FROM OCEANS TO TABLE – THE FUTURE OF FOOD

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WORLD Food Day, observed on 16 October every year, is the UN's principal vehicle to drive action to combat hunger, malnutrition, and food insecurity worldwide. The 2023 theme of WFD titled 'Water is Life, Water is Food. Leave No One Behind,' is a poignant reminder highlighting the indispensable connection between water and sustenance. However, population surge, pollution, and climate change have put the fate of the limited freshwater resources and its dependents in peril. World's population is estimated to increase to around 10 billion by 2050, which would require the world to yield 60 percent more food that is currently being produced. With the business-as-usual case of water resource and degradation, traditional agriculture – which has already taken over about 40 percent of terrestrial land – will not be able to cater for the increasing mouths to feed.

With the land-based nutrition sources exhausted, the opportunity lies in exploring the rather untapped food sources from under water i.e., marine fish (and plants). Surprisingly, 70 percent of the Earth's surface is oceans, but it accounts for a mere 2 percent of human food routine. Globally, only 17 percent of total animal protein intake comes from fish where the oceans have the potential to supply 3 billion tons of food to 30 billion people. Currently, one billion people rely on fish as primary source of protein, which has the potential to increase as global production of fish and seafood has quadrupled over the past 50 years.

Having fish as a major food source has many benefits. Marine fish's readily digestible protein is crucial for muscle growth and recovery. They're rich in vital nutrients like vitamin D, selenium, and iodine, vital for boosting the immune system and maintaining thyroid function. Studies demonstrate that marine food-based are linked to lower risks of chronic diet-related ailments. The increased consumption of aquatic food offers notably greater nutritional advantages for women compared to men, benefiting them nearly threefold. Furthermore, marine foods are low in calories, making them an excellent choice for a balanced diet.

Furthermore, fish is fairly environmentally-sustainable as compared to other meat proteins. Fish generally produce 39.5 gram of CO2 per gram of protein as compared to 389 and 200 gram of that of cow and lamb meat, respectively. Low carbon footprint of marine fish can be attributed to low methane emissions, less resource intensity and shorter growth periods. However, the rampant unsustainable fishing practices have deteriorated the

marine fish stocks to the level that almost 90 percent of global marine fish stocks are now fully exploited or overfished. This is where aquaculture and Mari culture come into play. The human-intervened breeding, raising, and harvesting of marine fish (and plants) for food in marine ecosystems and coastal areas has become increasingly common in recent years. This has ensured consistent supply, reduced environmental impact, and food security while tackling issues such as Illegal, Unreported and Unregulated (IUU) fishing, emissions from fishing vessels etc.

Pakistan, having about 1001-kilometer-long coastline, offers immense potential marine fisheries' potential. Many commercially important fish species are caught and landed at 22 landing sites along the coast. Surveys show that in Karachi, the estimated annual fish consumption is 5 kg, whereas along the Makran coast, it amounts to 10 kg per year, which is insignificant compared to global coastal areas' fish consumption. The potential of having marine fish as a major food source is undermined by the fact that fishing boats often remain at sea for extended periods before reaching fish landing sites. This prolonged duration adversely affects the quality of the catch. Additionally, once the catch reaches the landing site, it is exposed to direct sunlight until it is sold. The repeated process of freezing and thawing the fish accelerates spoilage, rendering it unsuitable for consumption and transportation inland. Furthermore, the fishing during the breeding seasons have drastically reduced the fish stocks in Pakistan's coastal waters. Coastal and marine pollution, on top of the repercussions of climate change are some major factors that have negatively impacted the fisheries sector of Pakistan.

According to a stock assessment survey by FAO, capture fisheries in Pakistan are over-utilized. In the light of the aforementioned concerns, saline aquaculture and Mari culture emerge as rays of hope. Pakistan's coastal belt offers immense potential for marine aquaculture-related infrastructure such as hatcheries, ponds, cages, processing facilities etc. The potential can be unlocked by repurposing unused state land for aquaculture. This will ensure minimizing pollution, curbing overfishing, and preventing ecological degradation in marine ecosystems. These efforts would also provide the vulnerable fishing communities an alternative livelihood during the periods when fishing operations are halted during the breeding season. In this regard, provincial and federal governments need to incentivize technologies for effective aquaculture, ensure skilled human resource and awareness among the coastal communities as well as businesses/investors. Efficient supply chain, along with promotion of market demand for seafood across the country by culinary and cultural integration is imperative to ensure food security in the coming years, and the overarching objectives of SDGs (1, 2 and 3) and the promotion of blue economy in the country.