

BACKGROUND INFORMATION DOCUMENT

KAOKO GREEN ENERGY SOLUTIONS (PTY) LTD

Environmental and Social Impact Assessment

The Proposed “/hao” Waveroller Pilot Project for the Generation of Electricity by Utilising Namibia’s Ocean Waves using WaveRoller Technology on Ocean Water

1. INTRODUCTION

Kaoko Green Energy Solutions (Pty) Ltd (hereinafter referred to as “Kaoko”) intends to apply for an Environmental Clearance Certificate (ECC) for their proposed “/hao” waveroller pilot project for the generation of electricity by utilizing Namibia’s ocean waves using WaveRoller technology on ocean water. The proposed project is located offshore, approximately 1 km from the coastline, near Wlotzkasbaken, Erongo Region, Namibia.

Kaoko Green Energy Solutions (Pty) Ltd, a Namibian private energy-generation assets development company, with mission anchored in the potent forces of sustainability-WAVE, solar and wind. The company has identified the power of Namibia’s coastal waves and through a pilot project, WaveRoller devices will be deployed in the Namibia water to generate clean and affordable electricity from ocean waves and then deliver that 200 MWh per year of electricity to communities close to the coast of the Erongo Region in Namibia.

The project will be located in the Atlantic Ocean where wave energy is the flow of energy both during the day and during the night. Wave energy changes at a much lower rate and is more predictable than wind and solar. These characteristics prompt the development of the technology, hence the pilot project and support the grid and reduce the amount of storage needed.

The challenge facing the project proponent is its contribution towards achieving these goals while at the same time preventing and/or mitigating potential negative social and environmental impacts, hence the initiation of the Environmental and Social Impact Assessment (ESIA) Process.

2. PURPOSE OF THE BID

This BID has been prepared to provide general information relating to the following:

- ◆ The proposed project activities.
- ◆ ESIA process.
- ◆ Early identification of the potential environmental and social impacts/issues.
- ◆ How you can have input into the ESIA process.

3. PUBLIC PARTICIPATION

Public involvement is an essential part of the ESIA process.

You have been identified as an interested and affected party (IAP) who may want to know about the proposed activities and have input into the ESIA process.

All comments (see attached comment sheet) will be recorded and addressed in the ESIA process.

Comment period is from 10 November to 07 December 2023.

General Public Meeting Details:

Date - Friday, 01 December 2023

Venue - The New Erongo Regional Council Offices in Wlotzkasbaken

4. INDEPENDENT ENVIRONMENTAL CONSULTANTS

I.N.K Enviro Consultants cc (I.N.K), is an independent firm of environmental consultants, that has been appointed by AW-Energy to manage the ESIA process for the above-mentioned activities.

IAP REGISTRATION

Please register as an IAP and submit any questions or comments:

Attention: Immanuel N. Katali

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ESEIA FOR THE PROPOSED “/HAO” WAVEROLLER PILOT PROJECT FOR THE GENERATION OF ELECTRICITY BY UTILISING NAMIBIA’S OCEAN WAVES USING WAVEROLLER TECHNOLOGY ON OCEAN WATER

5. ENVIRONMENTAL APPROVAL

Prior to the commencement of the proposed activities, an application for environmental clearance will be submitted in terms of the Environmental Management Act, 7 of 2007 and Regulations 19 and 21 of the EIA Regulations (January 2012) to the MEFT - Department of Environmental Affairs (DEA). MET - DEA will review the application and relevant reports for a final decision. An ESIA process will be conducted in terms of the above-mentioned Act and Regulations.

In addition, the ESIA process will be aligned with the International Finance Corporation (IFC) Performance Standards.

6. ESIA PROCESS

The ESIA process provides information on the proposed project and the environment in which it may be situated; it identifies, in consultation with IAPs, the potential negative and positive environmental aspects and associated impacts of the proposed project; and reports on management measures required to mitigate such impacts to acceptable levels.

A draft Scoping Report (including an assessment of impacts) and an Environmental and Social Management Plan (ESMP) for the proposed project will be made available for a 7-day public comment period. Registered IAPs will be notified via e-mail of the review period and the availability of the draft Scoping (including assessment) Report.

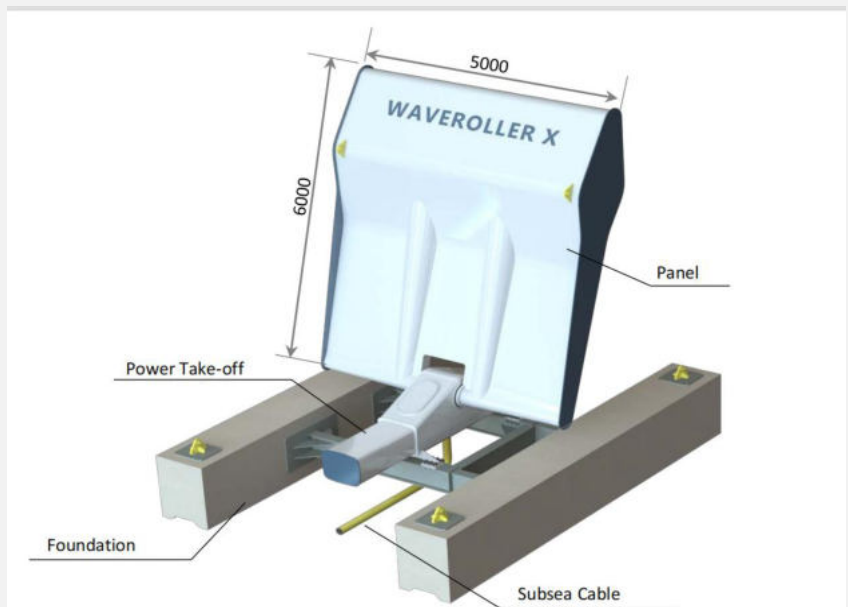
7. PROJECT DESCRIPTION

Introduction

As mentioned in section 1 above, the proposed “/hao” pilot project aims to generate electricity by utilising Namibia’s ocean waves using WaveRoller technology on the ocean water.

Wave Roller Technology

The Pilot project intends to install five (5) WaveRollers using its technology to convert wave energy to electricity (www.aw-energy.com). The electricity will be transmitted via underground cables from the site to a substation located inland and to the industrial hub 1km away from the shore. A video of the technology can be seen here: <https://youtu.be/xKI7WQ9fB3k>.



Panel	Steel panel 5m wide and 6m tall for deployment in 8-10m depth Larger panel options available for lower resource locations
Power take-off	Converts panel oscillation to electrical power Accumulators smooth output power over 20-30s
Subsea Cable	Standard off-the-shelf type subsea cable Wet-mate connection to simplify operations
Foundation	Provides a stable platform Ensures station keeping in extreme weather conditions
Supply	Modules supplied ex-works from Finland for assembly at site Total unit weight abt. 20t enabling shipment in ISO containers

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ESEIA FOR THE PROPOSED “/HAO” WAYEROLLER PILOT PROJECT FOR THE GENERATION OF ELECTRICITY BY UTILISING NAMIBIA’S OCEAN WAVES USING WAYEROLLER TECHNOLOGY ON OCEAN WATER

WaveRoller®-X (15kW) Datasheet

PTO X, EU version

Electric system	AC 3P
Nominal voltage	400V/ 50Hz
Maximum current	25A
Maximum power	17.3 kW
Nominal continuous power	15.0 kW
Isolation transformer	400V / 1000V

Subsea cable, chain

Power cable type	Rubber cable with excellent chemical, thermal and mechanical resistance (4 x 10mm ²)
Data cable type	Polyurethane Ethernet cable with water blocking filling compound. Two connections.
Cable protection	The cables are protected with a heavy rubber hose.
Subsea connectors	Subconn® High Power and Ethernet Circular
Maximum voltage	1000 V AC rms (max)
Maximum current in water	50A
Number of devices per chain	5 WaveRoller X units

Subsea cable, shore export

The energy export cable is a standard subsea cable with steel wire armoring and fiber optic cable. Exact type and voltage level are site specific since the number of devices connected to one export cable can vary between sites. The following is an example. The cable is connected to a WaveRoller-X unit that has the shore export module.

Cable type	AHXAMKPJ-W 3x50mm ² Al
Maximum voltage	10kV
Maximum current	125A
Example configuration	20 * WaveRoller X units: 315kVA, 6kV, 30A

Hydraulic power transmission

Power from the panel axle is transmitted to the electric generator axle using a hydraulic power transmission system. The system utilizes hydraulic accumulator for power balancing, and therefore, power in the panel axle can fluctuate whereas power in the generator axle is stable. The system is constructed using standard off-the-shelf components available globally. The system can be maintained by a regular mechanic.

Environment

The WaveRoller X does not contain significant amounts of hazardous materials or substances and is an environmentally friendly solution. For example, the unit is protected with non-poisonous silicone paint and aluminum anodes. Marine growth is not prevented in the basement structure that increases compatibility with the surrounding environments and the seabed. The amount of hydraulic oil and lubricants in the PTO is kept as low as possible, and oil and sea water are always separated with two barriers. According to EU-legislation, only non-poisonous hydraulic oil is used.

The unit can be easily recycled since only steel and concrete are used.

Underground Power Cable

The project will consist of underground power cables that is proposed to stretch along and parallel to the existing Orano Desalination Water Pipeline located inland.

Industrial Area

The industrial will comprise of facilities as required for the operational phase of the project. The facilities will be constructed on a 20 ha industrial zoned piece of land located north of the existing Orano Desalination Plant. The following facilities are proposed to be constructed:

- ◆ WaveRoller and Green Hydrogen Cooking Stove (HyCooker) Workshop
- ◆ Sulphur Plumes Research & Development Centre

9. POTENTIAL IMPACTS

Potential environmental and social impacts associated with the proposed pilot project development have been preliminary studied and will be assessed in the ESIA, these are as follows:

Potential Marine Impacts:

- ◆ Aquatic and marine disturbance and displacement.
- ◆ Marine fauna and flora impact.

Potential Social and Economic Impacts:

- ◆ Employment creation and electricity provision.
- ◆ Potential visual impact.
- ◆ Provision of renewable energy and reduction in carbon emission.

The construction of the industrial area and underground cable route to the substation is likely to have environmental impacts as follows:

- ◆ Fauna and Flora disturbance.
- ◆ 3rd Party Air Quality and Noise impacts
- ◆ Waste Management and Hydrocarbon Spillages
- ◆ Traffic
- ◆ Heritage and Archaeology

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10. STEPS IN THE EIA PROCESS

Phase I - Internal Screening (Month 1)

- ◆ EIA project initiation.
- ◆ Notify MEFT: DEA.
- ◆ Early identification of potential environmental issues.
- ◆ Submit Application form to MEFT
- ◆ Identify key stakeholders.

PHASE II – Combined Scoping & Assessment Phase and Environmental and Social Management Plan (ESMP) (Months 1-2)

- ◆ Notify other regulatory authorities and IAPs of the proposed project (via newspaper advertisements, this document, emails, site notices).
- ◆ Site visit.
- ◆ Conduct public meeting and key stakeholder (focus group) meetings.
- ◆ Assess impacts of proposed projects and compile Scoping (including assessment) report and ESMP.
- ◆ Comment period: Reports will be made available for review and comment by regulatory authorities and registered IAPs.
- ◆ Compile final reports.
- ◆ Submit the final reports to MEFT for its review and decision-making.

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