

# Chapter 4

## Stations 3 and 4: Environmental Conservation and Protection

The section of Iloilo River comprising Stations 3 and 4 will be the center of all environmental conservation and protection developments. A good number of fish corals, fish ponds, salt beds and mangrove species exist in this area giving it endless benefits from environmental and economic activities.

### Environmental Land Use

One of the thrust of Iloilo River Master Development Plan is the proper utilization, development and management of mangrove and water resources so that a greater number of people can benefit from its optimum use. As a policy it shall conserve, protect, rehabilitate and develop the remaining mangrove areas, fish ponds included in the SAFDZ map as well as designating the water fishing zone in stations 3 and 4.

An environmental land use plan will be formulated to maximize utility of land resources while considering impact of extensive activity to environmental conditions along Iloilo River. Areas with specific environmental use like mangrove buffer reforestation, fish pond (SAFDZ), park, built up areas, and mangrove on site nursery will be identified in the plan (see Map 7).

### Protected Areas

Section 13 of the Environmental Code of Iloilo City has identified the following as Protected Areas:

|   |   |
|---|---|
| Mandurriao Mangrove Area                      | <i>Privately-owned fishponds along Iloilo River in the District of Mandurriao</i>                             |
| Iloilo River Fish Sanctuary                   | <i>Portion of Iloilo River's mid-section in the district of Molo adjacent to the Mandurriao Mangrove Area</i> |
| Iloilo River Water Sports and Recreation Area | <i>Section of Iloilo River alongside and fronting the Nabitasan Eco-Tourism Zone</i>                          |
| Nabitasan Eco-Tourism Zone                    | <i>Approximately 15 hectares of private land next to Iloilo River</i>   |

Penalties are imposed if prohibited acts are carried out on these protected areas. Examples of prohibited acts are cutting of all kinds of trees and vegetation; and installation of illegal traps, fish corals and other forms of entrapment that pose threat to wildlife.

### Fishpond Areas

A vast track of land in Stations 3 and 4 are allotted for aquaculture operations. Data from the City Agriculturist revealed that the total land area of fish ponds in Station 4 is 216.4 hectares and there exist 38

fish pond operators. Station 3 have 91 hectares allotted for fish pond operations with just 7 fish pond operators. Common species cultured in these ponds are bangus, prawns and tilapia.

Brackish water ponds developed after the destruction of many mangrove swamps. Some fish and shrimp species may have been deprived of their nursery homes but bangus and tilapia production proved to be lucrative in the market.

The enactment of the proposed Local Fishery Code provided for a more sustainable development and conservation of fisheries and aquatic resources as a food source. Important points raised in the code that are relevant to the fish pond operations in Iloilo River are mentioned below:

- On fishpond lease agreements (FLA), old FLAs may be renewed for another 25 years but after that, preference will be given to qualified fisherfolk associations/cooperatives;
- Fishpond areas will be automatically reverted to public domain after 5 years if it's not fully producing;
- The lessee will undertake reforestation of riverbanks, bays, and stream fronting his/her dikes. Facilities

- e.g. settling ponds will also be provided to minimize environmental pollution;
- Ponds that are abandoned, undeveloped and underutilized but are still covered by FLAs can be converted to its original mangrove state;
  - Fish hatcheries and private ponds must be registered with the LGU;
  - FLAs will be revoked if non-compliance is proven.

Data on status of the fish ponds operations are unavailable but a good number is observed to be operating until now.

The master plan proposes for the conversion of inactive fish pond areas into mangrove nurseries and highlight its utility as retention ponds.

### ***Mangrove Conservation Developments***

Efforts toward preservation and conservation of mangroves are increasing because the Government has realized its important role in protecting the ecology. Mangroves provide a safe haven and a nursery for a variety of fish, birds, crustaceans, and shellfish. Wood (e.g. timber, charcoal, poles and post for firewood) and non-wood products (e.g. thatch, honey, medicinal plants, wildlife, fish) are derived from mangrove trees. The intangible benefits include reduction of pollutants and minimization of water turbidity.

Mangrove roots accumulate sediments and reduce water flow, thus protecting the coastline and prevent erosion.

Mangrove areas along Iloilo River are sporadically located but are predominantly present in Station 3 and in a portion of Barangay Nabitasan, Lapaz. Leech growth of mangroves also proliferates at the mouth of Dungon Creek until a section of Barangay Cuartero. Among the species identified are nipa (Calajunan Creek), alipata (or Avicennia), Bakhaw (or Bahowan), and Bali-Bali. The necessity of preserving these mangroves is foremost in this master plan because of its natural support to the river ecology.



As per DENR Administrative Order No. 15-19, Section 1, in order to sustain mangrove productivity, it shall be the policy of the government to:

- conserve, protect, rehabilitate and develop the remaining mangrove resources of the country;
- give preference to organizations, associations or cooperatives over individual users in the utilization and development of mangrove resources;
- stop needless exploitation of the mangrove resources
- enhance replenishment of denuded areas through natural or artificial means.

All mangrove areas along the river will be conserved but a mangrove nursery will be situated in Barangay South San Jose in the district of Arevalo to serve as a center project for the efforts to improve ecological environment of Iloilo River. Mangrove forests also flourish near the mouths of large rivers because of mangroves' special aerial roots and salt-filtering tap roots that enable them to thrive in brackish water (brackish water is salty, but not as salty as sea water). By carefully considering management of mangroves, the natural energies and resources available can be fully utilized to its maximum carrying capacity for production of the preferred products and services. In which case, a prudent examination of the site for a comprehensive data bank and full assessment of the socio-economic benefits and environmental impact of the project is important. Only then can standards, priorities and actions be formulated for an integrated framework of a mangrove management zone.

**Fishing Zone Delineation**

The Local Fishery Code of Iloilo City has delineated the boundaries of city waters and has divided the city shoreline into five (5) zones to represent the districts (excluding Mandurriao). The code also limited fishing activities along Iloilo River to use of stationary gears or those that were not classified as active gears in the FAO 201. Fishing for commercial and livelihood purposes are to be limited to areas near Station 3 and 4. People who wish to undertake fishing within City Waters will register with Office of the City Agriculturist for preferential right. This will allow monitoring of fishing activities and limit use of persons who are not actual resident of the barangay. Subsistence fishing will be allowed as part of efforts to address poverty alleviation. The area from Benigno Aquino Bridge (Diversion Road Bridge) down to the mouth of the river is allotted for recreational fishing or sports fishing. No fishing structures or active fishing methods will be allowed in this area. Promenade/boardwalks meandering around mangrove species will be built to support this purpose.

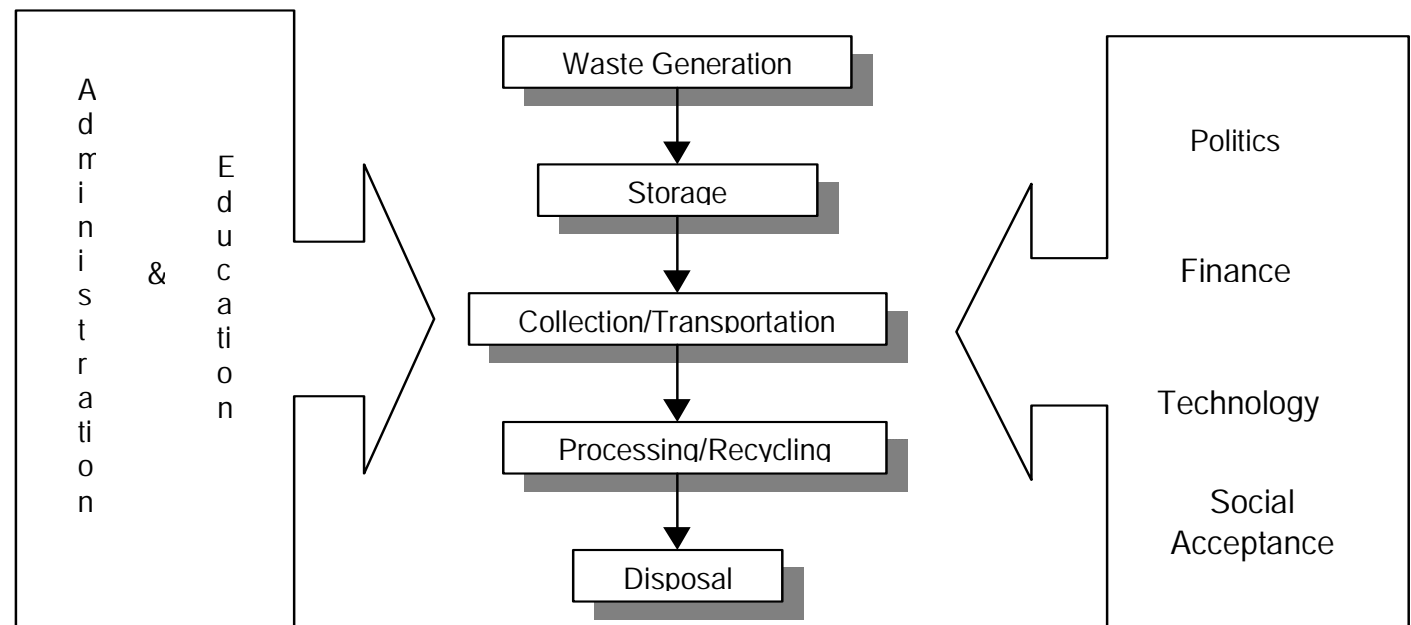
The code also prescribes standard setback from the mangrove zone for placement of fish corals. Significant distance in between fish corals is identified so as not to create adverse conditions on the river ecosystem. An area for navigation is observed at the middle to allow access of small vessels.

At the boundary of Oton and Iloilo River patches of mangrove will be removed to serve this purpose. The total number of a particular type of mangrove species removed from the area will be reinstated in another location identified by the DENR. To ensure sustainable fishing, fishery development plans will be developed by CFARMS to be integrated to the City Development Plan, and should be in accordance to the policies of the river master plan.

**Waste Management**

Relevant provisions of R.A. No. 7160, otherwise known as the Local Government Code Act provides that LGUs have a role to play in the implementation and enforcement of RA 9003 otherwise known as the Ecological Solid Waste Management Act within their jurisdiction.

For its part, Iloilo City has formulated a Comprehensive Solid Waste Management Plan to address the waste problem of the city. In the plan, the systems approach was adopted to come up with the following framework:



A management office or IRDC will have to formulate a version of the waste management plan through the Iloilo City Solid Waste Management Board by virtue of RA 9003 that will bring down the framework to the scenario in Iloilo River. This will ensure that programs, policies and projects pertaining to waste management are realistic to the Iloilo River experience. In which case the natural waste cycle will be observed and factors that have a great impact on the implementation will be identified. Oil spills in Station 1, for example, is a unique waste and therefore needs special provision in the waste management plan. Acquiring the technology to monitor this type of waste may be a significant matter of concern in the implementation. Also, Barangay Solid Waste Management Committees will be created to prepare and implement community-based solid waste management program

The proposed management plan will include segregation and collection of solid waste conducted at the barangay level specifically for biodegradable, compostable and reusable wastes on the condition that the collection of non-recyclable materials and special wastes shall be the responsibility of the city.; barangay-based projects to involve education of the river community (*stakeholders*) about the proper solid and liquid waste disposal in coordination with the City Garbage Collection System; imposition of three

chamber septic vault (all building abutting river bank); conversion of Calajunan dumpsite to a sanitary land fill and identify alternative barangay based method for such purpose; establish infrastructure component and provide an appropriate funding scheme; user friendly solid waste management equipment; institutional policies that will improve implementation. A memorandum of agreement with barangays will ensure sustainability of the implementation.

Waste is one of the serious threats to the river condition and unless the river community understands and participates in the proposed intervention, development will never ensue.

### ***Water Quality***

Iloilo City must formulate a 10-year water quality management area action plan that will contain goals, targets, water pollution control strategies or techniques, water quality information and education program, resource requirement and potential sources, enforcement procedures, schedule of compliance, rewards and incentives, to strengthen efforts to improve the river's water quality.

The IRDC in close coordination with the CENRO and DENR will campaign for strict compliance of the provisions of the Water Code of the Philippines

and Republic Act No. 3931 otherwise known as the National Pollution Control Decree of 1976 regarding abatement of water pollution on rivers.

As a highly-urbanized city, Iloilo also needs to come up with a ground water vulnerability map on the basis of a synthesized data on the nature of its confining soil and rock layer above the aquifer, aquifer permeability, recharge areas and topography.

### ***Environmental User Fee System***

Recent experiences in the implementation of environmental awareness programs have introduced the environmental user fee (EUF) system. EUF is a market based instrument that draws from the concept of "polluter's pay" principle. It operates as an economic means to compel polluters to reduce or abate water pollution while instituting remedial measures within their establishment. All projects, installations and activities that discharge liquid waste in Iloilo River will be affected by EUFs especially in the industrial, commercial, institutional and domestic sectors. With the adoption of the EUFs, stakeholders will understand and appreciate the impact they make on the river and because of the fee they pay, the level of pollution they create is expected to be minimized. IRMO will have to agree on the rates

and mechanism to be used in the implementation of this scheme with due consideration of the businesses/industries operating along Iloilo River.

### **Monitoring and Evaluation**

Ultimately, the IRDC will do the monitoring and evaluation of the progress of the implementation of the Iloilo River Development Master Plan. Being a multi-partite body, relevant agencies have already been identified to participate in this Executive Body.

Water quality will be monitored by DENR-EMB. The existing four sampling stations will be retained but additional posts can be established upon recommendation of the IRDC. Pollution monitoring and water quality sampling is being undertaken by the DENR and BFAR on a regular basis. Nuisance abatement is being undertaken by the LGU and advocacy work of the interim measures run across all component sector of the plan. But ultimately, pollution watching is not just the responsibility of one agency or the interest of a good number of people but should be everybody's concern. The City ENRO can help improve the reduction of solid wastes that goes into the water by improving the campaign for street cleanliness to prevent wastes from going into the waters of the Iloilo River.

If and when organized, the Inter-agency Technical Assistance Committee (IATAC) can also be consulted for issues on water quality monitoring and surveillance. IATAC is tasked to evaluate and identify water pollution control technologies to the industries appropriate for compliance with water quality standards; develop an environmental technology verification (ETV) program for the verification of technologies prior to its introduction in the Philippines; promote the development of clean technologies, cleaner production programs including water recycling and water re-use in industries; provide and disseminate information on water pollution control technologies including the best available and practicable technology and evaluate/endorse technology, machinery, equipment, spare parts and the like that are eligible for incentives.

To apply the concept of multi-use, the following will be allowed in the zoned area (*Station 3 and 4*) subject to the specific conditions imposed by IRDC:

1. Mangrove buffer that will protect the natural habitats of some plants & fishes.
2. Traditional fishing subject to the rules and condition of IRDC.
3. Residence of tenured migrant workers that have actually and continuously occupied such area for at least five years before the designation of the same as protected areas subject to rules and condition of IRDC.

4. Agro-livestock
5. Silvi-pasture
6. Mangrove reforestation or mangrove plantation project
7. Integrated Social Forest
8. Regulated/recreation/leisure fishing subject to the rules and conditions of IRDC.
9. Regulated use of hook and line and net traps for subsistence fishing.

The following uses/activities in mangrove and water fishing zone shall not be allowed, under any circumstances, within the protected areas:

1. Residential and other uses which is not in accordance with the approved management plan of the Buffer/Protected areas.
2. Hunting, destroying, disturbing and/or possessing any protected plants and animal species.
3. Introduction of modern fishing equipment, which may adversely affect the biological diversity of the zoned area.
4. Occupying areas without the regulated permission of the IRDC.
5. Expansion without prior clearance from the IRDC.
6. Introduction of exotic plants and animal species, which may endanger the buffer zone and protected area.
7. Cutting down mangrove trees without prior permit from IRDC.

8. Extensive commercial fishing and extraction of marine resources.
9. Other activities that would potentially destroy the integrity of the protected area.
10. Oil spilling