



Development of Micro Hydro Pilot Projects in Africa

(Ultra Low Head Micro Hydro Power: ULH-MHP)

August 27, 2016

 **JAPAN ASIA GROUP LIMITED**

 **JAG Seabell Co., Ltd.**

□ Japan Asia Group Limited (JAG)

- A Holding Company Publicly listed on the Tokyo Stock Exchange
- Through its group companies, engages in various types of business
 - Green Energy Business:
Photovoltaic, Wind Power, Hydro Power
 - Geospatial Information Consulting Business:
Aerial Survey, Disaster Defense
 - Green Property Business:
Smart-city Development (Energy Saving Town by IT)
 - Financial Services Business:
Securities Brokerage, Asset Management

□ JAG Seabell Co., Ltd. (Seabell)

- Became a group company of JAG in 2014
- Invented Ultra Low Head Micro Hydro Turbine System, **STREAM** in 2008
- Developing **STREAM** Business in Japan, Asia and Africa
(India, Vietnam, Myanmar, Korea, Kenya and Ethiopia)

Main Product of Seabell



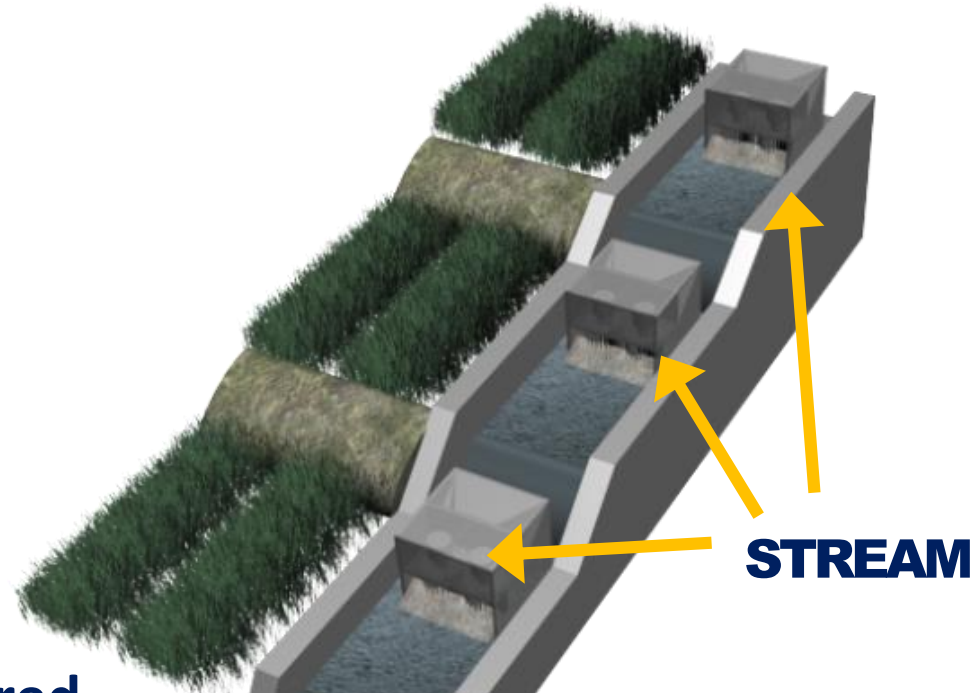
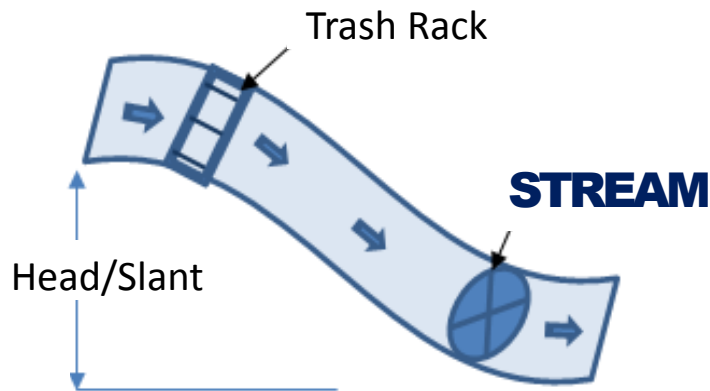
Ultra Low Head Micro Hydro Turbine System

STREAM[®] (Patented in 50 countries)

- Renewable & Low Carbon Low Emission Energy generating for 24 hours
- Vertical Dual Axis Turbine System for efficient Water Energy conversion
- Easy installation in existing waterways (no need for dam or penstock)
- Suitable for Off-grid power system
- Easy Transfer of Technology



STREAM Installation in Existing Waterways



- No bypass canal is required.
- Multiple units can be directly installed into the spillway.

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Minimizing the Construction Cost and Period

STREAM Global Installation



More than 60 Units of Stream were Installed globally



MWEA Irrigation Canal Project

Project Outline

- Location : MWEA irrigation canal, Kirinyaga county, Kenya (about 100km from Nairobi)
- Sponsor : UNIDO
- Installed : In 2015
- Rated Output : 15kW x 2 units
- Water volume : 2.0m³/sec Head : 1.6m



Fentale Irrigation Canal Project

Project Outline

- Location : Fentale irrigation canal, Oromia region, Ethiopia (about 160km from Addis Ababa)
- Sponsor : UNIDO
- Installed : In 2015
- Rated output : 30kW x 1 unit
- Water volume : 3.1m³/sec Head : 2.2m



➤ Pros and Cons of New Power Projects by **STREAM**

The Project to supply electricity generated locally:

- Enhances the Social Activities of the Local Communities
- Creates the new temporary or permanent Jobs
- Develops the competences in Operating and Maintaining the Plant
- Diffuses the concept of Clean Energy among people

Whereas:

- Cost of Electricity supplied by **STREAM** is higher than local electricity charge
- IPP business by **STREAM** is not Feasible at the moment without Public Supports

➤ For the Further Development of **STREAM** projects

The following Commitments are still essential for driving the projects in Africa:

- The strong commitment in the Projects by the local Governments
- Financial supports from Japanese Government (METI) or others
- Coordination and Implementation of the Projects by UNIDO

Our Commitments are:

- Further effort to reduce the price of the power unit, **STREAM**
- Collaboration with local partners for development of EPC business or Maintenance Business (including education for local people)
- Transfer of technology for manufacturing **STREAM** locally

Our Future Goal in Africa
IPP/MHP Business with Private or Public Local Partners