



**NICHE
MACHLEE
UPAR
BIJLEE**

Giriraj Singh & Sanjeev Srivastava

**“Integration & Optimization of Fisheries
development through sustainable energy
production by solar energy”**

**A Concept by
SHRI GIRIRAJ SINGH,
AND
SHRI SANJEEV SRIVASTWA**

OVERVIEW OF FISHERY SECTOR OF BIHAR

**IMMENSE POTENTIAL
FOR DEVELOPMENT
OF FRESHWATER
FISHERIES.**

**RESOURCES UTILIZATION
IS REQUIRED**

ABUNDANT RESOURCES

**e.g. RIVERS-3200 KMS,
CHAURS AND
FLOODPLAINS WETLANDS-
34878 HA
OXBOW LAKES /
MAUNS-16172 HA.
RESERVOIRS-8612 HA
PONDS AND TANKS-25103
HA**

**SHORT SUPPLY
ANNUAL DEMAND
4.56 LAKH METRIC TON**

**IMPORT of
Fish
WORTH
Rs.2050
CRORES**

Mission

- **Promotion & Self dependency of Fish Production in Bihar**
- **Economic development of the local farmers by self governance**
- **Maximum utilization of waste land without any compromise on agricultural land whatsoever**
- **Environment friendly Clean energy management system through solar energy.**
- **Environment : Rain water harvest and water table management.**



Issues

• AQUACULTURE

- Despite abundant aquatic resources fish supply is short of demand in the State of Bihar.
- Aquaculture and culture-based fisheries are the options for enhancing the productivity of more amenable waters such as Chaur, ponds and the oxbow lakes (*mauns*) with immediate results.
- It can be a potential means of reducing over need to import fishery products, it can mean an increased number of jobs, enhanced sport and commercial fishing

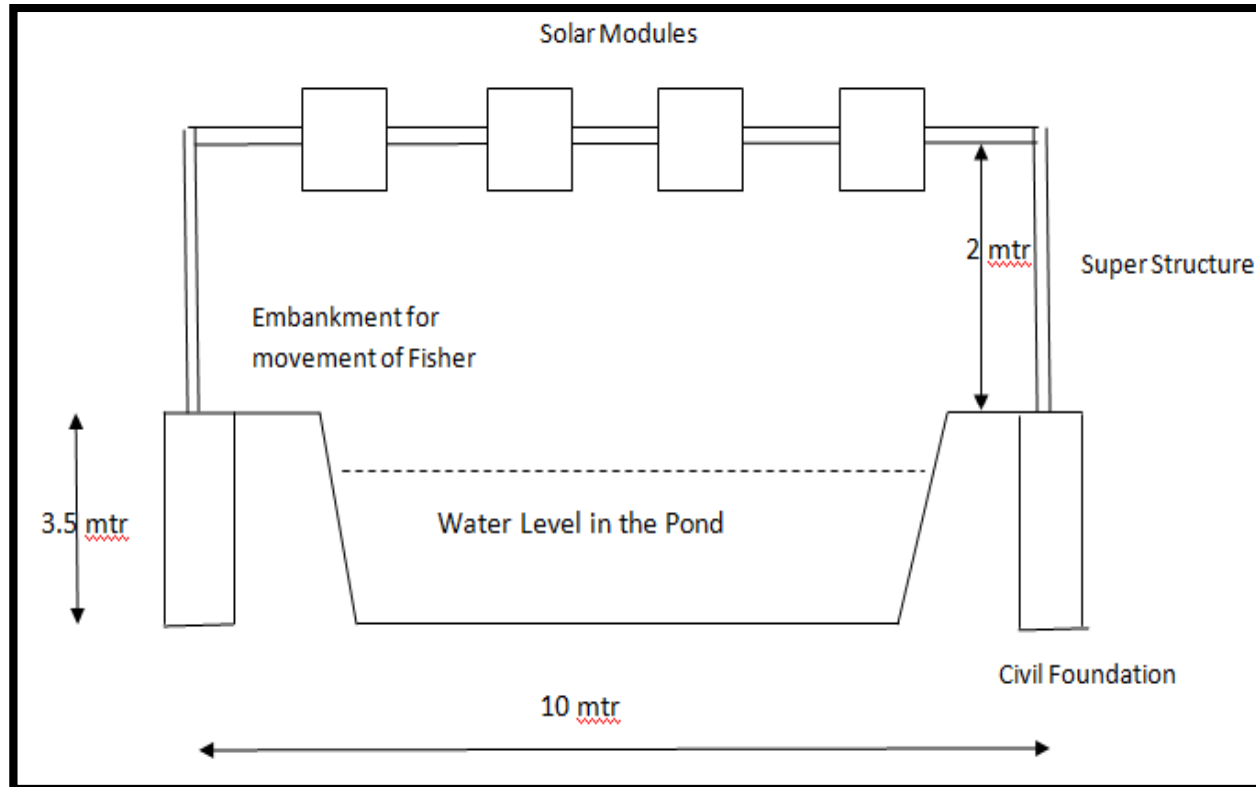
• Energy Development

- GDP growth backed up by the development of energy sector.
- Negligible conventional resources for power plant.
- Abundance of renewable energy resources in solar.
- Free fuel cost.
- Environment friendly technology.
- Push factor through government regulations.
- High requirement of land uses.
- Intensive upfront capital requirement

Issues with both sector can be utilized to complement each other thereby optimizing the business needs and maximizing the profitability and passing the same to the local community.

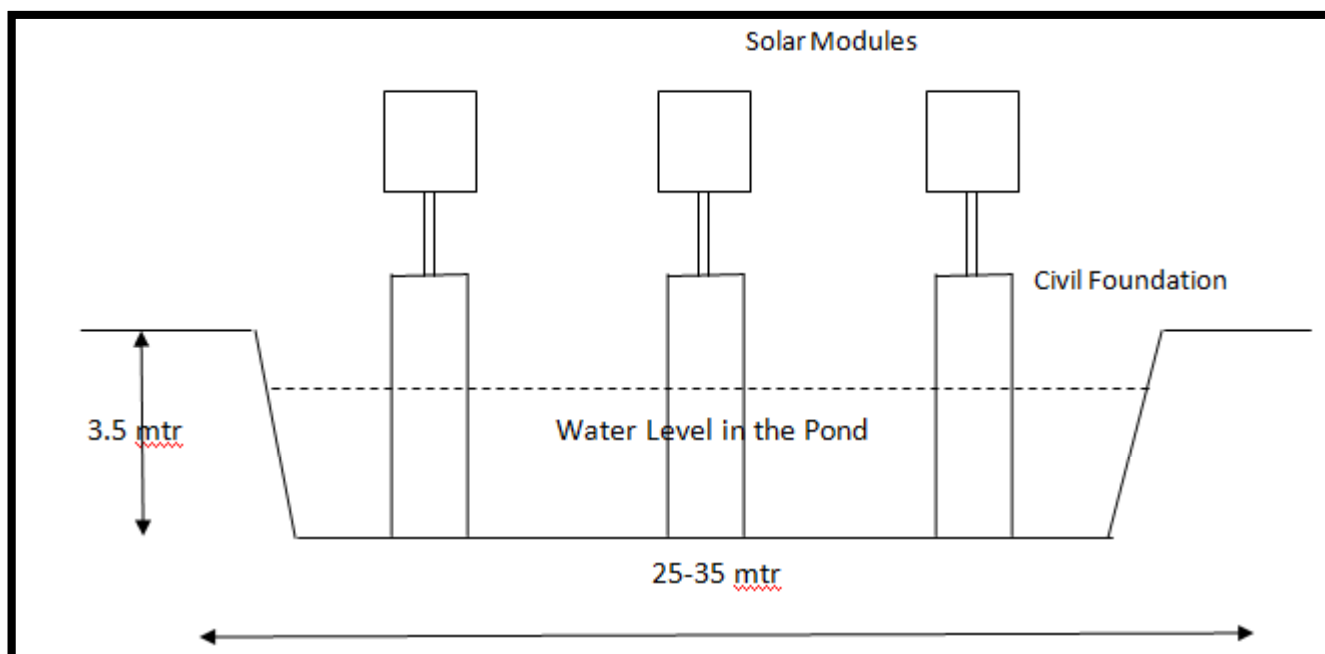
TENTATIVE CONCEPT DESIGN OF POND AND SOLAR STRUCTURE

Following two design concepts are proposed to be used as reference:



Development of Chaur land in trenches of width 10 mtr and depth of 3.5 mtr and making a structure of 2 mtr above the bund level. In such design, manual fish harvesting can take place.

TENTATIVE CONCEPT DESIGN OF POND AND SOLAR STRUCTURE



Development of Chaur land in trenches with width of 25-35 mtr and depth of 3.5 mtr and making structures within the pond to hold the modules. In such design, manual fish harvesting cannot take place and water is to be drained through sluice gate to an empty pond/reservoir or nearby canal.

BASIC DESIGN OF POND AND SOLAR STRUCTURE

CANAL DESIGN

- Land provided for the development of canal shall have soil which holds the water in place for example like clay ie the soil should have good content of clay.

SOLAR POWER PLANT INSTALLATION

- In order to install a 25MWp Solar Power plant on a 10mtrs wide canal, as per above calculation the approximate length of the canal shall be 19,134mtrs say, 19,500mtrs.

CANAL EXCAVATION

- With the depth of canal being 3.5mtrs the total volume of earthwork required shall be 6,82,500cu.mtrs for the said length of canal.
- The excavated canal will have to be compacted artificially in order to avoid any possible erosion of soil over the period of time. The sides of the canal shall have stone pitching in order to further hold the soil in place.

FISH FARMING

WATER

- Water must be available at all times and in good supply.
- A dependable source of water supply must be available near the site.
- There should be adequate water to fill the ponds.
- Maintenance of a water level which does not fluctuate more than 50 cm.

SOIL

- The soil of the pond must be able to hold water.
- It also contributes to the fertility of the water due to its nutrients.
- The best soil for a pond is one that contains a lot of clay.
- If the clay is more in the soil, its water retention capacity is more, and it is better for building a pond.

TOPOGRAPHY

- The most useful topography for fish ponds is that which allows water to fill the ponds and drain them by using gravity.
- Ponds built on a slope, can be drained easily.
- The site should be so selected that the earth available by excavation should, as far as possible, balance with the earth required in filling or raising dykes.

SITE SELECTION

- **FOR PISCICULTURE FOLLOWING ASPECTS ARE REQUIRED TO BE KEPT IN MIND BY THE DEVELOPERS FOR SELECTING THE PROJECT SITE:**
 - a) **Availability of land in a continuous, suitably shaped plot of optimum size.**
 - b) **The site should have assured water supply of adequate quality either surface or ground water.**
 - c) **Soil and water of the site must be suitable for fish culture.**
 - d) **The site should be free from floods**
 - e) **The site should have good transport facilities and approach roads.**
 - f) **The fish seed should be available easily and in plenty in that area**
 - g) **Marketing facilities should be available near the site.**
 - h) **The site should be away from populated areas.**
 - i) **The site should be connected to a drainage system.**
 - j) **The site should be away from polluted areas.**
 - k) **The fishermen or labour should be available near the site.**

CHAURS LANDS

Flat land with a slope around 1% to 2% in whole land. Available soil strata is of alluvium containing heavier soil with greater clay proportion, as shown in image



ISSUES RELATED TO OPERATION AND MAINTENANCE OF POWER PLANT

- Skilled manpower
- Approach of power plant during rainy season
- Cleaning of modules
- Stability of grid
- Timely payment

Input invited, please contact Mr. Sanjeev Srivastwa : +919830066516
Email Id: sanjeev@organicbihar.com

THANK YOU