

Concept note

- *General information*

Project title
(provisional): Efficient value chains by design: decentralized value creation with open technology kits to support sustainable industrialization in Cuba

SDGP -theme 1) Efficient value chains

Target Country2) Cuba

Name company lead partner/
applicant GO!Commons

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1) Choose one of the SDGP themes: 1.Nutrition value, 2.Efficient value chains, 3.Circular economy – agri-sector
4. Better work and income for youth and women. Please note that every SDGP-project subsidy application should be submitted under 1 selected SDGP theme. At least 50% of the project activities should be directly related to the selected theme.

2) Refer to list of eligible countries in Policy rules (<http://english.RVO.nl/SDGP>).

- *Development impact (specific policy theme)*
- What is the development goal the project wants to contribute to? (max 5 lines)

We want to help create efficient value chains in the context of agroecological developments currently taking place in Cuba. This can be done by using of peer production technologies and tools. Peer production and collaborative economic models can decentralize production and therefore reach more efficiency with regard to time, energy use, carbon footprints, transportation, communication, as well as increased productivity. We call this peer production tools: **appropriate technology kits**.

The SDGP-project has to contribute to at least one of the themes below:

- 1) Nutrition value
- 2) Efficient value chains
- 3) Circular economy – agri-sector
- 4) Better work and income for youth and women

Efficient value chains

Problem analysis

What is the problem/are the problems that the project aims to solve?

By facilitating decentralized production and open product design, efficiency in the value chains is stimulated in two ways. By bringing production closer to consumption areas reduction in shipping costs can be made and local resources can be used, in a smarter way. At the same time, sharing knowledge and facilitating peer to peer collaborative relations, makes value creation more efficient. Cuba is trying to address industrialization challenges aligned with sustainability principles. Agriculture for instance, is one of the key areas for industrialization. At the same time there is a strong agroecological movement, that needs a of a novel technology approach different from traditional industrialization models. Efficient value chains are directly related to industrial models (centralized vs decentralized, highly intermediate and complex value chains, vs interconnected and localized value chains). The path to efficient and sustainable value chains, industrial models, and production systems is a global challenge.

In order to transit on towards sustainable production/consumption patterns, via sustainable development programs, there are a set of challenges that need to be addressed, not only in Cuba, but across the world:

1. **Reduction/ optimization of long shipping costs.** This is key to lower the footprint of industrial processes and value chains. This implies bringing production as close as possible to consumption areas. We call these: appropriate decentralization of consumption and production.
2. **Re imagining economies of scales and productivity.** This implies a smarter/more rational use of local resources (human-physical), in combination with regional and global resources and supply chains. These can be facilitated by peer production services like platform economies and platform market places, in combination with technology transfer. In other words, by allowing and facilitating that more people can participate in value creation processes.
3. **Increase the participation and responsibility of citizenship beyond consumption.** Citizens have today a capacity to innovate and drive change like never before. But they need proper channels, resources, and gathering points to use their productive and constructive capacities. They need peer production tools and technologies that empower them, and aids intense and rich collaboration.
4. **Systemic and integrated use of technology.** We need to develop smarter and more appropriate solutions that combine low-tech and high-tech. Currently there is a dominant interest in high-tech and complicated technological developments. On the other hand simple, low-tech solutions, that can be easily deployed with local resources are labeled as outdated, and not interesting in many cases. This dichotomy needs to be overcome with an integrated vision that combines high-low-tech solutions. We call these appropriate technology.
5. **Efficiency of value chains is directly related to the chosen industrialization model,** and therefore it is also tightly related to the technologies that will be used in such model. This is a systemic approach, and therefore the models and policies chosen are what really impact the environment, as well as the the society. We want to contribute to tackle these challenges, towards more efficient value chains by design. Using “**appropriate technology kits**” coherent by design with a collaborative and open industrialization model, this is to provide technologies more adequate and coherent with peer production models is a key enabler in this transitions. These **technology kits** facilitate peer production and supply chain models, which stand for a more aligned model with the existing peer production grassroots activities currently taking place in Cuba. **Appropriate technology** stands for technologically sophisticated yet simple in design solutions. It is mostly used at small-scale, yet it is easy to scale up in a decentralized model. It is easy to adopt and designed to work with renewable energy sources. It also benefits from local experiences and grass-roots solutions, turning the latter into knowledge and resources that can be used by others and scaled up.

In the context of Cuba, there are specific challenges and processes that must be understood and considered in this transition. We think that an industrial ecology perspective for efficient value chains is essential, especially considering the emergent agroecological developments in Cuba. The problem we want to address is the following: **How can we support and help to consolidate peer production processes currently taking place in Cuba, with the use of appropriate technology kits and open design solutions?**

Describe the wider context of the project, paying attention to the social, economic and political situation and processes.

Highlights of Cuban political, social and economic developments:

Cuba is currently in a transition towards a more dynamic economic model, that combines social, political and economic reforms.

1. The government has recognized the informal economy sector as a key area to consider in the new economic reforms. At this moment it is trying to facilitate, legalize and organize legitimate informal and local economies.
2. Within this process it is also recognizing and framing the role of the private sector in these new economic model.
3. The Cuban state is opening to foreign investments also as a key element in these set of policies.
4. There is also a program for modernization of infrastructure including the internet
5. These changes are taking place, also maintaining a target of social security, universal healthcare education, and public resources.

Opportunities for this project:

1. Distributed value chains and localized economies are very common in Cuba. There is a very networked and decentralized tendency to organize economic activities in the informal sector, which drives most of the domestic economy activities. A lot of small businesses are starting to thrive and provide services for the population, they need support, know how, suppliers and services.
2. Cuba has a huge pool of capable highly educated citizens, they can easily absorb but also actively improve technology kits designs. They have a very intuitive inclination towards the concept of appropriate technologies. Many local businesses already create and craft simple machines to solve local problems.
3. Cuba is already engaged in a knowledge economy policy for sometime, but normally the knowledge economy is kept only for advanced technologies. Appropriate technologies are seen also as part of the knowledge economy concept. The technology kits we provide can bridge this gap between domestic economy and the intellectual capital available in the island.
4. Demonstrating with pilot projects, with **appropriate technology kits**, the concept of appropriate technology, can set an example on how to turn localized, sometimes marginalized, and local economic activities into a thriving and productive economy.

Threats for this project:

1. Changes in Cuba may take time and may have a different growth rate than the fast paced economy the world experiences. There is considerable inefficiency in decision making, with state agencies, which requires patience and openness.
2. The USA embargo slows down processes as well, especially with regard to imports and technology acquisition.

• Stakeholder analysis

Stakeholder	Role1)	Position2)	Influence3)
Cuban farmers and agroecological cooperatives	Beneficiary and user of our technologies	For	medium
Cuban Universities	Contribute in the research, adoption and development of technology kits	For	medium
Ministry of trade	decision-maker	ambiguous	high
Cuban Embassy in Netherlands	Intermediary	For	low

ANAP (National Association of Small Farmers) Beneficiary Institution medium

1) e.g. Beneficiary, decision-maker, supplier, consumer, financier

2) e.g. For, against, ambiguous towards the change(s) required to meet the development goal

3) Low, medium, high

Public Private Partnership (PPP)

For the requirements related to the partnership refer to the SDGP policy rules and policy framework.

Who are the anticipated formal partners in the PPP?

Role	Organisation	Type1)	Country2)	Current status3)
Lead partner / applicant	GO!Commons	Association	Netherlands4)	committed
Co-funding partner	European Union delegation in Cuba	Organization	Cuba	Interested
Beneficiary,	Fincamarta	Cooperative-agroecological farm	Cuba	Interested
Local Organization	ANAP (National Association of farmers)	Association	Cuba	To be contacted
Knowledge organization	CUJAE (Polytechnic University of Havana)	University	Cuba	Interested
Policy making entity	Local government of Artemisa and Mayabeque	Government	Cuba	To be contacted

1) Company / Government / Knowledge Institute / Non-Governmental Organisation (NGO)

2) Country of legal residence and registration of legal personality

3) Current status of involvement of this partner committed / interested / to be contacted / to be found / other (specify)

4) Dutch Lead applicant is obligatory

What interests do the project partners have in the project results and impact? Why do the partners want to participate in the project? What is their long-term benefit?

Applicant/Lead Partner: GO!Commons is interested in advancing the SDGs agenda using open products, that empower local actors and fosters sustainable economic activity.

Fincamarta: Agroecological farm model, interested in adopting and testing solutions that are sound with the environment. They are very interested in making sure that the scalability of agroecological farming meets sustainable development metrics, and also research on the impact of farming models.

ANAP: Within the National Association of Farmers (ANAP), there is a grass-roots farmer to farmer agroecological movement, called MACAC. MACAC is based on the horizontal transmission and collective construction of knowledge, practices, and methods. They are interested in technical solutions that can be easily adopted, improved and redesigned to meet local needs.

CUJAE: The Politechnic University of Havana is interested in technologies and knowledge that is open. They see these project as an opportunity to foster innovation, knowledge exchange and practical implementation of technologies. When we had contact with them they were interested in the tools we provided, as well as our open and collaborative approach.

EU: The EU in Cuba is working hard on food sovereignty and sustainable energy. We presented the initiative in Cuba some months ago. They need partners and participants to materialize their goals, and they found our project aligned with the goals they have.

Cuban Government: The Cuban state is interested in solutions towards sustainable development and economic prosperity. We are in touch with the Cuban Embassy delegation in Netherlands, and they have shown interest in our initiative. They have commented positively on the model and vision we have developed. Nevertheless, we still have to make direct contact with the local government entities, in Cuba, to deepen this partnership closer to the local places where the program will be implemented.

Project approach

Describe the project design in general terms.

Present briefly the main project interventions and investments and the rationale to include these into the project design. Is there local demand for the products and/or services that will be delivered by the project? If the project is innovative, please elaborate.

A proposal to improve efficiency in value chains, supply of materials and sustainable industrialization in Cuba using appropriate technology kits.

Technology background: GO!Commons is a knowledge economy driven initiative, focused on developing and distributing appropriate technology kits. A concrete example of a **technology kit** is an automated machine for metal cutting, that is design and documented so that others can study, change and improve its design. The CNC plasma cutter is also a machine that allows to fabricate tooling, implements and also other machines. This CNC combines low-tech and high-tech solutions in its design. Moreover it uses CAD and CAM files (intangible goods, knowledge), that can be shared, exchanged and modified by users. Another example is Compressed Earth Brick Machine, which could also be fabricated using the previous machine mentioned. This product and our service platform can facilitate the emergence of a market place, knowledge exchange and mini industries that can scale up as a very efficient industrial ecosystem. Another example of technology that can be tested and adopted is the libre-solar open hardware platform, which is designed to facilitate the migration to smart grids.

This project has three complementary goals that guide the interventions:

1. Replication, deployment, and test of technology kits that facilitate local production and efficient supply of capital goods in the context of organic farming in Cuba.
2. Capacity building and empowerment using open design resources, and community centered approaches for technology development/ validation/ deployment.
3. Validate the potential of business models for Cuba's prosperity and sustainable development in close partnership with the stakeholders.

Key Interventions to achieve the goals mentioned:

- 1. Replication, deployment and test of technology kits that facilitate local production and efficient supply of capital goods in the context of organic farming in Cuba.**
 - 1.1.Replication workshops automated plasma cutter (enabling technology for local fabrication)
 - 1.2.Replication workshops of Compressed Earth Press for brick fabrication (many parts of this machine can be done with the CNC machine. Moreover earth bricks can be used to do other farm constructions).
 - 1.3.Deploy, use, and test the machines mentioned, in the target context (farm, or areas close to the farm).
 - 1.4.Study available open designs. For example: LibreSolar kits, Biodigesters (available in our design platform), and other machines that can be adopted in the local context of Cuba.
 - 1.5.Re-design and validate these open designs for the Cuban context.
- 2. Capacity building and empowerment using open design resources, and community centered approaches for technology development/ validation/ deployment.**
 - 2.1.Build at least two low cost, workspaces where workshops, training and fabrication means are available for innovators, farmers and testers. These facilities are meant to be hubs where design and development takes place; but also where technologists, and farmers

- gather and materialize new ideas, formulate problems and come up with solutions.
- 2.2.Expose and bring the open design culture to Cuban Academia, including micro-controllers like Arduinos, raspberry pi computers, but also 3d printers, circuit mills and laser cutters. These are all basic and relatively low cost machines available in fablabs around the world.
- 2.3.Co-design and development of new machines/ capital goods that emerge from the collaboration partnerships
- 2.4.Establish global partnership with knowledge institutions across the world, and grow the community via the continuous documentation, and share of these program.
- 3. Validate the potential of business models for Cuba's prosperity and sustainable development in close partnership with the stakeholders.**
 - 3.1.Sell technology kits that have been validated and tested to other beneficiaries.
 - 3.2.Extend our technology products portfolio, after growing our network of producers, technologists and makers along this program.
 - 3.3.Test a platform-market place for products, but also source files (designs) that are created and have been validated collectively by the network of farmers-users.

Key activities and resources needed to enable these interventions:

- Acquisition of fabrication means and materials.
- Temporary internet connection (permanent internet would be better).
- Regular meetings and gathering with key stakeholders
- Payroll for technology developers.
- Payroll for core community leaders.
- Outsourcing of ancillary services needed along the program.
- Maintenance and improvement of the services we provide in our platform(software development and maintenance)
- Manufacturing costs, and shipping costs of high-tech components.

GO!Commons Highlights:

- Our portfolio of projects and products that is currently open and accessible via internet, has emerged as a result of innovations made by farmers and makers from different parts of the world. (for instance one of our open design has been tested in a Cuban farm. The CNC automated plasma cutter has been firstly build by a farmer in USA, who is now a lead developer in our online community).
- GO!Commons is an association focused on the development and distribution of open technologies for sustainable development interventions and programs.

- *Project output and outcome*
What results (outputs and outcomes) are pursued?

1. Technology adoption and validation within agro-ecological systems

- 1. Output:Deployed minimum 10 kits in test farms and community workshops
- 1. Outcome: Validated use of the kits provided to farmers. Farmers use the CNC machine to build artifacts, implements, and solutions collectively.

Expected Key output and outcome 2

- 2. Output: Growth of contributor number to 100 and activity in GO!Commons platform
- 2. Outcome: A strong and trained community of users, designers and researchers engaged in peer production activities within the internet platform we provide. They criticize, study, and improve the designs provided.

Expected Key output and outcome 3

- 3. Output: Increased number of projects (20) in GO!Commons Platform, coming from farmers, makers and innovators.
- 3. Outcome: farmers-users, engineers, and researchers work in direct collaboration, and in an organized way to solve problems continuously within projects they create.

Expected key output and outcome 4

4. Output: Increased product portfolio with validated machines in the field (5)

4. Outcome: Commercial validation of products developed under this program

1) Output: The products, capital goods and services (including hardware) which directly result from a development intervention (the project); may also include changes resulting from the intervention which are relevant to the achievement of outcomes; Outcome: The short-term and medium-term effects of an intervention's output.

- *Sustainability and potential for upscaling*

The project results should contribute to a more sustainable environment and living conditions in the target country. Sustainability is defined by the three main cross cutting themes in SDGP: 1. climate adaptation, 2. circular economy and 3. gender equality.

How will the project contribute to climate adaptation?

Using local (human and physical) resources as much as possible, to solve population needs and foster human development is key. It creates resilient societies, more dynamic, adaptive economies and lower environmental footprint. Global trade and long shipping activities have to be redefined and used if and when needed. For instance instead of shipping a complete machine, only those components that cannot be sourced locally should be shipped.]

- How will the project contribute to a circular economy?

The design of open kits is highly modular and standardized, facilitating the assembly/dissassembly, as well as their repairability. The CNC machine in particular can be used to fabricate custom made parts, and adapt existing products like cars, tractors, or other machinery, which need of maintenance and adaptations (for instance mounting new motors in old car casings, adapting chassis, ,)

- How will the project contribute to gender equality?

Our project is inclusive in the sense that allows anyone to participate, and join in design, improvement, feedback and research around appropriate technology packages, and resources.

More detail on the financial sustainability

If the financial sustainability is based on one or more business case(s), please provide the outlines of this/these business case(s). 1. If the financial sustainability is (partly) not based on one or more business case, indicate how the project results can be sustained based on local financing (e.g. taxes, tariffs, public budget allocation)

- The driving business model behind this project, is to sell appropriate technology kits.
- There are other complementary business models which include:
 - The sale of design files produced within community members.
 - Subscription fees for support related to high tech components and unlimited access to design resources(a potential platform business model)

Potential for up-scaling

Projects with a considerable scaling potential contribute in general more substantially to reaching the development impact on the specific policy themes.

How can the project be scaled up?

These project tackles different scalability challenges by design:

1. The technology kits are easy to operate, they are modular and work with off-the-shelf components, making it easy for customers and adopters to modify, repair, change and adapt them to the local situations.
2. Community validated designs and exchange allow to ensure the relevance of products and sales of these kits across Cuba, but also in other countries promoting agroecology like Nicaragua, Costa Rica, and other countries working on agroecological programs.
3. The solutions provided are so simple that they are low risk investments, and can be managed easily by the region.

- *Provisional budget*

What is the expected project budget?

The project budget can be modified during development of the SDGP application.

Budget line	Budget in Euro
Project Management	EUR 150000
Technical Assistance	EUR 696600
Hardware	EUR 1090000
Monitoring and evaluation ¹⁾	EUR 50000
<i>Total budget</i>	EUR 198600(approx 2 million)

¹⁾ Project (output and outcome, contribution to SDGP objectives) monitoring and evaluation is regarded to be an important aspect of SDGP-projects. For this, a baseline study and annual reporting on project key indicators are mandatory.

Who are the intended parties to finance the project?

Organisation	Budget in Euro	Means of financing¹⁾
RVO SDGPF	1000000	Subsidy
EU Delegation Cuba	1000000	Call (funds for economic development)

¹⁾ The financing method, for instance a cash investment / an in kind investment (labour) / external other funds / other (specify). A maximum of 50% of the project costs can be subsidized.

Why is SDGP support needed?

- Sustainable development is intrinsically systemic, it needs collaboration, openness and involvement of many stakeholders. Systemic interventions require PPP models and funding that aims for such kinds of partnerships.
- GO!Commons focus is on an integrated vision about technology, where different factors and forces come into play: investment, business, social development, education, and policy.
- The funding scale offered by this fund, is very fitted to the specific needs to make impact in Cuba using our appropriate technology resources, and products.
- Cuba needs a more dynamic approach to solve development programs, and SDGP can work as a catalyst to foster innovation and economic prosperity. For instance a core component of this program, is knowledge exchange, and therefore it could become a reason to accelerate the access of internet across the island.