Innovations in the trawl fisheries of Karnataka and its possible impact on fisheries sector

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Mechanisation of fishing operation in Karnataka was initiated with the introduction of 30 to 43 feet trawlers in 1957 for exploiting inshore demersal resources including shrimps. Introduction of purse seiners in the 1970s extended the area of fishing operation and enhanced pelagic fish landings significantly. Motorisation of traditional crafts like gillnetters and longliners and encouragement of offshore fishing beyond 50 m depth using bigger vessels for duration of 12-15 days have effectively increased the range and effort of fishing operations. Further, financial institutions have extended loan facilities for acquiring fishing boats which helped to enhance the fleet strength.

Presently, out of 10,892 mechanised crafts in the state of Karnataka, there are 4,482 trawlers alone. The rest is constituted by purse seiners, gillnetters and longliners. The steel trawlers, an innovation introduced in the marine fisheries of Karnataka 14 years back, has brought about a visible and phenomenal increase in the capture fisheries sector by virtue of its bigger size, larger fish holding capacity, longer fishing duration and durability to endure rough weather at sea.

Single-day trawlers are operated using Ruston engine of 35-75 HP. The crew consists of 4-5 men. The species caught by such fleet include prawns, lobsters, crabs, anchovies, silver bellies, scombroids, pomfrets and ribbonfishes. The boats operate mainly shrimp nets with cod end mesh size of 10-12 mm. These units leave the shore during early morning and return the same day afternoon after fishing for 5-6 h. Multi-day trawlers are now mostly steel trawlers with a length of 55 feet and operate using Ashok Leyland engine of 130 HP. They operate at a depth of 500 m and each trip lasts for a period of 10 days. The diesel consumption of these units is 5000 l and the fish holding capacity is 20 t.

According to the catch and effort data analysis of CMFRI (2002-2008), the present multi-day trawler effort in Karnataka is 33% more than the required effort to exploit the resources of the coast. The calculation is based on the engine capacity of the fleets pertaining to the period. Steel trawlers are increasingly becoming preferable over wooden trawlers because of the advantages like bigger fish holding capacity, less maintenance/repair cost, better capacity to withstand rough weather conditions *etc*. The steel trawlers can venture into longer distances at sea and at deeper fishing grounds when compared to wooden trawlers. Yet another modification noticed in the case of steel trawlers is the advent of Chinese engine operated steel trawlers. Introduction of Chinese engine for trawling appears to make disparity in the income generated by the trawlers operated with traditional engines. Chinese engines with nearly double the capacity (240 HP) are virtually utilising almost double the fishing effort when compared to traditional engines. This increased use of engine power/unit is equivalent to increasing the

number of fleets in the fishery. Fishers are smart enough to make good for the loss of catch incurred due to effort restrictions by modifying their gear or craft through a process known as "technological creep". In the case of Chinese engine operated trawlers, the speed is 11 nautical miles and that of trawlers with ordinary engine, the speed is 8 nautical miles. The consumption of diesel by Chinese operated engine is 22 l h^{-1} and for ordinary engine it is 12 l h^{-1}. Chinese engine has got bigger fan size and the blade length of fan is 28 inches, width being 14.5 inches and has a weight of 140 kg. The blade length of fan of ordinary Leyland engine is 21 inches; width 12 inches and weight is 110 kg. From resource point of view, the additional capacity of trawlers equipped with Chinese engines are going to put additional pressure on the resources which are already on the verge of overexploitation.