

# Hydraulics



# Definitions

- **Environmental Footprint** - the negative effect a person/company has on the environment with what they produce in the environment
- **Endangerment of Ocean life**
  - Fish can get sucked inside of the system
  - It is important because systems everywhere has caused a risk in ocean life population
- **Fish Hatcheries** - A hatchery is a mix of a laboratory and a farm where fish and shellfish are spawned, hatched, and cared for.
- **High CO2 Levels** - Excess amounts of CO2 can have negative effects on human health by displacing oxygen in the atmosphere and making it more difficult to breathe.



# Challenge

## We plan to solve:

- Environmental Footprint
- Endangerment of Ocean Life

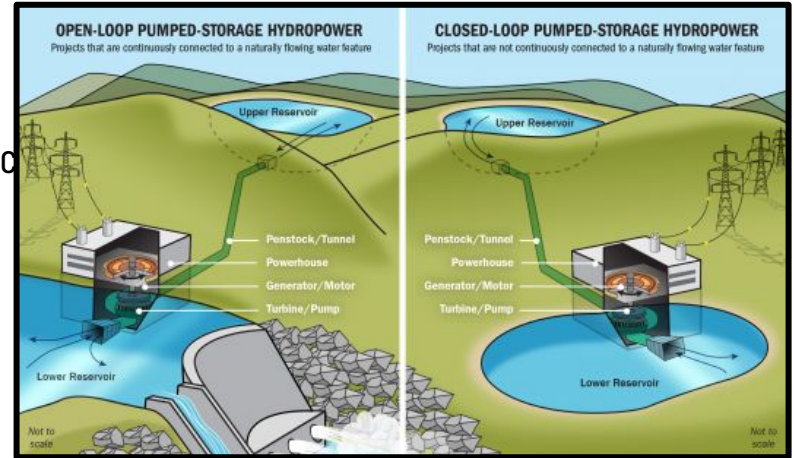
## How?

- Our hydrosystem will be located in South America, Asia and Africa
- A net will be placed where the system retrieves water



## Why These Locations?

- They have less environmental footprint



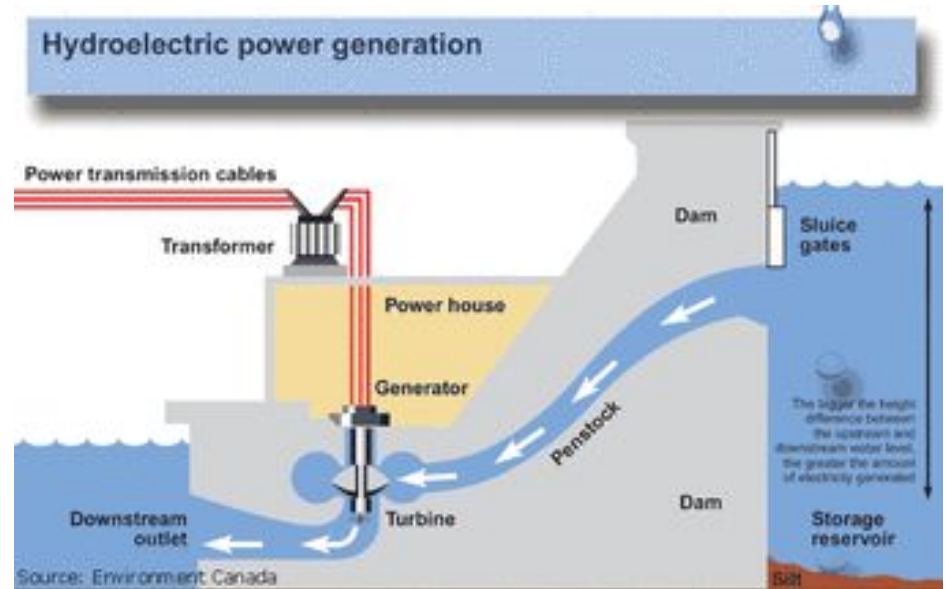
# Innovation

## Major Changes:

- Supplying clean water
- Not harming sea life

## What features?

- Filtration System
- Generator (for clean energy)



# Innovation Continued..

## Analysis

When the Water is brought in through the pipe, first a metal barrier would bring in the water, but leave the sea life out. Second, some trash may be brought in through the pipes, so the water would flow down a another filtration system that makes the Garbage go to a designated area, where it could properly be disposed, and the water would then go down a path where it would spin a turbine to then produce power, and bring the water to a river at the bottom of the Dam.



# Viability

## Is this environmentally safe?

- Plan to protect sea life by constructing fish passage facilities
- Building fish hatcheries and controlling temperature and oxygen levels coming from the dam.

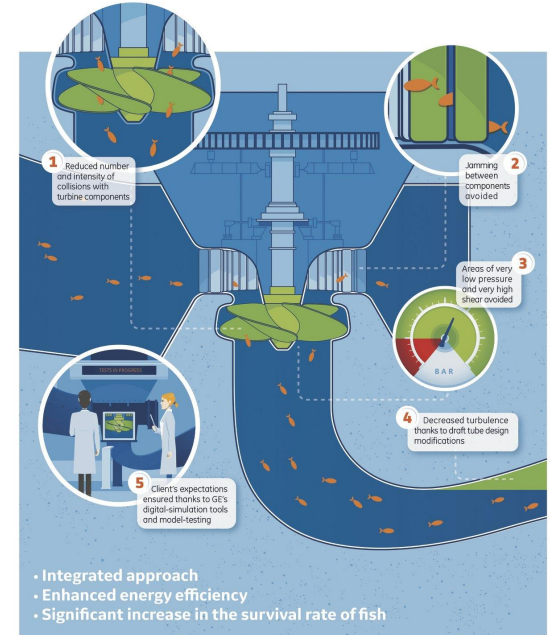
## Is this financially viable?

- Updating already existing factories gives us the opportunity to focus on creating better systems.



## Fish friendly turbine

Whether fitting new turbines, or retrofitting existing equipment, GE Renewable Energy offers innovative and integrated solutions, so that migrating fish are preserved and, when necessary, levels of dissolved oxygen are increased.

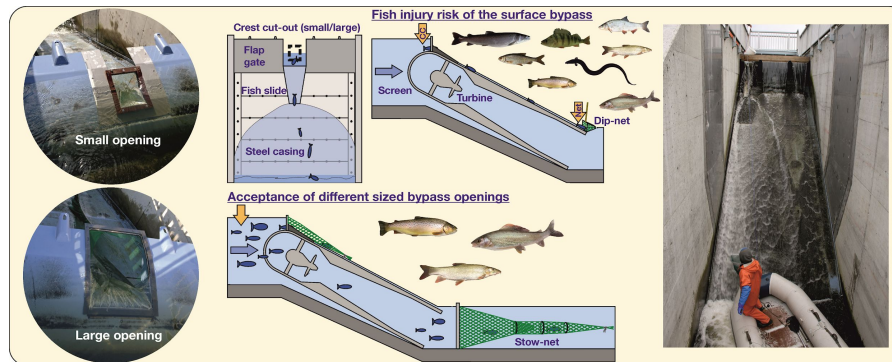


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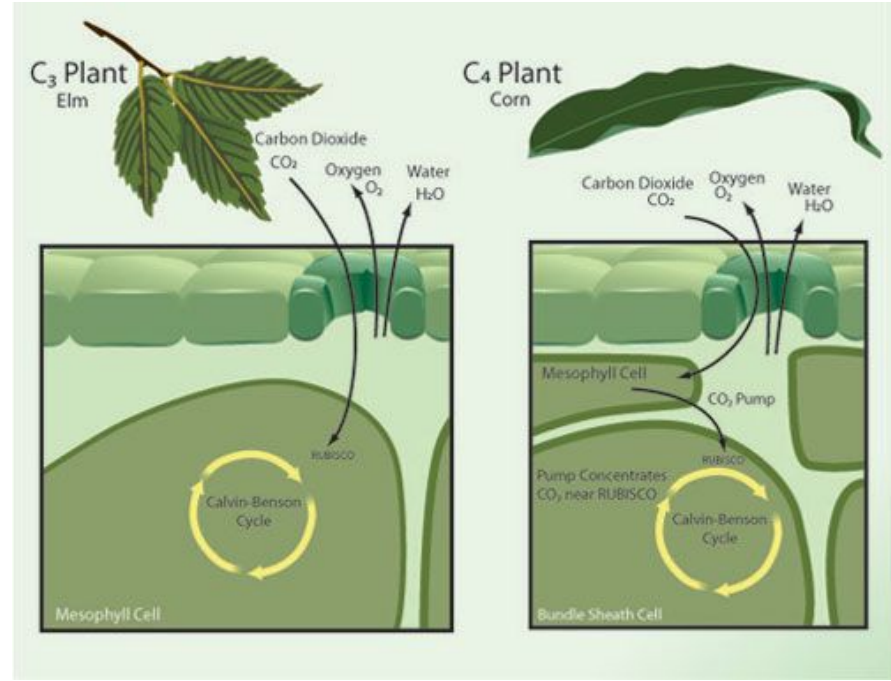
# Analysis

- Creating fish hatcheries will prevent any harm coming to the fish which means they will not be disturbed in their own environment
- Helping keep the fish alive means that they are able to play their part in keeping the ecosystem
- We will also not use shallow waters in our hydropower system since plants in those waters help greatly to better our environment.



# Analysis

- Shallow waters are the homes to many animals and plants that helped to control the CO<sub>2</sub> levels in our ecosystem
- Interrupting their way of life will be extremely detrimental. The technology to do this is already being developed so the next step into the future will be to incorporate it into new hydropower systems.





# Timeline and Costs

## Timeline

- This project will last around 6 years
- Building fish hatcheries and other fish protection programs will be prioritized before the building of the Hydro-System
- This will include geological assessments



## Cost

- Estimate: \$1,000 - \$3,000
- Cost would include
  - Filtration system
- System will be built on an existing site