

Review of ADB Report

“Technical Assistance to the Islamic Republic of Pakistan for Preparing the Sindh Coastal and Inland Community Development Project”



**Participatory
Development Initiatives [PDI]**

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1. The Context

Pakistan's coastline has two provinces: Balochistan and Sindh. A total of 350 kilometers (km) of coastline extends along the province of Sindh. A combination of the subtropical environment and the Riverine flow into the Indus delta has resulted in a highly productive coastal zone of significant biodiversity and economic value. Recent estimates indicate that of the total marine resource production for Pakistan, 71% is derived from Sindh.

The coastal communities are the poorest communities in Pakistan and their livelihood resources are under constant threat of depletion. About 90% of the households in the coastal communities rely on fishing and other fisheries related activities. Besides fishing coastal agriculture and livestock rearing are also key livelihoods of the coastal communities. Illiteracy rates are very high- estimated at 90%. Almost two thirds of the households are indebted to informal sector. Rapid degradation of coastal resources has created a threat of socio-ecological catastrophe. Access to service provision, such as primary schools, mosque schools, health services and potable water is miserably low.

The key cause of the destruction of livelihood resources in Sindh coastal region especially in its two districts i.e. Thatta and Badin is the reduction in Indus River fresh water in the Indus Delta as a result of construction of barrages and dams upstream. Indus flow reduction has resulted in grave degradation of the agriculture, fisheries and forestry resources in the coastal region. Livestock sector has almost completely vanished as the green pastures have been replaced by the salinity, water-logging and seawater intrusion.

However, man-made disasters in the form of mega projects financed by World Bank and other international lending agencies have greatly added to the vulnerabilities and poverty levels of the local communities. For example Left Bank Outfall Drain [LBOD] funded by World Bank and more than 10 other international agencies has been playing havoc with the lives and livelihoods of the coastal communities since last many years as a result of design defects. Similarly, commercial shrimp culture project of ADB implemented in Thatta district some years back also greatly destroyed the local environment and livelihoods by increasing environmental pollution levels and degrading agriculture lands.

2. New Threats from WB/ADB Funded Mega Projects

Already bearing the brunt of mega projects of the past including LBOD, the poor and vulnerable coastal communities are facing new challenges and threats from the international lending agencies. Without any community consent or consultation and without any local level planning both World Bank and Asian Development Bank [ADB] are launching two mega projects in the coastal districts of Thatta and Badin.

Wrapped in the words of sustainable development, community empowerment etc both the project taking influence from both the agencies' globalization and trade liberalization agenda, are aimed at widely supporting commercialization of the natural livelihoods in the coastal region. The dangerous aspects of both the projects is that both the projects emphasis on the large scale infrastructure development especially the development of commercial fish ports as to facilitate the commercial fishing trawlers to trawl in the already degraded fishing resources of Sindh coast. Besides, the projects are also aimed at financing fish and shrimp culture in the coastal areas on the commercial basis. This is being proposed despite very adverse affects of such commercial shrimp and fish culture

financed by the same lending agencies in other developing countries. The commercial basis fish and shrimp culture is likely to degrade land and water resources of the coastal areas hitting hard the biodiversity and the natural resources. Besides, the introduction of commercial shrimp culture would greatly invite the commercial concerns including multinational food and export oriented business concern. In this way the local communities would greatly loss their control over their own natural resources and these resources would be unsustainably exploited by the commercial multinational companies.

3. Review of ADB Report “Technical Assistance to the Islamic Republic of Pakistan for Preparing the Sindh Coastal and Inland Community Development Project”

3.1 Brief of the Paper

Following is the brief of the paper taken from ADB Report:

I. INTRODUCTION

1. At the request of the Government of Pakistan, the Asian Development Bank (ADB) fielded a Fact-Finding Mission from 28 September to 9 October 2004 to develop a technical assistance (TA) proposal for the Sindh Coastal and Inland Community Development Project (SCICDP).¹ The Mission discussed the relevant issues with the federal Government and the government of Sindh (GOS). The preliminary project framework is in Appendix 1.

II. ISSUES

2. Pakistan's coastline has two provinces: Balochistan and Sindh. A total of 350 kilometers (km) of coastline extends along the province of Sindh. A combination of the subtropical environment and the riverine flow into the Indus delta has resulted in a highly productive coastal zone of significant biodiversity² and economic value. Recent estimates indicate that of the total marine resource production for Pakistan, 71% is derived from Sindh.³ The average annual income from marine commodity exports amount to PRs2.2 billion, of which 60% is attributable to shrimp and 40% to fish. Similarly, coastal agriculture (including livestock) continues to be an important contributor to the local economy in Sindh. The economies of the local coastal/deltaic community⁴ with approximately 2.3 million people, the majority of whom are poor⁵ are thus principally based on the fisheries industry and coastal agriculture; and for coastal communities, marine and coastal resources provide a primary source of nutrition.

3. However, as a result of water shortage issues and degradation of both groundwater and surface freshwater resources, which have been severely affected by seawater intrusion, potable water sources are scarce, with severe implications particularly for coastal farming. Severe water shortage has also affected the natural vegetation of the area, which is under environmental stress as a result of increasing hyper- salinity and evidenced by a reduction in mangrove cover and concomitant reduction in breeding grounds for many commercially important species of fish and crustaceans. At the same time, land use practices such as the building of bunds and shrimp ponds has interfered with water flow and hydrological processes. In some areas in the Indus delta, excessive water abstraction and interference with upstream hydrology⁶ such as urban water pumpage, irrigation and

hydropower? have had devastating effects on downstream coastal ecosystems by reducing the quantity and regularity of freshwater flows.

4. The situation is further exacerbated by property rights conflicts between the farming and fishing communities in the area over the distribution of water from the Indus River. The availability and use of freshwater within Sindh also appear to be problematic between agrarian upper Sindh and coastal lower Sindh since both groups rely heavily on freshwater for sustainable cultivation of crops as well as to prevent sea intrusion into the deltoid region. Lower freshwater flows downstream consequently translate into disincentives for farmers to cultivate crops and for fishermen to invest in fishing technologies. Reduced freshwater traversing lower Sindh severely retards mangrove cultivation and also has a detrimental impact on the fishing industry, and thus negatively impacts the livelihood of the coastal population.⁵

5. A combination of all these factors, including mismanagement of marine resources and lack of enforcement of environmental laws, has led to an unsustainable situation. An analysis of the current situation and apparent trends in Sindh suggests that a downward spiral of coastal and marine resource degradation, livelihood loss, and worsening poverty are occurring (Appendix 2). There is evidence, both anecdotal and documented, to suggest that fish stocks are declining, and commercially important marine species are fast disappearing. Similarly, water, air, and land are being contaminated by both on-site and off-site sectoral activities, leading to the pollution of marine and coastal environments. Levels of urbanization and industrialization upstream of coastal and marine areas are high and land in this belt is intensively used, especially in Karachi district. For the most part, development activities are carried out with scant regard to environmental concerns, and pay little attention to possible impacts on marine and coastal environments. Water, air, and land pollution arising from activities in agricultural, industrial, urban, and shipping sectors all give increasing cause for concern because of their impacts on the natural environment, as well as on the living conditions and livelihood base of upper and lowland communities.

6. The magnitude of problems in the coastal areas of Sindh requires that an assistance program be developed to follow an ecosystem-management approach so as to benefit a larger population. The proposed SCICDP will cover the coastal districts of Badin and Thatta, and the coastal areas of Karachi. The SCICDP will build on previous coastal fisheries and other related resource management initiatives by replicating successful approaches for implementing policies and effective use of management interventions. A significant and related component of the recently concluded ADB regional technical assistance (RETA) Coastal and Marine Resources

Management and Poverty Reduction in South Asia⁶ was the development of integrated coastal zone management (ICZM)⁷ strategies and plans for selected high priority areas (HPAs).⁸ The ICZM strategy and plan for HPAs was developed in a period spanning 5 years, with the goal to "foster integrated and sustainable coastal and marine zone management practices and equitable use of marine resources." Key objectives are to (i) work at the policy level to ensure that integrated approaches to coastal and marine management are adopted; (ii) work toward sustainable management of coastal and marine resources; (iii) facilitate sustainable development and poverty reduction in the HPAs; (iv) promote the equitable sharing and use of coastal and marine resources; and (v) mitigate the negative impact of economic activities in hinterlands, in particular the distribution of

water resources of the Indus River. The management plan was developed in considerable detail, including pilot testing the implementation of the interventions and the staffing levels required.

7. Recognizing the deteriorating water flows and upstream obstructions, the SCICDP will attempt to coordinate with the approved ADB TA on *Water Sector Irrigation Development*,⁹ which aims to develop the capacity for water resources management, and investment preparation at the provincial and federal levels, and will help establish a permanent body to provide strategic planning at the federal level. This effort is expected to strengthen the capacity of relevant water resources management institutions to address sustainable water flow issues to the benefit of downstream communities in the Indus River delta. It is important to note, however, that this project is unable to address the very complicated water flow issue, and will therefore be designed with the assumption that there will not be any water flow to the Indus delta.

III. THE TECHNICAL ASSISTANCE

A. Purpose and Output

8. The goal of the SCICDP is to support GOS strategies and initiatives to reduce pervasive poverty by improving livelihood opportunities and facilitating sustainable natural resource management in the project area. The purpose of the TA is to help the Government prepare the SCICDP, which will (i) improve the condition of coastal and marine fisheries and related resources by improved management of coastal resources and ecosystems, and minimizing threats to their ecological integrity; and (ii) increase incomes of coastal communities through improved coastal resources and provision of supplementary and/or alternative livelihood opportunities.

B. Methodology and Key Activities

9. The TA will formulate an investment project with the following possible components: (i) policy and institutional strengthening for integrated coastal resource management; (ii) management of coastal fisheries resources, including rehabilitation and protection of fisheries resources and related ecosystems (including mangroves) through district government planning; (iii) provision of sustainable livelihood assistance for income generation in coastal communities; and (iv) small-scale infrastructure development, including fish landing facilities to reduce production losses and provide environmental and social investments in environmental protection, provision of social services, and marketing facilities and infrastructure. The project framework will be developed as part of the process to facilitate project design.

10. A key intervention that could result in improved sustainable livelihood projects and enhanced natural resources management for poor coastal communities include community based programs to restore and rehabilitate saltwater-tolerant mangrove, most notably along the Thatta coastline. Such programs would seek to demonstrate the current level of dependence on mangrove key communities and target specific user groups such as mangrove fodder and fuel wood collectors and developers. A series of supplementary or alternative sources of sustainable income and livelihood enhancement opportunities will also be developed: (i) reinvestigation of aquaculture potential including a

comprehensive analysis and feasibility study of the ecological and economic viability of this industry;10 (ii) development of saline agriculture and livestock production, which remain key livelihood enterprises for coastal communities in Badin and Thatta districts, as well as supporting infrastructure; (iii) development of codes of conduct for fishing in coastal and inland areas; (iv) post-harvest handling and marketing of fish catch, including micro-enterprise development initiatives and training; (v) community mobilization schemes including specific assistance to fishing communities; (vi) targeted communications, education, and awareness building incorporated into long-term management programs; and (vii) formulation of ICZM plans and strategies for all three coastal districts based on the findings and work conducted by the RETA (footnote 6), which recommends revisiting aquaculture (shrimp/crab culture) as an important source of income for local communities.

11. The TA will follow a participatory and consultative approach to involve potential beneficiaries and stakeholders. Specifically, participatory rapid appraisal, poverty analysis, and socioeconomic assessment will be conducted in defined coastal areas of the three districts, and stakeholder workshops will be organized and conducted to discuss the project design and implementation arrangements. The TA will review and update the status of marine and coastal fisheries resources in the project area, determine major problems, and identify opportunities and strategies to achieve sustainable management of coastal resources. Relevant information, data, technical approaches, and policy recommendations from the RETA, and lessons learned from projects funded by ADB and other sources will be key inputs in the TA study. An institutional assessment will be conducted and will include an analysis of roles, responsibilities, and capabilities of provincial agencies, district governments, coastal communities, and private sector/non-government organizations (NGOs) in the project area. The TA will also assess proposed project activities and formulate technical guidelines and methods for implementing the activities, taking into consideration technical, environmental, and ecological conditions, and local initiatives. The TA will identify economically viable and environmentally sound supplementary and alternative livelihood interventions by community-based organizations and the private sector, as appropriate, incorporating relevant gender aspects. The output will be a range of options from which people can select and design the system that most effectively meets their needs and best fits the opportunities and constraints of the local environment.

12. The TA will be implemented in two phases. The diagnostic phase will focus on key constraints to improved coastal livelihoods and natural resource management, and priority problems requiring public intervention; the second phase will focus on preparing the feasibility study. The TA will (i) analyze relevant economic information, estimate costs and benefits for the proposed project and components; (ii) estimate economic rates of return and financial benefits;

(iii) Conduct economic valuation of environmental impacts and analyze the financial viability and sustainability of proposed project activities; (iv) analyze project risks; (v) review the management mechanisms for public funds and recommend suitable financial arrangements in accordance with policies and guidelines on decentralization for the project; (vi) assess the financial capacity of participating provincial and district governments; and (vii) conduct an appropriate marketing study for the livelihood products.

C. Cost and Financing

13. The total cost of the TA is estimated at \$814,000 equivalent, consisting of \$424,000 in foreign exchange and \$390,000 equivalent in local currency. ADB will cover the entire foreign exchange costs as well as \$226,000 equivalent of the local currency cost for a total of \$650,000 equivalent. The TA will be financed on a grant basis by the Japan Special Fund, funded by the Government of Japan. The Government will provide the remaining local currency cost of \$164,000 equivalent to cover expenses for office accommodation, counterpart staff, etc.

Detailed cost estimates are found in Appendix 3. The Government has been informed that approval of the TA does not constitute a commitment by ADB to finance an ensuing project.

D. Implementation Arrangements

14. ADB will engage a firm or consortia of firms to undertake the TA in accordance with its *Guidelines on the Use of Consultants* using the quality- and cost-based selection procedures and other arrangements satisfactory to ADB for engaging domestic consultants. The TA will require a total of 61 person-months of consulting services: 20 international and 41 domestic.

Consultant expertise will be in the following areas: policy and institutional development, natural resource economics, coastal resources management, coastal fisheries infrastructure development, rural sociology/community development, gender issues, coastal environmental assessments for improved management, rural infrastructure, enterprise development, farming systems/crop development, fisheries and aquaculture development, and financial management.

The outline terms of reference for consulting services are in Appendix 4. Simplified technical proposals will be required from short-listed consulting firms. All procurement under the TA will be in accordance with ADB's *Guidelines for Procurement*.

15. The TA will be implemented over 7 months (excluding the 1 month break), starting in May 2005 and ending in January 2006. The lead consultant will submit an inception report within 4 weeks of the start of the TA, a midterm report within 3 months (at the end of phase 1), a draft final report (including a detailed feasibility study for the proposed project) within 6 months, and a final report within 1 month of receiving comments on the draft final report from ADB and the GOS. Workshops will be arranged to seek formal consultations and present the findings and reports of the TA. Tripartite meetings of the Government, ADB, and the consultants will be held following the submission of the inception, interim, and draft final reports.

16. The provincial Planning and Development Board will be the TA Executing Agency, and will establish a project management office (PMO) in Karachi to coordinate TA implementation. A project coordinator will head the PMO and provide technical and logistical support to the consultant team. Technical personnel from the Coastal Development Authority; Department of Agriculture, Fisheries and Livestock; Department of Forest and Wildlife; Department of Environment and Alternative Energy; and Department of Irrigation will be appointed as TA counterpart staff. In addition, the TA will establish a committee comprising International Union for Conservation of Nature

and Natural Resources, the Pakistan Fisher Folk Forum, and World Wide Fund for Nature to provide independent advisory support to the TA. A project steering committee (PSC) will be established to provide overall guidance to the TA and to decide on all technical and design aspects of the project. The PSC will be headed by the Planning and Development Department, additional chief secretary, and will comprise director-level representation from the aforementioned departments, as well as the Department of Finance, Department of Local Government, and representatives of the three district governments.

IV. THE PRESIDENT'S DECISION

17. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of \$650,000 on a grant basis to the Government of Pakistan for preparing the Sindh Coastal and Inland Community Development Project, and hereby reports this action to the Board.

4. PDI Expert Review of the Report

ADB project concept paper, which would lead to comprehensive project proposals, has been prepared without proper consultation and need assessment of the coastal communities. The project concepts seem to be the brainchild of World Bank/ ADB consultants and Sindh Government bureaucrats, with no community input. Resultantly, the project documents have not addressed the real problems of the coastal communities and the causes of those problems.

For example the project goal in ADB Project “to support Governments strategies and initiatives” seems to be confusing as the facts on the ground tell that government strategies and so-called initiatives so far have been the key cause of biodiversity and livelihood degradation of Indus Delta/ Sindh Coast. Therefore, livelihood problems of the coastal communities can only be addressed by brining positive changes in the government policies and strategies in place of supporting the same strategies.

The projects’ key assumption that ‘there will not be any water flow to the Indus Delta’, is also misleading as it creates an impression of officially withdrawing from the water rights of Indus Delta. Flow of Indus River to the coastal area is not only a need for biodiversity but also a basic human right of the coastal communities. Besides, reduction in the Indus water flow is the key cause of degradation in the livelihood resources of the coastal communities and their subsequent poverty. Keeping the key cause of the resource degradation out of the program domain would never serve the purpose of the sustainability in the livelihoods of the coastal communities.

Similarly, the key programs proposed for the projects i.e. “To restore and rehabilitate saltwater tolerant mangroves’ and ‘Development of saline agriculture and livestock livelihood’ give clear impression of withdrawing from the fresh Indus water needs downstream Kotri Barrage for biodiversity including mangrove forests and agriculture resources and trying to live with the present circumstances.

One of the key problems in the coastal region [Indus Delta] is seawater intrusion which has so far eaten away 1.5 Million acres of fertile land of Thatta and Badin. However, both the project documents have completely ignored this problem as well the key cause

of this problem i.e. reduction in fresh water flow from Indus River downstream Kotri Barrage.

Overall, the project document in place of the emphasizing on the restoration of fresh Indus water flows downstream Kotri to restore agriculture and mangrove forests, has completely ignored the water needs for delta and give an impression of living with the present day reality of devastation and degradation by trying to find some alternative but unsustainable solutions.

‘Reinvestigation of aquaculture Production’ is another program component in ADB Project document which is also cause of the civil society organizations in general and the coastal communities of Sindh in particular. It seems that after the failure of the previous ADB aquaculture project in the coastal Sindh, the Bank once again wants to re-introduce aquaculture in the coastal areas in the name of ‘reinvestigation’.

It is an open truth that ADB Aquaculture project in coastal Sindh proved to be massive failure as a result of large scale corruption in the project especially allotting government lands to the politically influential people in the name of establishing aquaculture ponds. Such corruption was done under the nose of ADB and Bank authorities continued its support to the project. Besides, ADB- supported Aquaculture projects have played havoc with coastal environment in a number of developing countries of the world. Protests are being held against ADB Aquaculture projects in many countries as the communities facing coastal environment degradation are holding ADB responsible for such disaster.

The coastal communities are not against Aquaculture. However, they believe in small scale, community based sustainable aquaculture, while ADB and other international financial institutions have been supporting large scale aquaculture for export purposes. Influenced by the commercialization greed, such large scale aquaculture projects result in devastation of environment including lands and coastal waters.

Another important factor responsible for the degradation of the coastal [Indus Delta] ecosystems and livelihood resources is the manmade disaster, i.e. technically unsound design of the Tidal Link of Left Bank Outfall Drain [LBOD] , which has been playing havoc with the ecosystems, livelihood resources as well as human lives of the region. This issue has not been touched in the project despite the fact that during last two to three floods and cyclones in the region, millions of acres of land was degraded, thousands of communities were uprooted and hundreds of people were killed due to free flow of LBOD drainage water because of breaches in the project which occurred as a result of wrong design in the project. Ignored and abandoned by the federal government, World Bank and even Sindh government the project is continuously degrading lands and fishing resources, displacing and killing innocent people. The project has not addressed that key problem of coastal Sindh.

5. Situational Analysis of Sindh Coast and Suggestions

The coastal region of Sindh especially the Indus delta is faced with major degradation threats. One of the major causes of the gradual death and destruction of delta is the decreasing availability of fresh water flows from Indus River. The reduction of fresh water flows from Indus River has badly hit the ecosystem of Indus Delta situated in the coastal zone of Sindh province.

According to the government records seawater intrusion has resulted in tidal infringement over 1.2 million acres of land in the Indus Delta. This makes up no less than 33 percent of the total land in the districts of Badin and Thatta.

Indus delta originally occupied an area of about 600,000 hectares, consisting of creeks, mudflats and forests between Karachi in the north and the Rann of Kutch in the south. Although 17 major creeks make up the original delta, due to reduced flows below Kotri, only the area between the Hajamro and Kharak creeks now receives water from the Indus, and there is only one main outlet to the sea—Khobar Creek. The active delta is now only 10 per cent of its original area.

The mangrove forest in the Indus delta is spread over some 700,000 acres and was once the sixth largest of its kind in the world. It provides fuel wood to approximately 120,000 people, forage to 16,000 camels, and other products to 28,570 households. The forest owes its sustenance to nutrient-loaded silt in the estuaries. Mangroves also act as a shield against active tidal erosion in the area. They support thousands of botanical, aquatic and wildlife species and provide a nursery for most of the 44 commercial fish and shrimp species in the deltaic area. All these benefits are dependent on the survival of the forest, which in turn needs fresh water flow in the estuaries. According to satellite observations made in 1998, the mangrove cover has been reduced to only 400,000 acres, of which only 125,000 acres are healthy, whereas another 125,000 acres are dying. The remaining mangroves are in moderate condition. If current trends persist, the day is not far when the Indus delta will be mangrove-free.

The economic implications of the delta's deterioration are already making their presence felt, not least in the fishing sector. Mangrove ecosystems are considered important for many of the commercially caught fish species along the Pakistan coast. The total fish production of the Sindh coast is estimated at 350,000 tonnes. In 1988, landings from the creeks were estimated at about 96,410 tonnes. Migratory fish, such as Palla and Barramundi, have registered a significant decline. Catches of Palla were reduced from about 10,000 tonnes per annum during the 1970s to 400-600 tonnes per annum in the late 1990s. Now this species is becoming rare in the market. Similarly, the catch of Barramundi has declined from 1,000-3,000 tonnes per year in the 1980s to about 200 tonnes per annum in the 1990s.

The degradation of the coastal regions of Sindh in the form of reduction in the fresh Indus water has not only affected fisheries resources and their habitats but also agriculture sector in the region. Before the construction of such dams and barrages the delta due to this enormous quantity of fresh water and the silt the river brought with it, the delta lands were believed to be the richest in the area. Agriculture yields were high. Rice was the main crop and most of it was exported to the coastal regions of India and the Gulf. Besides, wealthy growers, there lived millions of cattle grazers including traditional camel grazers. However, with the reduction in fresh water flow major ecological changes took place, as a result of the sea moving into the delta channels. With the disappearance of Fresh River water, agriculture in the coastal belt became no longer possible. These changes forced the agricultural as well as cattle grazer communities to shift their livelihoods to fisheries. Presently, all the communities who were previously engaged in the agriculture and livestock grazing in the coastal regions have shifted their livelihoods

towards the fisheries resulting in the greater pressures on this only sector of livelihood in the coastal regions of Sindh.

Presently million of coastal communities of Sindh living in coastal regions of Karachi, Thatta, and Badin districts of Sindh are living in a miserable condition with a host of problems including growing poverty, reduction in the incomes from the traditional livelihoods of fisheries, lack of basic facilities of education as well as health. The key problems of coastal Sindh / Indus Delta can be summarized as under:

- One of the major problems is the constant reduction in the fish catch, which has badly affected the incomes of the fisher folk communities and have consequently driven them towards worst-ever poverty. The catch of many fish species including Sindh's special fish Palla as well as big sized shrimp locally known as jaira has drastically reduced.
- Influential jagirdars previously related to agriculture sector in the coastal region have forcefully occupied coastal creeks after losing their lands in the progressive seawater intrusion and salinity. They are depriving the indigenous fishermen from their livelihoods and are exploiting the fish resources in unsustainable methods through non-fishermen labor. A number of fish spots have been made no-go areas for the deltaic fisher folk communities by those influential locally referred to as sea-lords by the media.
- The coastal waters are being polluted by drainage schemes like Left Bank Outfall Drain which disposes off thousands of cusecs of agriculture effluent containing pesticides, chemicals etc threatening the survival of fish species specially juvenile fish. Despite such damages the government planners have decided to dispose off the effluents of Right Bank outfall Drain (RBOD) as well as the agriculture effluents of the whole country with the completion of mega drainage project National Drainage program (NDP). Under this project the drainage of all the provinces of country would be disposed off in the Indus deltaic region of Sindh coast.
- The fisher folk population of the Indus delta is faced with the problem of marketing of the fish catch. The fish markets being in Karachi much finance are involved in the transportation of the fish to Karachi, which also results in, the damage to fish catch. The fishermen due to poverty as well as lack of institutional credit systems are in the grip of middle men who provide them loans on the high interest rates and make them bound to sell the fish catch to the middlemen on the reduced prices, resultantly the fishermen of the areas are under debt burdens since generations despite working day and night.
- Due to overall lack in fish catch many fishermen have resorted to un- sustainable methods of fishing including using harmful nets which result in the genocide of the juvenile fish species further aggravating the problem of the livelihood resource deletion in the deltaic region.
- One of the major problems being faced by the coastal communities is the severe shortage of drinking water. In fact the coastal communities especially the fisherfolk communities had been dependent for their livelihoods on more than 17

creeks through which the Indus water used to be disposed off in the sea. However, due to the gradual and severe shortage of sweet water, the salt water of the sea has replaced sweet Indus water in these creeks resulting in destroying the agriculture and pasture lands around these creeks as well as creating worst water drought conditions. Consequently, fisherfolk community members especially women face a lot of hardships. A lot of time, resources and energies of the local fisherfolk communities including fisherfolk women are wasted in the search of water. Majority of the coastal communities usually purchase water cans on heavy prices which further reduces their earnings and makes them economically vulnerable. The water purchased and consumed is also too much unhygienic which results in outbreak of many diseases especially the diarrhea as well as diseases of skin among the women and children. The fisherfolk communities living inside the creeks in small fishing villages have to consume a lot of energies, time as well as amounts to ensure a can of drinking water for them.

- Overall mismanagement and lack of sustainable fisheries policies and management on the governmental level has further aggravated the sorrows of the fisher folk communities. They are being exploited by various agencies from Ranger officials to Coast guards. Their fish catch is usually snatched and they are beaten up and humiliated by the agencies operating in the areas. Interestingly some natural fish lakes in the coastal area are directly being managed and auctioned by Pakistan rangers despite the land being provincial subject.
- Fisherwomen have been bearing the brunt of the destruction of Indus delta, reduction of overall fish catch and the mechanization/ globalization of fisheries. Previously the fisherfolk women used to be engaged in fishing, fish net making as well as agriculture and livestock activities, which resulted in sufficient incomes and empowerment for them. With the destruction of delta the deltaic women have been converted into the most vulnerable sections of the society as they have been rendered completely dis-empowered

5.1 Suggestions for Future Developments

- The main cause of the degradation of Indus Delta is the constant decrease in the flow of fresh Indus Water. This flow has been decreasing with the construction of irrigation canals, dams and reservoirs. Before these mega irrigation schemes, the delta lands were ideal for agriculture production, which was even exported to remote countries. However, the decrease in the fresh water from Indus has completely destroyed the agriculture lands of Indus delta. Even a government survey says that, due to decreased fresh water flow to the Indus Deltaic region from Indus River, the sea intrusion has inundated more than 1.2 million acres of farmland in the coastal areas of Thatta and Badin districts of Sindh province. Seawater has intruded as far as 30 km and 50 km in the sweet water channels down stream Kotri Barrage rendering thousands of acres of farmland saline. This has pushed the local populations towards extreme poverty. Therefore it is suggested that no more mega irrigation projects especially big dams be constructed on Indus River
- The coastal population of Indus Delta should be considered as the real affectees of all the previously completed irrigation projects including dams and reservoirs and special programs should be launched for the economic rehabilitation of the coastal

population providing them compensation for their economic losses along with ensuring alternative livelihoods

- The coastal population of Indus Delta and their representatives should be consulted before launching any small future project on the Indus River. Since last many years not a single drop of Indus water has flown towards delta downstream Kotri barrage. This has further degraded agriculture lands, livestock, and fishery resources on which millions of people of Indus delta depend for their livelihoods. Similarly, mangrove forests, which are re the breeding grounds for fisheries, are facing threats of extinction. Therefore, at least 10 million acre feet of fresh Indus water should be ensured downstream Kotri barrage as envisaged in water accord of 1991.
- On the one hand, there is no Indus Water flow in the Indus Delta while on the other hand, agriculture, industrial as well as urban effluent of the whole country is thrown into Indus Delta. Presently, more than 2500 cusecs of Left Bank Outfall Drain (LBOD) effluent comprising poisonous pesticide residues are thrown in Indus Delta daily. Besides, About 300 million gallons urban sewerage of Karachi and about 37,000 tons of industrial waste are drained into coast daily. Now Federal as well as Sindh Government has decided to drain out the effluent of Right Bank Outfall drain (RBOD) poisonous to the extent of 3500 PPM into the Indus Delta at Gharo Creek. Besides this, Under National Drainage Program (NDP) the drainage effluent of all the provinces including Punjab, NWFP and Balochistan would also be passed from Sindh and drained into Indus Delta. This would completely destroy the agriculture, fisheries, and livestock livelihoods of the coastal communities as well as the ecosystem of Indus Delta. Therefore steps should be taken for bringing complete stop to the practice of draining out agriculture, industrial as well as urban effluent in Indus delta. Treatment plants should be established for the treatment of urban as well as industrial effluent of Karachi. Similarly, in place of draining out the drainage effluents of all the provinces of the country into Indus delta, the respective provinces should make arrangements for the treatment and re-use of their drainage water at their provincial levels.
- Many non-fisherfolk influential tribal have occupied a number of Indus Delta Creeks, which are considered as the nurseries for fish species. These influential persons have posted their armed persons at the mouths of these creeks from Korangi Creek near Karachi to Sir Creek near Indian Border to stop local fishermen from fishing in those areas. These sea lords in their bid to exploit fishery resources. Harmful nets are widely used in the 'occupied creeks' by sea lords. The sea –lords usually take hold of the boats and nets of fishermen who mistakenly enter into their 'occupied areas' for fishing. Government authorities should take severe action against those sea-lords as to free the coastal water from the occupations and ensure that the indigenous fishermen can fish freely in those coastal creeks.
- The fishermen of the Indus Delta are being widely exploited due to the inefficient marketing system under which they are forced to receive loans from the middlemen. The middlemen in response makes them bound to sell their fish catch to them on throw away prices. This has created a situation of bonded labor in the Indus deltaic region. Therefore there is a need to improve and modernize the marketing system in fisheries, which should include latest marketing facilities including infrastructure development as well as soft loans to the fishermen from the public sector banks.

- The fishing rights of the indigenous fisherfolk communities of Pakistan on coastal as well as inland waters be acknowledged in the legal framework of Pakistan.
- Sustainable fisheries policy as well as sustainable coastal fisheries management plan should be prepared and properly implemented
- Over fishing resorted to the industrial fishing fleets as well as the local fishermen should be stopped by properly implementing the existing laws against over fishing and introduction of new laws and rules
- Deep sea fishing by the foreign deep sea trawlers be banned due to over fishing, violation of rules and coastal pollution by these trawlers
- The use of harmful nets in the coastal as well as inland fisheries should be stopped by strengthening the existing legal provisions as well as monitoring systems by the government
- A fresh survey of the fish stocks in the coastal region should be conducted to bring forth the actual status of the fish stocks and the preparing policy plans for the sustainability of remaining stocks as well as recovery plans for the depleted fish species
- Increasing community participation and ownership in various projects and plans being launched in the fisheries sector should be ensured
- Alternative livelihoods for the fisherfolk communities should be ensured so as to minimize the burden fishermen from the coast
- Proper and sustainable representation of the fisherfolk communities and their representatives in all the federal as well as provincial policy making forums, institutions and departments related to fisheries sector should be ensured
- License System for Fishing in the Inland Waters should be restored in place of Contract System
- The federal as well as provincial governments with the complete consultation and participation of the fishing community representatives should formulate a sustainable fishing policy jointly. This policy also should follow the FAO Code of Conduct for Sustainable Fishing.
- Complete ban on the harmful nets be properly enforced in not only the mangroves and creeks but also within the three miles of the coast for ensuring the breeding the various species of fish.

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