description

Pyrolysis systems allow to recycle specific type of waste such as cashew nut shells. This technique consists in heating the organic waste at a high temperature to transform it into a new material called biochar. Biochar can then be used for various ends, such as soil fertilisation. The heat produced during the pyrolysis process is reused to dry the cashew. Eventually, the process could be adapted to other waste products.





© IDE-E



© IDE-E

Partners

Institute for Development, Environment and Energy (IDE-E), Reinach  
[www.ide-e.org](http://www.ide-e.org)  
Caroline Huwiler

- Project Type: Pilot project
- Technology: Resource efficiency
- Country: Vietnam
- Project Status: Ongoing
- Project Start: 2021
- End of Project: 2024
- Contract: 2021.05

Swiss Contribution

IDE-E and its Swiss partners have many years of experience in development co-operation, renewable energy and spatial planning, as well as waste management and recycling.

Description

The rise of Vietnamese land-based marine litter is due to a combination of rising consumption and a lack of local capacity to effectively deal with steadily increasing amounts of litter.

The “Phu Yen for Zero Waste” Project is aimed to support the provincial efforts to drastically reduce and effectively manage solid waste. More specifically, its goal is to pave the way for the reduction and progressive elimination of single-use plastics in Phu Yen, to improve the cost-effectiveness, coverage and quality of waste collection in Tuy Hoa City, and to develop viable recycling solutions, including composting and animal feed production from organic waste.

Results

In order to set solid basis for the launch of the project, the partners have been dealing with various administrative and technical challenges with local actors, resulting in delays for the start of the activities in Vietnam.



© Universidad de Cuenca



© Universidad de Cuenca

Partners

Ecopartner Ltd., Horgen  
[www.ecopartner.ch](http://www.ecopartner.ch)  
Heinz Böni

Project Type: Pilot project  
Technology: Resource efficiency  
Country: Ecuador  
Project Status: Ongoing  
Project Start: 2021  
End of Project: 2024  
Contract: 2021.02

Swiss Contribution

The Swiss partners Ecopartner, ETH Zurich and Solenthaler Recycling have many years of experience in e-waste management and circular economy strategies in Switzerland, as well as internationally, especially in Latin America.

Description

Cuenca is the third-largest city in Ecuador with 615,000 inhabitants and is facing significant challenges in e-waste management.

This project's goal is to improve e-waste management, from collection to recycling. To achieve this, the current processes of the municipality's own waste management company, EMAC-EP, are being optimised, and the existing collection point is being expanded into an e-waste management center. The activities take a comprehensive approach towards repairing, reprocessing and recycling electronic equipment. The accompanying training and the sustainability assessment of the processes are also ensured, in cooperation with the University of Cuenca. In the medium term, the project results are also to be implemented in other regions of Ecuador and Latin America.

Results

A baseline report was first drafted and the roles and responsibilities of the different stakeholders were established. In 2022, the concept for the entire facility, initial implementation work, the concept for integrating the informal sector, as well as the work on operations and the business plan were completed. Due to delays in the operating permit, the start of the facility for repair, re-manufacturing and recycling of electrical appliances is expected for the end of 2023.

## E[co]work, a Co-working Space Adapted to the Informal E-waste Recycling Sector



© E[co]work Association



© E[co]work Association

### Partners

E[co]work Association, St. Gallen

[www.ecowork.international](http://www.ecowork.international)

Andrea Wehrli

Project Type: Pilot project

Technology: Resource efficiency

Country: India

Project Status: Ongoing

Project Start: 2019

End of Project: 2023

Contract: 2019.10

### Documentation

[Video](#)

### Swiss Contribution

E[co]work is a startup project of Empa, the Swiss Federal Laboratories of Materials Science and Technology. Empa has been leading the Swiss development cooperation engagement on e-waste for more than 15 years. The Indian branch of the Swiss headquartered consultancy Sofies is involved as a local partner, with over 10 years of e-waste technical expertise.

### Description

In India, 95% of e-waste is processed by the informal sector. The activities related to the recycling of these materials are often dangerous and polluting, but they also provide a living for a significant number of low-income people. Recently, the country has passed various laws to regulate these activities. However, compliance by micro-entrepreneurs is complicated as it involves financial investments and complex licensing procedures. The E[co]work space provides a dedicated environment for e-waste recycling work by pooling costs and providing specific services not accessible elsewhere. Protective equipment, specific tools and machines as well as training are offered by the centre, thus favouring the development of micro-enterprises. The aim of the project is to achieve an economically viable place thanks to a self-sustaining business model.

### Results

Workshops were organised and taught in small groups due to the pandemic. Various challenges were identified and addressed with appropriate solutions. The site for the workspace has been picked and the building work is currently ongoing. In the meantime, the project leaders have initiated new cooperations, including with the Brazilian start-up Circular Brain, and have found new co-financing from Innovate UK.



## LaundReCycle – A Water and Energy Autarkic Laundromat



© ZHAW



© ZHAW

### Partners

ZHAW Life Sciences und Facility Management, Wädenswil  
[www.zhaw.ch/de/lsfm/](http://www.zhaw.ch/de/lsfm/)  
Ranka Junge

Project Type: Pilot project  
Technology: Resource efficiency  
Country: South Africa  
Project Status: Ongoing  
Project Start: 2019  
End of Project: 2023  
Contract: 2018.12

### Documentation

[Video](#)

[Project website](#)

[Project presentation in 10vor10](#)

### Swiss Contribution

ZHAW emphasizes a multi- and interdisciplinary approach to applied research on the sustainable use of natural resources in urban and rural environments and has broad expertise across several fields of study that are relevant for this project such as new sanitation systems, wetlands, renewable energy generation and zero-emission buildings.

### Description

The project will implement and evaluate a pilot of the LaundReCycle in Switzerland and a demonstrator in Cape Town. This laundromat will be nearly water and energy autonomous, thanks to its highly-efficient washing machines, its vertically constructed plant wall that treats the wastewater, its rain-water harvesting, as well as its photovoltaic system. The pilot plant will allow to configure the technical components of the system before the knowledge transfer and adaptation to South African conditions through local partners. The demonstrator in Cape Town will allow to assess the operational and financial viability, as well as the social acceptance and the potential for multiplication. At the same time, the project partners aim to establish a South African spin-off that will enter the market after finalizing the project.

### Results

The pilot installation LaundReCycles was put into service in Cape Town in January 2021, in collaboration with the Swiss Embassy. This key step corresponds to the beginning of the on-site tests in South Africa. The results have shown a high and diverse demand, from shops, restaurants, locals and homeless people. As the capacity of the water treatment still needs to be improved, the ZHAW is currently working on a new treatment system in continuous flow that shall be integrated with the pilot installation in South Africa.



## E-Waste Management in Kathmandu



© myclimate



© myclimate

### Partners

Foundation myclimate, Zürich

[www.myclimate.org](http://www.myclimate.org)

Susan Gille

Project Type: Pilot project  
Technology: Resource efficiency  
Country: Nepal  
Project Status: Completed  
Project Start: 2020  
End of Project: 2022  
Contract: 2020.04

### Documentation

[Standard Operation Procedure for E-waste -Doko Recyclers](#)

[Final Report](#)

### Swiss Contribution

The project's lead partner and coordinator is the Swiss non-profit myclimate (MYC) Foundation. This ETH spin-off is a partner for effective climate protection – both locally and globally.

### Description

E-waste management is a major problem in Nepal, and especially in its rapidly growing capital Kathmandu. The lack of proper policies and economically viable solutions to ensure proper recycling or electronic waste disposal poses a threat to worker and general population health as well as the environment.

Doko and myclimate have partnered up to tackle these challenges. This proposed E-Waste Management project aims to establish replicable e-waste management practices in Nepal by starting e-waste recycling and refurbishing facilities, and educating consumers about the hazards of e-waste and conscientious consumerism.

### Results

The facilities for safe dismantling and repair of electric devices have been set up. An online shop for the resale of reconditioned devices has been opened and a network of seven collection points is now in operation in and around Kathmandu. The good practice manual "[Standard Operation Procedure for E-waste -Doko Recyclers](#)" is available to interested parties. In addition, school-children, community and government representatives, and experts were widely informed through workshops and social media.

### Impacts

The centre processes around 300 tonnes of electrical appliances per year, saving 478 tonnes of CO<sub>2</sub>. By 2025, processing capacity is expected to increase to 500 tonnes per year. 130 new direct and indirect jobs have been created. In total, around 800 people are benefiting from the project.



© Hofstetter Gastechnik



© Hofstetter Gastechnik

### Partners

Hofstetter Gastechnik, Hindelbank

[www.hofstetter-gt.ch](http://www.hofstetter-gt.ch)

Alin Schiopu

Project Type: Pilot project

Technology: Resource efficiency

Country: Serbia

Project Status: Completed

Project Start: 2020

End of Project: 2022

Contract: 2020.01

### Documentation

[Final report](#)

### Swiss Contribution

Hofstetter Gastechnik is a Swiss plant constructor specialized in integrated landfill solutions. This internationally established company is responsible for the design, technological know-how, main equipment manufacturing, training and initial operation of the project.

### Description

A serious challenge is being posed to Serbia, where no solutions have previously been offered for landfill gas or leachate at over 100 dumpsites. These dumpsites are polluting the air and soil, as well as surface and underground waters. Many of these landfills have no access to the electricity grid; which is problematic as landfill technologies such as degassing systems and leachate treatment plants rely on electricity for operation.

In Trstenik, Hofstetter Gastechnik proves the concept of an innovative and probably unique solution, which is capable of managing the gas and leachate of off-grid landfills. A system called “Autonomous” safely combusts landfill gas in a gas engine which produces electricity that can be utilised on-site. Part of the produced energy is used to power a compact reverse osmosis unit for landfill leachate treatment. These measures reduce significantly the landfills’ impact on the environment.

### Results

The new “Autonomous” system was built, tested and optimised in Hofstetter Gastechnik’s workshops. Subsequently, all components were delivered to Serbia and installed. The system is up and running and the operating times have been continuously increased.

### Impacts

The plant runs and produces about 86,000 kWh of clean energy per year.

Among other actions, the osmosis plant driven by this energy manages to treat about 90% of the accumulated leachate. In addition, approximately 5,400 tonnes of CO<sub>2</sub> are saved annually and one full-time employment position has been created for the plant’s operation and maintenance.



## Sustainable Management of Organic Municipal Waste in the Municipality of Pérez Zeledón



© Project partners



© Project partners

### Partners

Skat Consulting Ltd., St. Gallen

[www.skat.ch](http://www.skat.ch)

Sandra Méndez Fajardo

Project Type: Pilot project

Technology: Resource efficiency

Country: Costa Rica

Project Status: Completed

Project Start: 2019

End of Project: 2022

Contract: 2019.05

### Documentation

[Final report](#)

[Good practices in the Implementation of Composting Plants](#)

[Guidelines Composting from Municipal Waste](#)

[Guideline Compost Application](#)

[Video in English](#)

[Video in Spanish](#)

### Swiss Contribution

Skat Consulting Ltd., is an independent consulting firm and competence center in international cooperation and humanitarian aid. Founded in 1978, the company has many years of proven experience in technology, training, project management and business matters. For this project, Skat Consulting has been supported by other Swiss experts from the Research Institute of Organic Agriculture (FiBL) and the Zurich University of Applied Sciences (ZHAW).

### Description

The districts of San Isidro El General and Daniel Flores of the Pérez Zeledón municipality operate one of the largest composting plants in Costa Rica. It started its operation in 2012 and currently receives 8-10 tons of organic waste per day. The plant's processes are technically insufficient, and the marketing of the resulting products is limited. Through cooperation with experts from Switzerland, the participating Costa Rican partners (Acepesa, Municipality of Pérez Zeledón, Ministry of Agriculture and Livestock, National Union of Local Governments, University of Costa Rica San Pedro) seek advice for technical improvements in the composting process, as well as the improvement and diversification of the final product, in order that the economic viability will be assured in the long-term.

### Results

Thanks to the Swiss know-how transfer and trainings, the compost production processes were optimised, the produced compost's quality was improved and the amount of compost created was increased from 100t/month to 246t/month. Various webinars with relevant stakeholders – at times with the Swiss Embassy's participation, as well as communication and awareness-raising activities for sustainable compost production were implemented.

### Impacts

270t of CO<sub>2</sub> per year have been saved. About 50% of the compost is being sold (and a rise in sales is trending). Through the effective involvement of the Agriculture and Environment Ministries and the Institute for Community Development and Advisory Services (IFAM), as well as through information events and the various information documents (best practices and guidelines), it was possible to stimulate interest of various organisations and institutions. The pilot Pérez Zeledón municipality has signed five cooperation agreements with cooperatives and regional offices of the know-how transfer. In addition, the four municipalities of Esparza, Golfito, Coto Brus and Pococí have asked Pérez Zeledón for technical support to improve their own composting facilities.

## Plastic Recycling Project



© Fair Recycling



© Fair Recycling

### Partners

Foundation Fair Recycling, Zurich

[fair-recycling.com](https://fair-recycling.com)

Marianne Naeff

Project Type: Pilot project  
Technology: Resource efficiency  
Country: Liberia  
Project Status: Completed  
Project Start: 2018  
End of Project: 2022  
Contract: 2018.16

### Documentation

[Final report](#)

### Swiss Contribution

The Foundation Fair Recycling is mandator and supervisor of the plastic recycling section of the Liberian company Green Cities. Some Swiss experts are involved who provide support in technical and strategical questions of waste recycling.

### Description

The "Plastic Recycling Project" contributes to a relevant and sustainable waste management in Liberia in cooperation with the local population of Monrovia. Due to the lack of drinking water access, a lot of water bags are used, which generates a big amount of plastic waste. The Liberian partner, Green Cities, has made it its duty to recycle and reuse this waste and other plastics profitably in the densely populated communities; thus, creating a new market for waste products. At the same time, jobs are created for young adults as well as income opportunities for the community inhabitants collecting the waste. Activities within the project focus on mechanization of the recycling chain, on raising awareness in reduction, reuse and recycling, as well as on making the social business of Green Cities financially self-sustaining.

### Results

By the time the project was completed, the entire infrastructure for plastic waste collection, separation and processing had been built, as well as the installation of the production facility for manufacturing natural rubber milk collection cups and geometry sets. The production line consists of a shredder for hard plastic, a washing line for plastic films and a production machine for the plastic products. Furthermore, a storage capacity for more than 50 tonnes of processed plastic was realised. Additionally, the existing collection and recycling centre was supplemented by five new collection points in Monrovia's outskirts.

### Impacts

This REPIC project directly trained 50 young people and created around 75 new jobs. In addition, Green Cities has trained another 100 people and created 75 jobs in the REPIC project's vicinity. Green Cities collected and separated 250 tonnes of waste and processed 25 tonnes of plastic in total during the project. From 8.5 tonnes of waste plastic, 13,453 geometry sets and 97,856 natural rubber milk collection cups were produced. This sums up to 131 tonnes of CO2 being saved. Due to the excellent networking of those responsible for the project, the approach's multiplication has already been discussed with representatives of five cities, which includes Buchanan, Paynesville, Ganta, Kakata, Gbarnga; whereby the implementation in Buchanan and Paynesville will be tackled first.





© dss+



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### Partners

dss+, Zurich

[www.sofiesgroup.com](http://www.sofiesgroup.com)

Hannes Zellweger

Project Type:	Pilot project
Technology:	Resource efficiency
Country:	Peru
Project Status:	Completed
Project Start:	2018
End of Project:	2023
Contract:	2018.04

### Documentation

[Final report \(in German\)](#)

[Video](#)

### Swiss Contribution

dss+ has many years of experience in introducing technologies in developing and emerging countries. The pyrolysis technology for the recovery of agricultural organic waste is being optimized in Switzerland at the *Center of Appropriate Technology and Social Ecology*, "Ökozentrum Langenbruck".

### Description

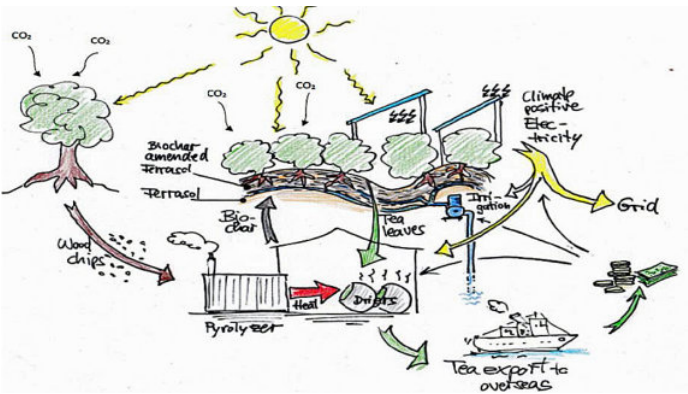
In Peru, coffee growers are under increasing pressure: declining productivity, soil depletion and unfavourable weather conditions for drying the crops are many challenges to be met. To address these issues, the company dss+ proposes to transfer the knowledge acquired during a previous project supported by REPIC (contract 2016.01). Through the technology of pyrolysis, the potential of large quantities of waste, including coffee pulp, can be exploited. The heat generated in the process allows coffee cherries to be dried more efficiently and the charcoal (biochar) produced from the biomass is an excellent fertiliser for soil remediation.

### Results

Cooperation with the national association of coffee producers APPCACAO/OROVERDE has made it possible to build a pilot plant adapted to local conditions. It is now operational and has enabled users to be trained in pyrolysis technology. Farmers now use charcoal effectively and are aware of its advantages. In particular, it drastically reduces the absorption of cadmium in cocoa crops. In the future, the local manufacturer of the pyrolysis plant wants to continue to promote the technology and market the charcoal on a larger scale.

### Impacts

The basis for a nationwide expansion of the project has been laid. A total of 360 families benefit from the new installation and three jobs have been created. The plant has a capacity of 80kW and produces the equivalent of more than 76'000 kWh per year



Partners

ZHAW Zürcher Hochschule für Angewandte Wissenschaften, Winterthur  
[www.zhaw.ch/imi/ciis](http://www.zhaw.ch/imi/ciis)  
Grégoire Meylan

- Project Type: Pilot project
- Technology: Diverse
- Country: Vietnam
- Project Status: Ongoing
- Project Start: 2022
- End of Project: 2024
- Contract: 2022.09

Swiss Contribution

The ZHAW Center for International Industrial Solutions has many years of proven experience in the management aspects of the circular economy, from the development of implementation roadmaps to the design and implementation of circular business models. The additional Swiss and Vietnamese project partners dispose of long-term experience in pyrolysis and photovoltaics.

Description

The project aims to design a pilot integrated agrivoltaic-pyrolysis system including characteristics (business model, partnerships, costs and revenues for farmers, legal aspects, etc.) to be implemented in the tea-producing province of Nghe An or other tea-growing provinces. The specific implementation roadmap will detail steps required for the deployment of such technologies and business models at full scale, that is the modalities of a pilot plant and of the multiplication of such plants in consideration of legal and political aspects.

## The Tanganyika Aquahub (TTA) – Proof of Technical and Economic Concept of a PV Solar-Powered and Resource Efficient Fish Farm Input Production Facility



© SUSTAIN



© SUSTAIN

### Partners

SUSTAIN – Switzerland, Zurich

[www.bongofish.net](http://www.bongofish.net)

Severin Spring

ZHAW, Wädenswil

[www.zhaw.ch](http://www.zhaw.ch)

Fridolin Tschudi

Project Type: Pilot project

Technology: Diverse

Country: Tanzania

Project Status: Ongoing

Project Start: 2021

End of Project: 2023

Contract: 2021.04

### Swiss Contribution

Swiss partners SUSTAIN and ZHAW have many years of experience in aquaculture systems, fish farming and solar power systems.

### Description

Tanzania's rapidly growing population has a steadily increasing demand for fish as food. In rural areas without access to the electrical grid, fish production powered by diesel generators and/or long transportation from fish farms connected to the grid are not cost competitive or feasible.

Electricity costs are to be reduced by 70%, when compared to diesel generated electricity, thanks to a comprehensive solar power supply and an optimized energy use concept. The costs for self-produced fish feed from rice cultivation waste are to be 30-50% lower with solar power, and the costs for breeding of juvenile fish are to be 50-70% lower than with diesel power. Nutrient-rich water from fish farming is, in turn, used to irrigate rice fields. The value chain development also includes the establishment of decentralised fish farms for fish fattening. The project leaders would like to engage women for 50% of the employment positions.

### Results

The solar-powered fish farm could be built and is currently going through a test phase. In 2021, two training modules were organised. In 2022, the fish-breeding process was optimized with solar-powered food dispensers. 7000 fish were bred in the pools built in 2021. The stock of young fish caught in wild waters kept on increasing to reach 10'000 individuals. Meanwhile, the training activities are still going and new local fish-farmers have been trained.



## Sun-Oxygen-System: Energy Efficient Fishpond Aeration Enhancing Integrated Small-scale Farming in Cambodia



© ZHAW



© ZHAW

### Partners

ZHAW Life Sciences und Facility Management, Wädenswil

[www.zhaw.ch/de/lsfm/](http://www.zhaw.ch/de/lsfm/)

Fridolin Tschudi

Project Type: Pilot project

Technology: Diverse

Country: Cambodia

Project Status: Ongoing

Project Start: 2020

End of Project: 2023

Contract: 2019.09

### Swiss Contribution

ZHAW's Institute of Natural Resource Sciences (INRS/IUNR) is committed to the sustainable use of natural resources and that natural habitats for humans, animals and plants remain intact. The aim of good fish farming is to maintain high-quality water, strive for low emissions, energy optimisation and simplification of operational processes in order to enable sustainable fish production. This project is implemented in cooperation with the Asian Institute of Technology AIT, Smiling Gecko Cambodia and WorldFish organization.

### Description

Aquacultures initiated by the Cambodian government in rural regions are intended to ensure a better food supply for the population in the medium term. The commonly used, simple paddle wheels or diesel-driven systems are inadequate for a good and cost-effective oxygen supply in order to successfully manage fish ponds. On one hand, the ZHAW developed Sun-Oxygen-System SOS, with pumps supported by photovoltaics, is used to guarantee efficient oxygen supply for fish ponds. On the other hand, the nutrient-rich water is used for irrigation systems in fields; representing an economic, ecological and social approach.

### Results

The satisfying results of the Sun Oxygen System (SOS) obtained in Switzerland could be replicated in Cambodia. 13 new ponds were built and fish mortality decreased by 93% thanks to the use of SOS. Out of the ten women leader farmers enrolled in the training program, eight have now completed the second cycle and are financially sustainable.





© HEIG-VD



© HEIG-VD

### Partners

HEIG-VD / IESE, Yverdon-les-Bains

<http://iese.heig-vd.ch>

Jean-François Affolter

Project Type: Pilot project

Technology: Diverse

Country: Cameroon

Project Status: Ongoing

Project Start: 2020

End of Project: 2022

Contract: 2020.09

### Documentation

[Final report](#) (in French)

### Swiss Contribution

The Institute of Energy and Electrical Systems (IESE) of the School of Management and Engineering Vaud (HEIG-VD) provides its expertise, particularly in overall system's modelling and in training of Cameroonian technicians. The project's implementation is carried out in close collaboration with the National Technology Development Committee of the Cameroonian Ministry of Scientific Research and Innovation (CNDT/MINRESI).

### Description

About half of Cameroon's population lives in rural areas, where less than 45% of the people have access to clean drinking water and only 23% is connected to the electric network. The project "Rural Energy Platform (REP)" offers an innovative solar power plant that greatly differs from the usual solar kiosks as it also included a drinking water distribution system, an energy utilities supply system, as well as space favourable to the creation of a market place for goods and services (grocery, hairdresser, infirmary, etc.). The pilot platform has been installed in the Mvan Nvog Nyengue locality of Akonolinga

### Results

Part of the REP was achieved in march 2022. It includes a computer and reading room as well as an infirmary. The launch of these infrastructures allowed for technical and socio-economic analysis that will help replicate similar projects in the future.

The energy produced with the photovoltaic plant is a clean alternative to small petrol fueled equipment and saves about 29 t<sub>eq</sub>CO<sub>2</sub> per year. Access to clean drinkable water reduces the risk of chronic diseases and the new local services allows to save time and money related to transport to the city.

### Impacts

The diversity of services made available through the PER allows for increased financial sustainability. The offers correspond to local needs and promote local entrepreneurship. Collaboration between Swiss and Cameroonian engineers has been strengthened through various seminars and conferences organised in both countries.



© EBP



© EBP

### Partners

EBP Schweiz AG, Zürich

[www.ebp.ch](http://www.ebp.ch)

[www.ebpchile.cl](http://www.ebpchile.cl)

Nicola Borregaard

Project Type: Pilot project

Technology: Diverse

Country: Chile

Project Status: Completed

Project Start: 2018

End of Project: 2022

Contract: 2018.17

### Swiss Contribution

EBP Schweiz AG has proven long-term experience in the renewable energy and energy efficiency fields within the building sector. EBP Chile is linked very closely with major local stakeholders from industry and national authorities. The Swiss know how for microfinancing is ensured by the company Kalyta Partners LLC.

### Description

At least three energy services are being developed and tested with the aim of improving the energy supply to poor and disadvantaged households by using renewable energy and increasing energy efficiency. Local energy companies are involved. A loan model is being developed in cooperation with financing institutions. It enables low-income families to access these energy services despite modest initial investments. The loans are to be repaid from the savings made on energy costs.

### Results

By the end of 2020, the selected energy services have been implemented, monitoring has begun and the technical training documents have been finalised. In 2021, the measures put in place have been analysed, information workshops have been organised, the project has been disseminated via various channels and multiplication has been prepared with the relevant stakeholders, such as energy service providers, financing institutions or the authorities. The project is attracting a great deal of interest at all levels. The Energy Inclusion Program was a finalist for the AVONNI 2021 prize, a Chilean national award for innovation.

### Impacts

The project was completed by the end of 2022. Final administrative work will take place in 2023 to formally conclude the project.

## 9. References and publications

- [1] [Webinar REPIC: An introduction to REPIC Rollout, September 15 2022, online](#)
- [2] [REPIC Yearly Event, November 30 2022, Berne “How to succeed with commercialisation in growth markets”](#)
- [3] [Website REPIC](#)
- [4] [Newsletters REPIC](#)
- [5] [LinkedIn page REPIC](#)
- [6] 2021 Yearly report in [French](#) or [German](#), July 2021

All publications can be accessed on the REPIC website <https://www.repic.ch/en/>

# Appendix: projects 2022

## Renewable Energies

### ● Biomass

[Nouvelle Planète – Vietnam](#): Domestic biogas for the Trà Vinh province

[Renergon – India](#): Waste to Energy Bio-CNG Project Patiala

[OekoSolve / Belmont Energie Raum - Chile](#): Swiss Fine Dust Filters for Chilean Wood Stoves

[EBP BM – Chile](#): District Heating Systems as a Solution for Air Pollution in Southern Chile's Cities

### ● Geothermy

[UNI-GE Domo San Pedro – Mexico](#): The Domo San Pedro Geothermal Simulation (DOS PEGAS)

### ● PV

[Antenna – Mali](#): Solar-powered cold rooms for Malian farmers

[Association CEE – Bosnia and Herzegovina](#): Solar Power for Tuzla

[SUPSI – Haiti](#): Center for Experimentation and Competence in Renewable Energies

[Ongresso Energy – Colombia](#): Floating photovoltaics for flower production

[Power-Blox – Tanzania](#): Solar Mushroom Farm

[Mount Sunzu Switzerland – Zambia](#): Combining PV-Power and Irrigating System in Professional Agriculture

[Zenna – Belize](#): Smart Battery-Grid

[Fastenopfer – Colombia](#): Energy Inclusion as a Community-Centered Driver of Development

[Ecosys – Chile](#): Photovoltaic Solar Cooperative Model for Low-Income Households

[hiLyte – Tanzania](#): Renting Solar-recharged, Smart & Affordable Power Banks

[Swissenergy-Solutions – Zimbabwe](#): Water Thanks to Solar Energy

[EPFL-IMT – Senegal](#): Quality and Test Center for Photovoltaics

[FirstClimate – Argentina](#): Climate Finance for Distributed Renewable Energy in Rural Argentina

[Antenna – Cameroon](#): Salt Battery for Rural Electrification

[Power-Blox – Mali](#): Solarpower for Mali

[Shanti Schweiz – Bangladesh](#): RESI – RSUF Electrical Skill Improvement

[PurePower Solutions – Ghana](#): Solar Education

[HES-SO Valais Wallis – Ivory Coast](#): Autonomous Microgrid Optimized

### ● Solar thermal energy

[SPF – Ecuador](#): Solindustrias – Solar Process Heat in Cuenca

### ● Energy efficiency

[VAI Capital – Kenya](#): Project Finance and Energy-as-a-Service of electrification of road vehicles

[Vehicles Solarfreeze – Cuba](#): Climate-neutral Colling with the Sun

[SoPAS – Ghana](#): Competence center for Soalr Water Supply Systems

[Brandes Energie – Comlombia](#): Latin America Energy Award network



[CEAS Centre Ecologique Albert Schweitzer Madagascar](#) : ENERGYNGER – Reducing the Environmental Impact of Essential Oil Production

[Eride – Zambia](#): Solar E-Mobility for Sub-Saharan Africa

[2000WattSmartCities Association – India](#): 2000 Watt Certification of Symbiosis University Campus Pune

[Nereid – South Africa](#): Solar Thermal Zero Discharge Desalination

[Minergie – Chile](#) : Introduction of the Swiss Minergie Building Standard in Chile

[Zenna – Thailand](#): Solar Powered E-longtail Boat

[Caritas – Haïti](#): Solution Approach for Climate Change at the Catchment Area Carrefour/Léogane

[Swiss Fresh Water – Bolivia](#): Water Kiosks in Bolivia

## ● Resource Efficiency

[NaturLoop – Philippines](#): Sustainable coconut husk supply chain

[FiBL – Ivory Coast](#): Recovery of palm oil production residues by composting

[Don Bosco – Colombia](#): Waste management in Don Bosco

[Pakka – Colombia](#): Cashew-Pyro-Power

[IDE-E – Vietnam](#): Phu Yen for Zero Waste

[Ecopartner – Ecuador](#): ResCuE – Responsible and Sustainable E-waste Management in Cuenca

[E\[co\]work Association – India](#): E[co]work, a Co-working Space Adapted to the Informal E-waste Recycling Sector

[ZHAW – South Africa](#): LaundReCycle – A Water and Energy Autarkic Laundromat

[Myclimate – Nepal](#): E-waste Management in Kathmandu

[Hofstetter Gastechnik – Serbia](#): Integrated Dumpsite Solution

[Skat Consulting – Costa Rica](#): Sustainable Management of Organic Municipal Waste in the Municipality of Pérez Zeledón

[Fair Recycling – Liberia](#): Plastic Recycling Project

[dss+ – Peru](#): Added Value of Coffee Waste

## ● Various

[ZHAW – Vietnam](#): Green!Tea, Renewable Energy for the Vietnamese tea sector

[Sustain – Tanzania](#): The Tanganyika Aquahub (TTA) – Proof of Technical and Economic Concept of a PV Solar-powered and Resource Efficient Fish Farm Input Production Facility

[ZHAW – Cambodia](#): Sun-Oxygen-System: Energy Efficient Fishpond Aeration Enhancing Integrated Small-scale Farming

[HEIG-VD – Cameroon](#): Rural Energy Platform

[EBP – Chile](#): Energy Inclusion Program – Renca

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