Refocusing the Bicol River Basin Development Program (BRBDP): The Need for an Integrated Approach to Planning and Implementation

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INTRODUCTION

The perennial problem of flooding in the Bicol region was recently highlighted in the aftermath of Severe Tropical Storm Kristine in October 2024. Its damage and devastation prompted President Ferdinand Marcos Jr. to order a review and assessment of the Bicol River Basin Development Program (BRBDP). The Department of Public Works and Highways (DPWH) was tasked to focus on flood mitigation component of the program. Secretary Manuel Bonoan in a press briefing stated that the feasibility study was completed on July 2024, the detailed engineering will be in 2025, the civil works, flood control projects will be completed in 2026 and thereafter. The Korea Eximbank will fund the project with a preliminary estimated cost of PHP75 billion which includes the long-term construction of Sabo Dam in Albay with an estimated cost of PHP22 billion. (Gozum, 2024)

The revisiting of the BRBDP is a recognition of the gaps that resulted in the implementation of the BRBDP in the 1970s, the challenges posed, the things to be done and an affirmation that what is needed now is a refocusing of the plan on flood mitigation program taking into account the reality of the current climate change phenomenon and the importance of drawing from the lessons of the past implementation of the BRBDP. (IBC13, 2024)

Background

The Bicol River Basin

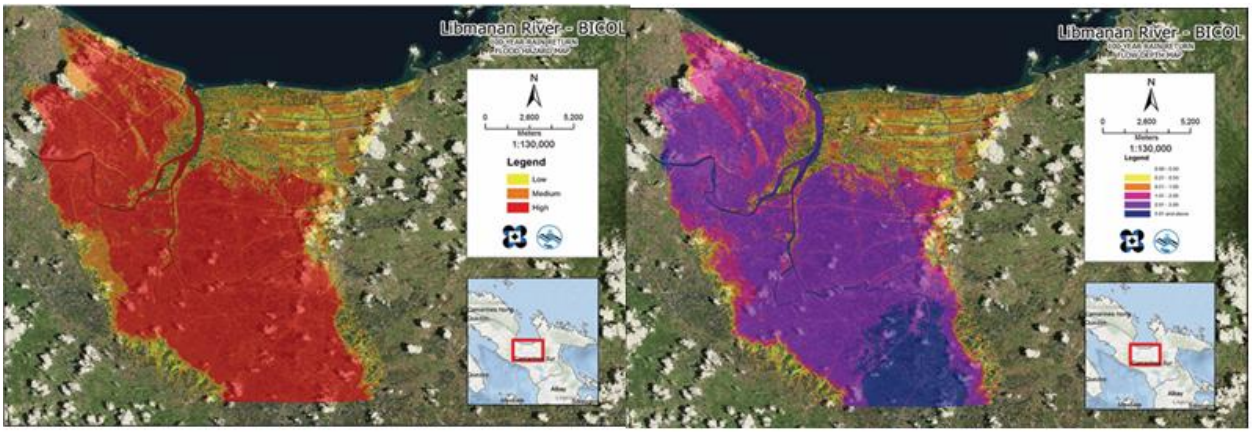
The Bicol River Basin is the eighth largest river in the Philippines in terms of drainage basin size and is a 312,000-hectare fertile valley that covers the provinces of Camarines Sur, Camarines Norte and Albay in the Bicol Region. The DENR in 2015 specified that 83% of this was used for agriculture, settlements and commercial purposes.

It stretches 135 km. in Northwest- Southeast direction and it is approximately 35 km in width. In its west are volcanoes starting with Mt. Mayon in Albay (2,421 M) up to Mt. Isarog in Camarines Sur (1,320 M). The Bicol River extends from Lake Bato in the upper basin (Albay) for 130 km and empties at the San Miguel Bay. In its Northwest is the Bicol National Park (Camarines Norte) and drains into the Sipocot-Libmanan River (the largest of eight sub-basins), while in its Southwest is the Ragay Hills. (Astillero, 1976). Within it are three major lakes: Lake Buhi, Lake Bato and Lake Baao. (Gozum, 2024)

The topography of the Bicol River basin “has given the area rich volcanic soil and abundant underground aquifers specially suited to rice culture.” Further, Astillero describes the Bicol River basin as two-thirds watershed with the rest, arable and 20% is that land on the flood plain. On the other hand, this makes the basin prone to flooding such as areas near the San Miguel Bay susceptible to storm surges. (Gozum, 2024)

Studies were conducted on the mapping of vulnerabilities of the Bicol River Basin. The maps below are Figures 37 and 38 in the article Region 5 Bicol River Basin: DREAM Flood Forecasting and Flood Hazard Mapping which was generated by the Nationwide Disaster Risk and Exposure Assessment for Mitigation (DREAM)

Program by the UP Training Center for Applied Geodesy and Photogrammetry (UP TCAGP). This program aims to produce finer-scale flood hazards and flooding modes to be used for early warning.



100-year Flood Hazard Map for the Bicol River Basin 100-year Flow Depth Map for the Bicol River Basin

These maps show that the susceptibility of the Bicol River Basin is caused by factors such as its low-lying topography and its constant exposure to intense tropical cyclones that cause severe flooding in the area.

In the recent disaster, flooding was caused by the high volume of rain which coincided with high tide of San Miguel Bay, which in turn is the only exit of the Bicol River basin. This resulted to the rainwater being stuck in the area. (Gozum, 2024) In particular, flooding in Albay, as reports show comes from the river of Camalig and flows through the other nearby areas-Guinobatan, Ligao, Oas, Polangui and Libon, passing through Cabilugan River, directly to Bato Lake. A high volume of water caused by heavy rains will cause spillover or backflow to Albay and other municipalities as a catch basin. This caused multibillion damage to infrastructure and agriculture affecting food production, and even claimed lives.

The Bicol River Basin Development Program (BRBDP)

In the study of models of area-based convergence, Jeanne Frances Illo described the Bicol River Basin Development Program (BRBDP) as an early experiment the Philippines had in geography-based planning where the focus was a hydrologic area or a river basin. She presented an assumption that if development is concentrated on an area with high growth potentials, this would lead to economic development in the Bicol region.

President Ferdinand Marcos Sr. issued Executive Order No. 412 in 1973 establishing the BRBDP and strengthened by a Presidential Decree in 1976 with the purpose of improving the socio-economic status of the communities in Bicol. The United Nations University described the situation as *"ironically, most Bicolanos live in poverty in a land of great natural beauty and abundant natural resources with rich alluvial soil producing enough rice, corn, abaca, sugar, coconuts, and vegetables and has a wealth of untapped mineral resources-about 30 per cent of the marble deposits, 75 per cent of the perlite and about 20 per cent of the coal reserves of the Philippines."* It was to promote the development of agriculture, natural resources, infrastructure, social services, and private sector investment through integrated rural development; to provide comprehensive but decentralized planning and management of programs and projects; and to combine national with local resources in attaining regional development goals. (UN University).

The National Council on Integrated Area Development (NCIAD) had jurisdiction over the BRBDP and its organizational structure and its functions were as follows:

a) the Minister of Public Works serves as coordinator among the regional directors of national ministries and agencies operating within the Basin;

b) the governors of the participating provinces and the BRBDP program director form the Bicol River Basin Coordinating Committee (BRBC) which forms a council with representatives from private business, farmers, and religious groups, the media, and civic and youth organizations who advises the program; and

c) the Integrated Development Areas (IDAs), each with a development team headed by a municipal mayor, and consisting of local government officials, community leaders, and technical personnel from national ministries and line agencies working in the Basin for facilitating local planning and program implementation, assisted by line agency professional staff in technical tasks. (UN University)

Funding assistance was provided by the World Bank, the Asian Development Bank (ADB), and the governments of Germany and Japan and projects were implemented such as farm-to-market road construction, rehabilitation of the railroad from Manila to Bicol; supplement irrigation; upgrade of facilities of local agricultural colleges; expansion of smaller ports in the Basin; improvement of domestic water supplies, contribution to agribusiness and fisheries, provision of capital for integrated project for health, nutrition and technical assistance to BRBDP personnel. (UN University)

The implementation of the BRBDP has taken into consideration a multisectoral and multi-agency development approach to solving problems, with some success. (Dy-Liacco, 2011)

Purpose of the Study

The purpose of this case study is to review the BRBDP from its inception up to the current updating of the masterplan and feasibility study highlighting the accomplishments and failures of its implementation. These will provide a blueprint to ensure that the BRBDP is "integrated in its approach" and "future proof" that would mitigate the impact of climate change and recurring natural disasters in the Bicol Region.

Objectives

1. To map out the accomplishments and failures of the implementation of BRBDP;
2. To present the lessons learned from impact evaluation reports; and
3. To highlight the solutions and best practices in moving forward with the implementation of the plan

Scope and Limitations

The study will use past impact evaluation reports in assessing the accomplishments and failures of the BRBDP. These will be the assessment of independent bodies and its sponsors such as the USAID and the ADB. Local sources are also used for recent observations on the BRBDP.

This case study will present the lessons learned by the various stakeholders and their proposed solutions and recommendations which may be considered as we revisit the BRBDP.

Problem Statement

The heavy emphasis on revisiting the BRBDP as a flood control measure poses a limitation on the success of the BRBDP. Focusing on one component and neglecting the others will repeat if not compound our challenges in the Bicol River Basin.

LITERATURE REVIEW

A sufficient reference on the implementation of the BRBDP is the comprehensive study of Jeanne Frances Illo on the various models of area-based convergence drawing out and presenting the lessons from the BRBDP from its inception until 2013. She describes it as an early experiment on geography-based planning that aims to improve the communities in the Bicol River Basin where the highest incidences of poverty were observed.

Applying the lessons from her evaluation and assessment is a valuable tool in the success of the current move to revisit the BRBDP. (Illo, 2013)

The Bicol Biennial Evaluation of the Bicol River Basin Development Program by the USAID is another reference for a clear evaluation of the BRBDP implementation in August 1979. This is a balanced account on the assessment as both foreign and local evaluators compose the team, Dr. Thomas T. Weaver of University of Rhode Island and Dr. Gelia T. Castillo of UPLB. Among other matters, they found out that decentralization of appropriate planning, coordination and policy-making activity to the regional and sub-regional levels has been effective. (Weaver and Castillo, 1979)

A perspective on urban and environmental planning is presented in the article of Emmanuel Astillero in the Philippine Planning Journal, UP Institute of Environmental Planning. In the article The Bicol River Basin Development Program: An Experience in River Basin, a complete description of the Bicol River Basin was given, including all boundaries that will provide a clear picture of the metes and bounds of the Bicol River Basin. This also provided a recommendation on how to use urban or environmental planning in improving the productivity of a community or an area. (Astillero, 1976)

In the article BBM's Fictional Version of the Bicol River Basin Development Project by Miguel Paolo P. Reyes in the Vera Files, published Nov 11, 2024, several points were reiterated on President Marcos Jr.'s apparent method of reviving the BRBDP initiated by his father and insinuating that it was successful and that the only reason why it ended was because of the change of administration when then President Aquino came to power and introduced changes. This is a comprehensive article on fact-checking the implementation of the BRBDP. (Reyes, 2024)

The other remaining articles in the list of references all contributed to the current directive of President Marcos Jr. to review the BRBDP and refocus on flood mitigation program to improve the flood situation in the Bicol region.

METHODOLOGY

The main method used in this case study is data gathering and research from articles, journal and publications on the Bicol River Basin Development Program. Written works on the narrative on the implementation of the BRBDP were reviewed taking into consideration the achievements and failures of the Program. Data gathered, both old (1970's) and current were compared and contrasted to bring about the facts on its implementation. Opposing articles and opinion of authors, researchers, academics and administrators were considered to expose their discussions and thresh out concepts for the recommendation for its future implementation such as best practices to improve its rate of success.

RESULTS

Several observations were identified in the implementation of the Bicol River Basin Development Program:

1. Jeanne Frances Illo's evaluation in 2013 of the lower, middle and upper sub-basins study area yielded the following problems:

a) Poor design and supervision;

b) Inadequate coordination between the National Irrigation Administration (NIA) and the BRBDP

c) Poor institutional development

d) Implementation delays and cost overruns; and

e) Delayed payments of workers.

2. The UNDP of the BRBDP conducted a review of the implementation and the following were observed:

a) Poor design and engineering of the mainly physical infrastructure project, where perfect designs were needed but were achieved only in some areas which in turn caused problems especially to the beneficiaries. (Gozum,2024) Flooding remained because of the nature of the river basin;

b) Inadequate coordination between project implementers and lead agencies; and

c) Limited inputs from local leaders.

3. In the study of Abracosa and Ortolano, it was observed that environmental impact statement requirements were not taken seriously. They claim that environmental studies were done merely to comply with the procedural requirements of the USAID. This inadequacy failed to predict negative impacts after implementation such as the case of the construction of the Lake Buhi regulation project.

4. Local Chief Executives and governors concentrated only on their political boundaries and neglected interlocal development initiatives. There was absence of landscape-level planning which caused problems to development. (Romero, 2024)

DISCUSSION

On “green interventions”

The previous implementation of the BRBDP focused on construction of physical infrastructures which taken on its own posed some challenges. This neglected other areas that resulted to partial success on the implementation. The ADB recognizes the current global trend of shifting to nature-based solutions referred to as ““green and inclusive interventions that respect river dynamics and ecosystem functions.” These green interventions include wetland restoration, floodplain widening, and removal of embankment. (Gozum, 2024) Environmental studies is seen as a practical tool to be used in projects such as flood mitigation.

On “integrated area development” (IAD)

Integrated area development is a planning approach that integrates all sectoral activities to attain significant social change. Such was the mandate of the Bicol River Basin Council (BRBC) in Camarines Sur, that is to coordinate the programs of the agencies in the Bicol River Basin. (Juanico, 2024) Illo observed that there was inadequate coordination between agencies.

On project accomplishments

Projects accomplished include some irrigation systems constructed, farmers’ cooperatives formed, residents resettled, farmlands consolidated, secondary and feeder roads constructed, and social service-oriented programs set up. While flood control projects were initiated such as dredging of waterways and setting up of minor flood control structures, these were limited in scope. (Juanico, 2024)

On consultation of Local Government Units (LGUs)

According to Illo, the Bicol River Basin Watershed Management Program which was the successor of the BRBDP employed the same process, that is with limited consultation with the LGUs. Coordination with Local Chief Executives (LCEs) in the region was insufficient. (Juanico, 2024)

On “hard” or “soft” components

The DPWH was tasked to focus on flood control program and the consideration of projects such as dams, diversion canals, levees, retarding basins, and dredging. In the discussion, Secretary Bonoan stated that the Sabo Dam in Albay will be constructed first and there was a suggestion to consider implementing NIA’s planned Libmanan-Cabusao Dam in Camarines Sur. This hard component of the program was to be complemented by

the soft component such as intensified reforestation of the basin watersheds, and strict slope-based regulation of mining, silviculture, tourism, and grazing activities in the basin**.** (Juanico, 2024)

On decentralization

Executive Order No. 374 on Oct. 30, 1989 issued by President Corazon Aquino caused the closure of the BRBDP and IAD offices to reorganize the regional development councils to strengthen coordination among LGUs. From the NEDA as lead implementor, EO No. 374 transferred the tasks to the Regional Development Council of the Bicol region and the governors of Albay and Camarines Sur. This essentially decentralized the planning and management to local levels.

On costs and loans

According to Illo, the "USAID funding for the BRBDP ran for a decade (1973-1983), but the Program itself, or at least some of its components, went on for at least another decade." When this happened, the infrastructure projects completed were either managed by the NIA and the DPWH for their maintenance and rehabilitation or were subsumed under the Comprehensive Agrarian Reform Program (CARP) when it comes to agrarian reform. Some projects on flood control did not materialize.

In line with this, Juan Escandor of the Philippine Daily Inquirer wrote in 2004 that the BRBDP of Marcos Sr. "failed to achieve its major output: a huge reservoir in the middle of the Bicol River Basin area and that the national government was forced to abandon the project in 1989 because of the ballooning costs of the infrastructure component estimated in 1992 at $274 million." Managing funds was a major factor in the program implementation.

Another recorded instance by Illo was Buhi-Lalo Upland Development Pilot Project under the BRBDP in 1985, where workers engaged in arson, burning the facility because of their payments delayed by eighteen months, due to fund mismanagement.

On poor engineering design

In her evaluation, Illo stated that poor engineering design plagued the Libmanan IAD project which was a construction of a 4,000-hectare irrigation and drainage system plus flood control, salt water intrusion protection facilities, and farm access roads in an economically depressed area in the lower Basin that was considered to have high growth potentials." Another concern was "inadequate coordination between the NIA and the BRBDP, environmental damage, and poor institutional development." These clearly showed the inadequacy of engineering works in the implementation of the project.

CONCLUSION/RECOMMENDATION

Change in organizational structure

Taking from the lessons of the implementation of the BRBDP, environmental and developmental challenges were recognized. To address these concerns, the NEDA Regional Office 5 reconstituted the BRBMC wherein Regional Project Monitoring and Committee passed Resolution No. 29, s. 2024, "to fill institutional gaps through stronger coordination and collaboration among stakeholders and this will ensure the sustainable future of the communities that relies on the Bicol River Basin." (Tria, 2024)

Key agencies were added to the organizational structure such as the Climate Change Commission, Bicol Region Disaster Risk and Reduction Management Council, Bicol Association of Water Districts, Department of Human Settlement and Urban Development, Commission of Higher Education, Philippine Chamber of Commerce and Industry Bicol Chapter, Regional Agricultural and Fishery Council, and the Local Chief Executive of Naga City. The roles of these new agencies strengthen the capacity of the BRBDP to be implemented in an integrated manner, ensuring coordination and collaboration to better respond to the needs of Bicolanos in disasters and in the effects of climate change.

Readjustment of roles and functions

An appropriate response to the order of the President to focus on the flood mitigation component of the program is a readjustment of the roles and functions of the BRBMC which includes:

a) formulate a Bicol River Strategic Management Plan;

b) review and monitor the strategic action plans of the local government units (LGUs);

c) facilitate the implementation of the management strategies and action plans and resolve implementation issues;

d) coordinate the implementation of activities between the different agencies and LGUs; and

e) enhance the capacity of stakeholders in promoting good practices in river basin and watershed management. (BRBMC, NEDA, 2019)

Inclusion of environmental agencies and disaster risk management in planning and implementation

The inclusion of the environmental agencies and disaster risk management in the strategic planning and facilitating the involvement of the LGUs and increasing the capacity of the other stakeholders in the implementation would increase the success of the BRBDP. This is addressing the gaps of the first implementation of the BRBDP in the 1970's and the review of the BRBDP of the current administration.

Holistic approach rather than fragmented solutions

When the Bicol River Basin Management Committee (BRBMC) was reconvened on January 22, 2019 at the National Economic and Development Authority (NEDA) Regional Office 5, Arimbay, Legazpi City, the BRBMC reiterated that "a holistic approach should be applied rather than fragmented solutions in dealing with problems related to flooding." It recommended that the agencies to shift from flood mitigation approach to flood risk management." (BRBMC, NEDA, 2019).

In this meeting, the regional offices of the Department of Public Works and Highways, National Irrigation Authority, Philippine Atmospheric, Geophysical and Astronomical Services Administration, Mines and Geosciences Bureau and Environmental Management Bureau discussed proposed programs and projects that would enhance the flood control capacity of the BRBDP:

1) consulting services for the feasibility study and detailed engineering design for proposed flood control projects in the Bicol River Basin;

2) habitation protection at the upper and central basin;

3) Lake Buhi and Lake Bato flood control structures;

4) Bula embankment;

5) Rinconada Integrated Irrigation System;

6) Sagip-Ilog Program;

7) Geohazard Map Distribution and Seminar, and

8) strengthening of Flood Forecasting and Warning System in Bicol River Basin.

Other proposed interventions included in the master plan are:

a) minimize incidences of flooding through improved storage capacity of rivers and lakes by constructing flood control structures in strategic locations;

b) provide sufficient irrigation facilities through rehabilitation and upgrading of existing irrigation facilities;

c) rehabilitate at least 18,000 hectares of degraded forest lands;

d) improve waste disposal by developing sanitary landfill facilities in different LGUs;

e) resettle at least 6,000 families in high disaster risk areas particularly the informal settlements in river easements; and

f) comprehensively identify vulnerabilities and corresponding adaptation actions for communities. (BRBMC, NEDA, 2019)

Still on the holistic approach, the Orient Integrated Development Consultants Inc., in coordination with NEDA studied the 2011-2016 Philippine Development Plan recommended an *"integrated approach that will ensure a holistic view of the physical area and the socio-economic situation in the river basin, and take account of the interconnection between upstream and downstream activities. Close coordination with stakeholders in the formulation of a comprehensive long-term plan will harmonize individual and collective actions of various stakeholders, and improve the overall governance. The approach is anchored on the integrated ecosystem management (IEM) approach that the Department of Environment and Natural Resources (DENR) is promoting and intends to institutionalize within the department." The integrated Bicol River Basin Management and Development Master Plan will provide guidance on interventions and investments in water resources and watershed management, biodiversity conservation, land use, climate change adaptation and disaster risk management, livelihoods and other economic activities. The plan will also suggest an appropriate and sustainable governance structure and system for the river basin."*

Resolutions to allocate funds

The Bicol River Basin Management Committee (BRBMC), in addressing the proposed recommendations may push for the passage of a resolution urging Congress to allocate funds for vital flood control and irrigation projects in the BRB area, and for the rehabilitation of Doppler radar stations in Bato, Catanduanes and Cataingan, Masbate. (RPMC, 2024)

The Committee may lobby for swift action "to enhance the basin's resilience to climate change and ensure sustainable management for future generations, addressing critical environmental and infrastructure challenges." (RPMC, 2024)

Taking into consideration the inadequacies of the previous implementation of the BRBDP, may the current administration learn from the lessons of the past to ensure an improved socio-economic status and strengthened environmental and disaster response among the communities in the Bicol River Basin.

The table below shows the summary points of the preceding discussions on the planning and implementation of the BRBDP, contrasting the issues presented with their corresponding consequences and the proposed solutions or alternatives with recommendations.

Objectives	**Status and Issues**	**Result/Consequences**	**Proposed Solutions/Alternatives**	**Recommendations**
To add or incorporate soft	Poor design and engineering of the physical	Persistent flooding in the area; difficulty in transporting products and	Shift to nature-based solutions referred to as "green and inclusive	Emphasize environmental studies which is a practical tool

component to the hard component	infrastructure project Environmental impact statement requirements were not taken seriously (done merely to comply with procedural requirements	mobility, detrimental to livelihood and socio-economic activities Negative impact after implementation such as the construction of Lake Buhi regulation project	interventions that respect river dynamics and ecosystem functions". Examples are wetland restoration, floodplain widening and removal of embankment Aside from physical infrastructure (hard component) projects, others must be accomplished (Soft component) such as irrigation systems, farmer's cooperative formed, residents resettled, farmlands consolidated and social service-oriented programs set-up. In addition, intensified reforestation of the basin watersheds, strict slope-based regulation of mining, silviculture, tourism and grazing activities in the basin Other soft component: Rehabilitate degraded forest lands; improve waste disposal by developing sanitary landfill facilities in different LGUs; resettle families in high disaster risk areas particularly the informal settlements in river easements	to be used in projects such as flood mitigation; Institutionalize an integrated ecosystem management approach in projects and programs
To enhance collaboration among various stakeholders	Inadequate coordination among agencies and stakeholders, among planners and implementers	Misunderstanding on roles and functions causing delays in the implementation thus producing inefficient or defective projects; Delays in implementation thus cost overruns where ballooning costs of the infrastructure component forced the national government to abandon	Integrated Area Development (IAD) as a planning approach integrating all sectoral activities to attain social change Decentralization through transferring of tasks such as planning and management to regional councils and local government officials	Change the organizational structure to fill institutional gaps through stronger coordination and collaboration among stakeholders to ensure sustainable future of the communities. To address environmental and developmental challenges,

		the project, in one instance		environmental and disaster risk agencies must be included in the planning and implementation of the program such as the Climate Change Commission, Bicol Association of Water Districts, Regional Agricultural and Fishery Council and the Bicol Region Disaster Risk and Reduction Management Council. Readjustment of roles and functions such as including all and enhancing stakeholders' capacity in the planning and implementation stages Training on efficient management of funds for program implementation
To improve local governance responsive to issues and challenges	Concentration of LCEs and governors on their political boundaries	Neglect of interlocal development initiatives, programs, projects and activities Gains and successes in the implementation become limited, not shared for the benefit of the other LGUs	Require LCEs and governors to be actively involved in all stages-from the planning to implementation and monitoring of the projects Good practices must be shared and issues discussed to ensure awareness of the LGUs and to guide appropriate actions	Establish mechanisms to ensure that LGU officials and local administrators are properly oriented of their roles and functions and are active participants in the planning and implementation of the program

Refocusing the Bicol River Basin Development Program means carefully studying the previous plans and implementation of the program and employing steps for an improved program addressing the needs of the communities in the basin and thus ensuring a stable and steady socio-economic progress. Previous implementation of the Program focused heavily on the hard component which was on construction of physical infrastructures which garnered few successes. A wholistic approach is recommended where soft components are given due consideration in the planning and implementation stages. Environmental studies, a practical tool to be used in projects is necessary to address critical environmental challenges. Collaboration among implementing agencies and all stakeholders must be enhanced such as employing the Integrated Area Development approach in integrating sectoral activities and decentralization of tasks to regional councils and local governments which are entrenched in the communities. Improving local governance, including efficient fund management must be

given emphasis where good practices and useful information are shared across communities and local government units to harmonize actions towards a progressive and sustainable system for the Bicol River Basin.

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