

Through technological improvements, behavioural changes and effective Monitoring Control and Surveillance (MCS), capture fisheries can reduce the energy consumption and emissions; reduce ecosystem impacts, without significantly impacting on the fishing efficiency. The project has a broad appeal since it aims to address some of the core issues confronting fisheries world over and also endeavours to mitigate issues related to climate change and global warming and a modest step towards making fisheries green.

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# GREEN FISHING SYSTEMS FOR TROPICAL SEAS

### Funding Agency



National Fund for Basic, Strategic and Frontier Application  
Research in Agriculture (NFBSFARA),

**ICAR**

The objective of National Fund for Basic, Strategic and Frontier Application Research in Agriculture (NFBSFARA) under the ICAR is to build capacity for basic and strategic research of national and long-term importance to break yield and quality barriers and make India a global leader in research for development, through the partnership of all research organizations who can contribute towards this objective.

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## Introduction

Modern fishing is one of the most energy intensive methods of food production. Motorised and mechanised fishing vessels use fossil fuel combustion as the main source of energy, generating large amount of green house gases and leading to irreversible climatic and oceanographic changes.

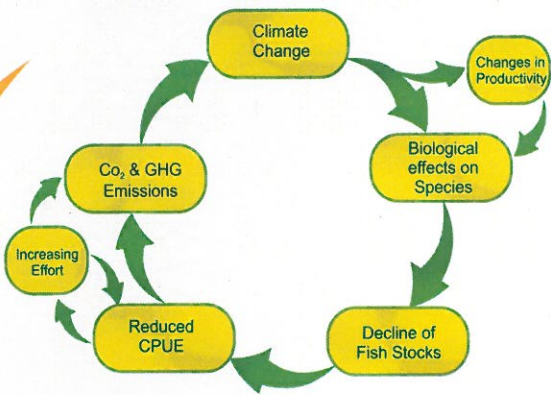
### World capture fisheries (2005)

- Consumes 50 billion litres of fuel annually
- Releases about 134 million tonnes of CO<sub>2</sub>
- 1.7 tonnes of CO<sub>2</sub> per tonne of live-weight fish landed

### Indian capture fisheries (2000)

- Consumes 1220 million litres of fuel annually
- Releases about 3.17 million tonnes of CO<sub>2</sub>
- 1.13 tonnes of CO<sub>2</sub> per tonne of live-weight of marine fish landed

According to marine fisheries census of 2010, the marine fishing fleet of India consists of 1,94,490 crafts out of which 37% are mechanised, 37% motorised and 26% non motorised. Operation of mechanised and motorised vessels contribute significantly to the generation of GHG.



Climate change, reduced stock, more effort, increased CO<sub>2</sub> & GHG - a Vicious Cycle



Modification to the vessel technology, fishing gear modification and adoption of energy saving operational interventions are the three main approaches which can make a visible dent in the efforts to conserve energy during fish harvesting. Some of the modifications to conserve energy in vessel technology are the optimisation of hull, propeller and machinery design.

Trawling consumes nearly 5 times more fuel compared to passive fishing methods such as long lining and gill netting and over 11 times more fuel compared to purse seining for every kilogram of fish produced. Optimized energy efficient resource specific fishing gears and improvements in operational methods are other approaches to save energy.

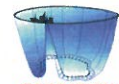
The combined synergistic effect of all the above factors will help in significant reduction in fuel consumption and thereby making fish harvesting more energy friendly, resource specific and hence more greener.



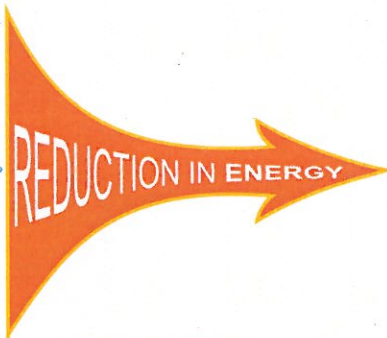
VESSEL



GEAR



OPERATION



GREEN FISHING SYSTEMS

## About the Project

Concerted efforts to decrease fuel consumption in the fishing sector has been attempted in the country by researchers. In order to achieve energy efficiency in fishing, the Central Institute of Fisheries Technology has undertaken a project on 'Green Fishing Systems for Tropical Seas' in joint collaboration with Goa Shipyard Ltd., Garware Wall Ropes Ltd. and DSM India Pvt. Ltd. with funding from National Fund for Basic, Strategic and Frontier Application Research in Agriculture (NFBSFARA)

It is for the first time that a project under basic and strategic research in fisheries has been taken under the public private partnership (PPP) mode with a total budgetary outlay of Rs. 12.25 Crores. The project aims to achieve the following objectives:

Design and construction of a 19.8 m energy efficient new generation combination fishing vessel.

Development of energy saving selective fishing gear systems through material substitution and design optimization.

The outcome of the project is intended to benefit the fishing industry in particular and will also benefit researchers and policy makers in general; by quantifying and evaluating the characteristic parameter and operational efficiency of the existing fishing craft and gear design against target performance values. The new generation energy efficient combination green fishing vessel envisaged to be constructed under the project will be a standard model for replication in the tropical waters. Development of optimised gear designs with new generation gear materials is another highlight of this project.

