

EXECUTIVE SUMMARY

The Cagayan de Oro River Basin (CDORB) is one of the major river basins in the country with a total area of more than 137,383.90 hectares. The river basin is of great economic and ecologic importance to the people of the area. Swathes of farms and agricultural plantations dominate the basin which provides livelihood opportunities to thousands of residents. However, the river basin is beset with a number of problems including flooding, soil erosion, and pollution which are in turn brought about by unsustainable land use and agricultural practices, improper waste disposal and proliferation of informal settlers along riverbanks.

In particular, loss of vegetation cover and land misuse and abuse result in soil erosion that consequently cause shallowing of stream, flooding, and landslides. The problems become all the more serious given the geomorphologic configuration of the river basin which is dominated by deep ravines, high elevation and steep slopes overlaid with generally loose volcanic soils. The condition in the river basin is further aggravated by climate change. Specifically, the problems that beset the basin was brought to the fore by Typhoon Sendong that devastated the area and caused the death of thousands of people and massive damage to properties. However, the tragedy seems to have become the catalyst which led to the outpouring of support from various sectors in the form of rehabilitation and development projects. As a result, the sheer number of projects being undertaken within the river basin unavoidably result in overlapping activities and deliverables. Thus, there is a need for a river basin management framework that could facilitate coordination and interfacing of the various initiatives.

On May 2, 2012, the Cabinet Cluster on Climate Change Adaptation and Mitigation passed Resolution No. 2012-001 identified CDORB as one of the eighteen major river basins in the country as priority areas of the government. It prescribes the application of the integrated river basin management approach for each of the river basins in line with the Philippine Development Plan. It is also in accordance with the integrated river basin management and development master plan crafted in 2007 pursuant to EO 510 creating the River Basin



Control Office (RBCO). Specifically, it mandates the RBCO to: (1) rationalize the existing River Basin Projects in the country; (2) develop a National Master Plan for Flood Control through integration of the experiences from the various river basin projects; (3) rationalize and prioritize reforestation programs for watersheds; (4) formulate a Master Plan on Integrated River Basin Management and Development; (5) coordinate all government projects within the river basins; and, (6) implement water-related projects on river rehabilitation, lake water management, etc., and other water resources management and development.

The plan adopts the vision as defined by the stakeholders of the river basin: which sees “A rehabilitated, sustainably protected and preserved, and well-managed CDO River Basin in 2020”.

The plan aims to:

- Manage and conserve the water resources in the river basin to benefit the greatest number of people.
- Rehabilitate and conserve watershed resources
- Strengthen and capacitate relevant institutions in the effective management of the CDORB
- Minimize the threat to life and property and environment from flooding and erosion hazards
- Promote sustainable management and utilization of coastal resources
- Protect and conserve the flora and fauna found in the area including their habitats and ecological support systems.
- Climate-proof the local communities, vulnerable ecosystems, and development initiatives in CDORB and contribute to the reduction of greenhouse gases in the atmosphere.
- Promote active involvement of local communities in the implementation of river basin development and management strategies
- Undertake research and development for science-based policy and decision making
- Attain sustainable economic development in the river basin



The plan zonifies the river basin based on the land classification as defined in the Constitution. Specifically, it classifies the river basin into forestland and alienable & disposable land. Using a set of criteria, forestland is further sub-divided sub-zones that include agroforestry, protection, timber production, timber regeneration, forest restoration, and agricultural zones. Likewise, alienable and disposable lands are sub-divided into agricultural, built-up area, coastal, private agroforestry, and private forest zones.

It also recognizes private lands which were zoned following the CLUP process. They include agricultural, residential, institutional, commercial, industrial, infrastructure, and water bodies and protective buffer zones.

Top operationalize the plan, it calls for the partitioning of the CDORB into Watershed Management Areas that correspond into the eight (8) subwatersheds that comprise the river basin. The WMAs are then further partitioned into municipality-based Watershed Management Units (WMUs). A WMU refers to the total area of a municipality or city which falls inside a WMA.

The public domain territories in the CDORB comprised 74,525 ha before the indigenous peoples in the WMA were granted 11,481 ha of CADT. The remaining 67,322 ha comprise MKRNP, which includes a small portion under the CADT, some 19,043 ha of tenured land including 18,843 ha of CBFM and 200 ha of ISF, and about 23,000 ha of open access lands, which are occupied by local people.

The CBFM and ISF areas should be further partitioned into household-type FMUs, as well as the 23,000 ha of untenured lands since they are already being used by local households. The CADT already assumes the character of private land, but the tribal council concerned may still partition it into household-and community

The local/indigenous peoples and communities that are occupying both tenured and untenured lands in the public/ancestral domain should be considered as FMU managers and provided tenure by DENR. It should be considered, however, that where recognition of land-use rights and provision of land-use tenure are concerned, there would be expected to arise a



number of conflicting claims that should be settled in a peaceful and fair manner through mediation mechanisms.

To be able to provide technical and financial support for the development of the FMUs under such programs/projects as NGP and INREMP, it would be necessary for the managers of household-type FMUs to organize themselves into POs. In addition to being legal entities that are able to enter into MOAs with DENR and be recipient of financial support for the development of FMU watershed rehabilitation and livelihood enterprises, the POs would also be able to serve their constituents in concerns that are of common interest, such as forest/agroforestry plantation protection from fire and other causes and later on in the harvesting, processing, and marketing of FMU products.

On one hand, the development and management of RMUs that are private in nature is the concern of the private land owners, who should have the financial capacity and other means to plan and implement their planned uses of those private lands. There are also banking/financing institutions that have programs for supporting investments in private land development. On the other hand, the development and management of public lands that are identified for management as FMUs of local/indigenous peoples and communities will need a number of support from the government (DENR and LGU), such as:

- Facilitation of identification and demarcation of FMUs and their FMU managers, including the mediation of conflicting claims.
- Organizing of POs with household-type FMU managers as members where there are no CBFM POs operating in the barangay/sitio, or the expansion of existing CBFM POs to include as members the household-type FMU managers operating outside the CBFM area.
- Building of capacity of FMU managers and their POs in the technical and financial management and administrative aspects. Provision of financial support, e.g. through NGP/INREMP, for watershed rehabilitation and forest/agroforestry-based livelihood development.
- Oversight in FMU management, as well as in the development of FMU managers into good and capable managers and stewards of natural resources.



The use of private lands by their owners will be regulated mainly by two agencies: the M-LGU for the enforcement of zoning and taxation regulations, as well as for the enforcement of local environmental legislation and regulations, and DENR for the enforcement of environmental laws, such as the Clean Air and Water Act. Both the LGU and DENR have already the minimum guidelines for regulating the use of private lands and have organized their local offices to take care of enforcement of relevant regulations. The regulation of land-use and related functions are already part of the program of both DENR and LGU.

The CDO master plan proposes twelve (12) river basin management and development programs. They include a) Water Resources Management; b) Watershed Management and Conservation; c) Flood Control and Hazard Management and Mitigation Along the Entire Landscape; d) River and River Delta Management; e) Coastal Resources Management; f) Biodiversity Conservation; g) Climate Change Adaptation and Mitigation; h) Institutional Framework and Physical Structure Management; i) Community Participation; j) Gender Action Program; k) Information, Education and Communication; and l) Research and Development.

The 15-year indicative budgetary requirements of priority development programs amount to P1.24 Billion of which P1.02 Billion goes to river basin rehabilitation activities. The plan also provides for financing mechanisms to identify possible sources of funds and ensure that all the proposed river basin management and development programs are successfully implemented. They include special levy and payment for environmental services.

Attempts were also made to estimate the value of ecosystem services provided by the river basin. A total of 23 ecosystem services were identified in the CDORB. Valuation proceeded on 13 ecosystem services. The “benefit transfer methodology” applying minimum value estimates, which is based on peer-reviewed academic journal articles and research done globally found that the CDORB provides between roughly P 2.04 billion per year in benefits. The value reflects uncertainty and the value will narrow and total value will rise as additional primary studies are completed and valuation gaps are closed. The watershed can be seen as an economic asset producing a flow of benefits, just as a building is an asset that may be rented out for a flow of benefits. If the ecosystem goods and services of the CDORB were treated like built capital economic assets, which depreciate over time, the asset value of the



natural systems would be between P25.49 billion and P40.92 billion at a 0 %- 5% discount rates over 20 years. These are conservative estimates. Valuation of additional ecosystem services and a more refined analysis will result in higher values. Reporting the full range better expresses inherent uncertainty, however, the lower number represents a solid basement value. It can be adopted for policy applications.

A monitoring and evaluation system will be adopted to ensure that every aspect of a project is moving as planned, and the desired outcomes and impacts are achieved. the M&E system will take into consideration the vision, goals, objectives and the respective key result areas and performance indicators of the various watershed management interventions and strategies as presented in the projects' logical framework. Likewise, it will work hand-in-hand with the decision-support system, particularly on the utilization and update of its database. to ensure that the project's activities and outputs contribute to the overall goals and objectives of the company.

To ensure cost-effectiveness and objectivity, monitoring will be undertaken in a participatory manner with relevant stakeholder groups particularly the communities who are affected by the watershed interventions. A multi-sectoral and inter-disciplinary committee will be created under the CDORBMC to design and implement the M&E system. It may be necessary to design M & E system for each program, or project individually although an integrated system may be more efficient and cost-effective. However, care must be taken in the choice of monitoring indicators, especially where it may be necessary to use "proxy" indicators. Although it is ideal to use verifiable indicators, some parameters may not be readily quantifiable, (e.g., degree of soil erosion), in which case, simple qualitative techniques (ranking or scoring system) may be used.

