

Global Multi-stakeholder SIDS Partnership Dialogue 2019

“Fostering Effective Partnership for Addressing Gaps and Priority Areas of the SAMOA Pathway”

10 July, 2019 – Conference Room 1, 3:00pm – 6:00pm

Statement by Mr. Charles Nouhan (Chairman of Stakeholder Forum for a Sustainable Future)

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Ladies and Gentlemen

My name is Charles Nouhan, Chairman of Stakeholder Forum for a Sustainable Future. I speak on behalf of the Global Partnership for Ocean Wave Energy Technology, a partnership, conceived by Stakeholder Forum and comprised of Stakeholder Forum, SurfWEC LLC, a University partner, and others, who share common objectives with regard to the 2030 Agenda in general, and the implementation of the Sustainable Development aspirations of vulnerable economies such as those of small island developing States.



This partnership recognizes that a multi-stakeholder approach to partnerships is an important vehicle for mobilizing and sharing knowledge, expertise, technologies and financial resources to support the achievement of the SDGs and sustainable development aspirations of all countries, particularly developing countries and those most vulnerable to the adverse impact of climate change.

The **Stakeholder Forum**, an NGO, works to advance sustainable development at all levels. Its mission is to enhance open, accountable and participatory decision-making and governance on sustainable development, with a particular focus on the effective engagement of all stakeholders with international policy processes.

SurfWEC LLC is a partnership of Martin and Ottaway, marine consultants, engineers, surveyors, naval architects, and appraisers since 1875, a privately held company recognized as one of the United States’ foremost marine consulting firms. SurfWEC is developing an energy capture solution with the potential to rapidly scale up the generation of power from ocean waves at costs competitive with wind and solar energy capture technologies.

Through the **Global Partnership for Ocean Wave Energy Technology**, we are and will be further collaborating with Member States, in particular, we hope, with governments and utility companies in SIDS and others to further these common goals by identifying the

stakeholders, mechanisms, and financial resources required to develop a zero-emissions technology capable of utility-level electrical power generation from ocean waves.

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Our Partnership aims to deliver utility level power generation to support resilient societies and economies that can adapt to climate change.

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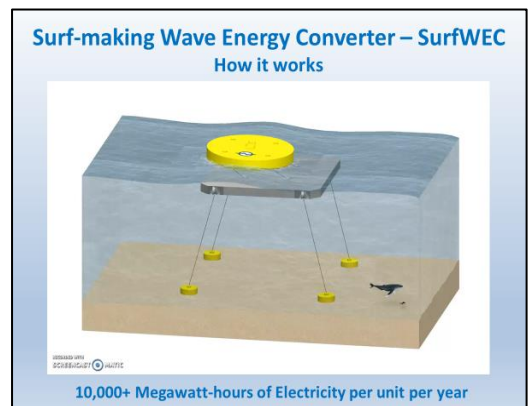
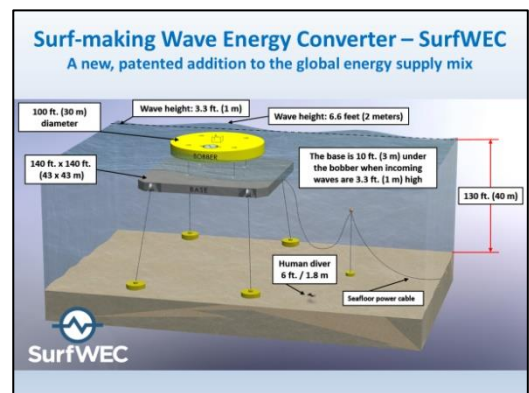
I do not have sufficient time. I am under strict instruction from the Organizers, whom I now wish to acknowledge and thank for their kind invitation for us to participate in this august forum, that I have only a maximum of five (5) to six (6) minutes to present.

What you are seeing now...

Is the diagrammatic visualization of how the Surf-making Wave Energy Converter – SurfWEC – works.

10,000+ Megawatt-hours of Electricity per unit per year.

When waves exceed 3 meters-high, the platform is lowered to reduce wave loads. Smart technology can 'learn' to become a severe-storm early warning system.



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We have many more elaborate Slides to show – explaining in detail, based on sound science and economics, how the Ocean Wave Technology SurfWEC platform works and how it allows effective wave energy recovery of a factor up to 100 times greater than legacy wave energy conversion systems. Time constraints inhibit me and my colleagues from further elaboration.

Not so long ago – our generation were accustomed to reading about inventors who have passed on. Today, however, given the advances in new technologies, I wish, at this juncture to introduce to you these two Gentlemen:

- (i) Mr. Michael Raftery – Inventor of the SurfWEC Technology; and
- (ii) Mr. Rik van Hemmen, President of Martin and Ottaway.
- (iii) In addition, Dr. Elira Karaya, Economist and Stakeholder Forum Associate.

They - **Misters Raftery & van Hemmen, and Dr. Karaya** will be around the Room all through this afternoon and you are most welcome to meet with them and further discuss this partnership and its potential as it relates to your respective Governments and sustainable energy aspirations.


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The SAMOA Pathway recognized that dependence on imported fossil fuels has been a major source of economic vulnerability and a key challenge for small island developing States for many decades and that sustainable energy, including enhanced accessibility to modern energy services, energy efficiency and use of economically viable and environmentally sound technology, plays a critical role in enabling the sustainable development of small island developing States.

Should deployment of the SurfWEC system be realized, it has the potential to transform the energy supply of small island developing states and other coastal communities. In addition, the new skilled jobs needed to support the system, along with many other skilled jobs and marketable energy products that would result, offer the potential for the societal change envisioned in the 2030 Agenda.

Potential benefits to SIDS
Improved Quality of Life on Land and Below Water
Biodiversity/Disaster risk reduction/Sustainable transportation

- Diversification of the power grid to reduce outages;
- Electrification of ground and marine transport systems;
- Wave-farms offer a reef-like environment with the potential to improve ocean health, biodiversity, and tourism;
- Smart technology that can ‘learn’ over time, becoming a data source for severe weather early warning systems; and
- In the most severe storm conditions, the SurfWEC platform can be retracted (submerged) on-site autonomously and remain fully operational.



The Economics of SurfWEC (US Dollars)

Capital Expenditure (CAPEX)
\$13 million for 1 prototype unit connected to onshore grid
\$9 million per unit at the 100 units production level

Operating Expenditure (OPEX)
Prototype: \$300K/year with 5-year major overhaul cycle
100 unit: \$200K/unit per year with 5-year major overhaul cycle

Revenue per year from electricity sales
Caribbean (average): 10K MWh¹/year x \$330²/MWh = **\$3.3 million**
Fiji: 10K MWh/year x \$470/MWh = **\$4.7 million**
Solomon Islands: 10K MWh/year x \$990/MWh = **\$9.9 million**

Headline: SurfWEC is projected to produce up to two times more electricity than a similar investment in off-shore wind.

¹ A MWh is 1,000 kilowatt-hours (kWh)
² Electricity rates from: <https://www.nrel.gov>

In our calculation,

Revenue per year from electricity sales through SurfWEC

- Caribbean (average): 10K MWh¹/year x \$330²/MWh = \$3.3 million (ROI – 4.5 Yrs.)
- Fiji: 10K MWh/year x \$470/MWh = \$4.7 million (ROI – 3 Yrs.)
- Solomon Islands: 10K MWh/year x \$990/MWh = \$9.9 million (ROI 18 Mos.)

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The Global Partnership for Ocean Wave Energy Technology is in line with the SIDS Partnership’s SMART Criteria.

It is:

- SIDS-Specific
- Measurable and monitorable
- Achievable & Accountable
- Resource-based & results focused
- Includes a timeline for implementation & transparency by all parties

| Development Timeline |
|--|
| Scale Model (1/17th scale) wave tank, then sea trial <ul style="list-style-type: none">• Build; wave tank tests; followed by 6-12 months sea trial<ul style="list-style-type: none">▪ 2 years - 2021 |
| Prototype (full scale) x 3 introductory locations <ul style="list-style-type: none">• Build, followed by 1-2 years sea trials<ul style="list-style-type: none">▪ 3 years - 2024 |
| Multiple unit expansion at the 3 introductory locations <ul style="list-style-type: none">• 2025 onwards |
| Commercial Deployment – 100's of units to utility-scale <ul style="list-style-type: none">• 2026 onwards |

| Thank you |
|--|
| Rik van Hemmen SurfWEC LLC rhemmen@surfvec.com |
| Michael Raftery SurfWEC LLC mraftery@surfvec.com |
| Elira Karaja Stakeholder Forum for a Sustainable Future ekaraya@stakeholderforum.org |
| Charles Nouhan Stakeholder Forum for a Sustainable Future charles.nouhan@stakeholderforum.org |

We are happy to register this new Partnership in the SIDS Partnership Framework as a way of addressing the gaps identified in the analysis of SIDS Partnerships by DESA, in particular in the Technology and Energy Sector.

If you have any questions – please do not hesitate to contact any of us through the addresses and contact details on the screen.

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Fellow Presenters

Ladies and Gentlemen

Thank you.