

## EMpower Colombia – Energías solares en el Mar por realizar el futuro deseado de Colombianos

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### Our Goal

We want to develop offshore solar projects with large positive impact for Colombians by providing clean and affordable electricity. The current Colombian energy system performs well. However, we are facing challenges in the energy transition towards a future proof system. Still 1,5 million Colombians live in the Zonas No Interconectadas with limited access to energy. The existing power sources are threatened by droughts related to climate change (hydropower) or are getting depleted (oil). Moreover, the Colombian economy is growing rapidly and therefore the demand for electricity is rising sharp. To provide abundant, clean, and affordable energy is of key importance for the future.

Our consortium believes in the value of innovative offshore solar projects. Supply of solar energy from sea provides coastal communities and cities with a clean energy source. This option can be deployed without competing for valuable, and exploited land, such as land covered by rainforests and land used for agriculture or urban expansion. The additional costs for the offshore infrastructure are offset by a higher power yield, lower land costs, and potential upscaling. We combine the most abundant energy source (*i.e. the sun*), the most invested energy technology (*i.e. Solar-PV*), and the most abundant available space (*i.e. the sea*), to supply the regions with the highest power needs (*i.e. the coasts*), most dense populations (*i.e. the coasts*), and least available land space (*i.e. the coasts*).

Offshore floating solar is however a new technology for Colombia. Developing projects therefore requires a development trajectory. EMpower Colombia is a non-commercial research project in which we will prove the technology's viability. Our showcase project will also explore the permitting and regulatory procedures that need to be complied to for innovative marine energy projects. The project will result into multiple bankable business cases for commercial adoption.

<b>END-GOAL</b>	<b>To develop offshore solar projects with large positive impacts for Colombians by providing clean and affordable electricity</b>	<b>5</b>
<b>Scope of EMpower Colombia</b>	To do so, we need fundable business cases that propose profitable offshore solar projects at sites that have a strong need for the technology	<b>4</b>
	To get there, we need to test the technology and monitor the impacts in a relevant environment for a period of one year	<b>3</b>
	This requires a demo-project in which the offshore solar technology is installed at a Colombian site	<b>2</b>
	For installing the demo-project, we need permits for testing the technology and conduct a (small) site-study	<b>1</b>

The objectives are directly applicable to 7 of the UN Sustainable Development Goals: 7) *Affordable and clean energy*, 8) *Decent work and economic growth*, 9) *Industry, Innovation, Infrastructure*, 10) *Reduced inequalities*; 11) *Sustainable cities and communities*, 13) *Climate action*, and 17) *Partnerships for the goals*. We also notice a connection to 6 other SDGs: 1) *No poverty*, 2) *Zero hunger*, 3) *Good health*, 4) *Quality education*, 14) *Life below water*, and 15) *Life on land*.

*The contents of this letter are confidential*



## Planning & Funding

Part	Description	Planning
0	Proposal & funding: Develop proposal, assure primary stakeholders, gain access to funding	Q4 2018- Q1 2019
1	Permitting & Site-studying: Acquire relevant permits, conduct (limited) location-study (incl. EIA)	Q1 2019- Q2 2019
2	Demo-project installation: Build system, transport to Colombia, install at site	Q3 2019
3	Impact/performance testing: One year monitoring of performance, environmental & societal impacts	Q4 2019- Q4 2020
4	Feasibility studies: 2-5 feasibility studies for applying offshore solar in large, commercial projects	Q4 2020- Q1 2021

The project is expected to require a total budget of between 0.5 MLN EURO and 1.5 MLN EURO, depending on the scope included. For funding we are aiming to combine sources from organizations related to Colombia (the country of subject) and as well to The Netherlands/European Union (the country of the supplier). We are currently looking to establish partnerships with:

<b>Problem owners</b>	To conduct studies to assess the feasibility of offshore solar for their challenges
<b>Pilot city/village</b>	To implement the demo-project with local support and supply power to
<b>Col. Governments</b>	To grant us relevant permits and to support us with introducing innovative technology
<b>Dutch Governments</b>	To stimulate Dutch export and to contribute to regional development
<b>Project partners</b>	To support the project activities with their relevant expertise
<b>Development banks</b>	To fund the realization of projects with a social/development component
<b>Private donators</b>	To support a project of interest (eg. NGOs/companies/private donors)

## Key deliverables

- 2-5 fundable business cases that can lead to profitable investments in offshore solar projects that provide clean and affordable power to the Colombian people
- A first-of-a-kind demonstration project of marine renewables in Colombia, that shows Colombia's leadership in tackling energy challenges with innovative solutions
- A showcase to develop new regulatory practices and the required institutional capacities for further development of the aquatic energy sector
- Leading (scientific) research papers in the rapidly growing renewable energy sector of floating solar (by applying floating solar at sea instead of in lakes)
- A demonstration of international cooperation to strengthen the ties between Colombia & The Netherlands and to contribute impactful to sustainability and the SDGs

## About the technology

At [Oceans of Energy](#) we are developing [the first offshore solar farm in the world](#) at open sea. Unique is the innovative & proprietary modular floater technology that inhibits the required robustness for a 20+ year lifetime. The technology is cost effective, scalable from kW's to MW's, and can be anchored at any sea-site, even at the most remote locations. In the demo-project we will install a small system of several kW's. Materials and design are such that zero harm to marine life is anticipated. Our technology consists of no moving parts and is therefore considered low-risk.

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