Capture fisheries production and its economic role in Pakistan

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This study showed that capture fisheries productivity in Pakistan is decreasing with the passage of time. This might be due to the overexploitation as the capture of fish often goes beyond maximum sustainable yield (MSY) value of our existing resources. Moreover, low profit, lack of resources and improperly trained fishermen are the main factors which are responsible for the decreased capture fisheries production in Pakistan. Although there is an increasing trend in the export of fish, however, the rate is very low. Thus, the economic contribution of capture fisheries in Pakistan is gradually declining which must be controlled through effective measures.

[Key words: Fisheries, Capture Production, Capture Effort, Economic Role, Trade Flow, Pakistan]

Introduction
Pakistan is an agriculture based country in which about half of the employed labor force, either directly or indirectly, works in this sector. This sector’s contribution to GDP is about 25% and a main source of foreign exchange¹. Fisheries, sub-sector of agriculture, plays a vital role in economic development. Overall, in Pakistan 400,000 people are directly involved with this sub-sector and 600,000, in addition to this, in ancillary industries². It supports the livelihood of about one million people living along the coastline of Sindh and Balochistan³. Fisheries sub-sector helps in fighting to eliminate hunger by ensuring food security⁴. Pakistani aquatic resources are rich in diverse biota⁵. Despite of this blessing, inland contribution towards fisheries capture production is low. Various reasons for this include lack of knowledge, fishing gears and proper training with motivation⁶.

Previous literature focused on biology, ecology, physiology etc. of fishes in Pakistan⁷-¹¹, and do not explain their economic potential for prosperous Pakistan. There are only a few studies that bridge fisheries sub-sector with economic perspective in Pakistan¹². However, there is lack of literature on fisheries capture production and its economic role in Pakistan. In these perspectives, the present study was planned to analyze fisheries capture production in Pakistan with its impact on the economy of the country.

Materials and Methods
The research method used was desk study. Literature related to project objectives was explored online by reading available websites displaying reports, data papers, research papers, short communications, opinion article or any document with objective relevance. Extensive review of literature was done to pursue project objectives. Data in the form of numbers, represented by figures, was obtained from Food and Agriculture Organization of the United States (FAO) while data in the form of characters, incorporated at various places in the text, was obtained from various organizations. Fisheries catch statistics ranging from 1950 to 2012 was obtained by using FishStatJ – FAO Global Fishery and Aquaculture Statistics Software¹³ or FAO published...
yearly books. Public and private groups including Marine Fisheries Department (MFD), Fisheries Development Board (FDB), The Ministry of Food, Agriculture and Livestock (MinFAL), Small and Medium Enterprise Development Authority (SMEDA), Karachi Fisheries Harbor Authority (KFHA), Punjab Fisheries Department (PFD), Pakistan Fisherfolk Forum (PFF), The United Nations Industrial Development Organization (UNIDO) and The International Fund for Agricultural Development (IFAD) were either contacted or explored through internet surfing. Data gathered was represented by making graphs. The graphs were made by using Microsoft Word Excel 2007.

Results
Total and average aquatic capture production was computed as 4,609,831 and 460,983 t (tonnes) respectively. Capture production quantity has decreased from 49,134 t in 2003 to 469,290 t in 2012. Least capture production quantity, 434,850 t, was recorded in 2005 (Fig. 1). Fisheries capture production has increased more than double from 1976 to 2011, 179,485 to 413,291 t respectively. Maximum production, 612,444 t, was observed in 1999. However after this peak, production has shown decreasing trend (Fig. 2). Marine production dominates inland capture production, however both show decreasing trend in capture production. Marine capture production has decreased by 125,630 t while inland by 4,245 t (Fig. 3). In contrast to marine and freshwater fish, the capture production of diadromous fishes show decreasing trend. Maximum capture production of these fishes was observed in 1993 (455,984 t), 1999 (179,865 t) and 1971 (13,300 t) in that order (Fig. 4).

Capture production of marine fishes i.e. herrings, sharks, tunas and M (Miscellaneous) fluctuated over time. In 1950 and 2012, the capture production for all these four listed marine fishes was 2,800 t, 4,800 t, 2,100 t, 7,800 t and 50,522 t, 12,732 t, 50,323 t and 192,192 t respectively (Fig. 5). We found no data representing capture production of freshwater fishes separately (species wise or category wise). The only available capture production cumulative data for freshwater fish have already been represented in Fig. 5.

Capture production of miscellaneous diadromous fishes (MDF) and Shads showed decreasing trend. Maximum capture production of MDF and Shads was reported in 1982 (3,018 t) and 1956 (13,000 t) respectively (Fig. 6).

Although there is decreasing trend in the number of fishers yet after 2000 it showed rising drift (Fig. 7). In 1995, the number of unmotorized and motorized vessels was 12,820 and 21,437 respectively. The number of unmotorized vessels decreased while the number of motorized vessels increased gradually and reached at 17,480 and 18,300 in 2012, respectively. The use of unmotorized vehicles with the passage of time is decreasing while motorized vehicles are gaining popularity with the passage of time (Fig. 8).

The volume of trade involving seven fishery commodity groups, as indicated in Fig. 5, has increased during the years 2009 to 2012. In 2009 there was an export of 228.485 million (m) USD. It rose up in the coming years and reached at 282.832 m USD in 2012. Increasing trend is also found in import value starting from 2.004 to 5.385 m USD in 2009 and 2012 correspondingly (Fig. 9).
Fig. 3 — Marine and Inland Capture Production of Fish
Source: FAO Fisheries and Aquaculture Department

Fig. 4 — Capture Production of Marine, Freshwater and Diadromous Fishes
Source: FAO Fisheries and Aquaculture Department

Fig. 5 — Capture Production of Marine Fish
Note: M = Miscellaneous
Source: FAO Fisheries and Aquaculture Department

Fig. 6 — Capture Production of Diadromous Fish
Source: FAO Fisheries and Aquaculture Department

Fig. 7 — Number of Fishers
Source: FAO yearbook 2012

Fig. 8 — Number of Fishing Vessels
Note: UMV = Unmotorized Vessels, MV = Motorized Vessels,
T = Total
Source: FAO yearbook 2012
Fig. 9—Total Value of Trade (Seven Fishery Commodity Groups)
Note: 1: Fish, fresh, frozen or chilled 2: Fish, dried, salted or smoked 3: Crustaceans and Molluscs 4: Fish products and preparations 5: Crustacean and Molluscs products 6: Oil and fats of aquatic animal origin 7: Meals, solubles or similar foodstuff of aquatic animal origin.
Source: FAO yearbook 2012

Fig. 10—Export Quantity and Value of Fish
Source: FAO Fisheries and Aquaculture Department

Fig. 11—Import Quantity and value of Fish
Source: FAO Fisheries and Aquaculture Department

Data obtained has shown that there has been an increasing trend in the export of fish. In 1976 exported fish quantity was just 8,374 t (4,134 m USD). It gradually increased and climbed up at 64,359 t (100.741 m USD) in 1993. In the next year it dropped at 45,147 t (59.270 m USD), however it again begin to rise and again reached at 111,495 t (170.19 m USD) in 2009.

The final year of our study, 2011, showed an export value of 110,847 t (227.125 m USD) of fish (Fig. 10). Like export, there is an increased trend in the import of fish after 2000. In 2000, the import quantity was only 38 t (0.061 m USD). In the following years, it increased and reached at 2,206 t (2.141 m USD) in 2007. Year 2008 showed decreased import i.e. 1,589 t (1.821 m USD). Import increased in next years and it rose again at 1,688 t (4.313 m USD) in 2011 (Fig. 11).

Discussion
Despite of increase in total fish production in Pakistan there exist decreasing trend in capture fisheries production probably due to overexploitation. Heavy fish harvest resulted in decreased biomass in coming years as it happened in 2005 and 2007. Many studies have ended up with a conclusion that Pakistani waters have been heavily harvested for aquatic organisms beyond sustainable range. For example, data obtained on catch and effort of Silver Pomfret, *Pampus argenteus*, analyzed with CEDA and ASPIC packages have shown that this creature has been overfished. Similar results have been found about Barramundi *Lates calcarifer*, Bombay Duck *Harpodon nehereus*, Greater lizardfish *Saurida tumbil*, Kiddi Shrimp *Parapenaeopsis stylifera*, spiny lobster fishery and Hilsa Shad *Tenualosa ilisha*.

This abnormal fishing effort is not only responsible for decreased capture production but also ruin aquatic ecosystem in the region. Many local and international organizations are striving to improve this prevailing condition. FAO is involved in Marine Resource Assessment Project aiming to evaluate fishery stocks for making better fishery policies.

Due to the efforts of UNIDO our government is now investing 800,000 USD for the renovation of fish auction hall in Karachi and upgradation of 19 labs.

IFAD is striving to improve the livelihood of the people by promoting fisheries sub-sector. Thus, the situation is expected to improve due to these efforts.
Now, there is more awareness about fisheries sub-sector in Pakistan among people due to public as well as private sector efforts\textsuperscript{24}. In past, only fisher folk families remained engaged with this business but the trend is changing nowadays. Considering fishing as a profitable business more people are getting involved with it and the graph of people associated with this agricultural sub-sector is increasing. It can be noted that since 2000 there is an increase in the number of fishers. However, in Pakistan earnings of fisherman are very low. Market instability, poor management, lack of training and resources are the major factors responsible for less fish production and slow development in this sub-sector\textsuperscript{5}. That is why majority of fisherman are still using old way of fishing by employing un-motorized vessels and this sub-sector is still infancy.

Pakistani fisheries sub-sector is facing many problems. Overall, there is decease in fish catch due to pollution, overfishing and the use of unchecked fishing nets. Even there is no proper cold supply chain. After several warnings and suggestions in 2007 EU banned Pakistani seafood. Due to this setback, just in few days orders of million rupees were cancelled. TRTA programme, funded from EU and run by UNIDO, was implemented to alleviate this situation by improving hygiene, quality management and traceability along the entire fishery supply chain. It is implementing SSOPs (Sanitation Standard Operating Procedures) and HACCP (Hazard Analysis Critical Control Point) by involving marine fisheries department (MFD) and Karachi Fisheries Harbor Authority. At the end of this four year project it is envisaged that ban on seafood export to the EU will be lifted by opening the window of prosperity for Pakistan people. There are many other positive steps and changes towards the betterment of this sub-sector such as now world fisheries day is celebrated with passion on November 21 of every year\textsuperscript{25}, and by holding various symposia or conferences, now there is more awareness among people about the importance of this agricultural sub-sector.

Conclusion

There is decreasing trend in fisheries capture production despite of increase in overall fisheries capture production. This is happening due to overexploitation of fishery resources, which results not only in ecosystem damage but also decreased biomass production. There is dire need to make such policies that must improve the standard of living of fisher folk.

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References