

Internal Ex-Post Evaluation for Technical Cooperation Project (SATREPS¹)

Conducted by Philippines Office: November, 2020

Country Name	Project on Integrated Coastal Ecosystem Conservation and Adaptive Management under Local and Global Environmental Impacts in the Philippines (SATREPS)
Republic of Philippines	

I. Project Outline

Background	<p>In the Philippines, destruction of ecosystems and deterioration of living environment in the coastal areas became serious issues due to worsening water and sea water pollution associated with poverty and economic growth, unplanned tourism development, illegal fishing activities and impacts of natural disasters and climate change. The degradation of coastal ecosystems has adverse effects on livelihoods of local communities and also increases the vulnerability of coastal areas against natural disasters. Unfortunately, necessary basic scientific information had not been compiled for policy and decision making in order to balance economic development with conservation of coastal ecosystems.</p>				
Objectives of the Project	<p>Through developing scientific and socio-economic knowledge for coastal ecosystem conservation and adaptive management, utilization of such knowledge and capacity development of stakeholders, the project aimed at developing a supporting basis for coastal ecosystem conservation and adaptive management.</p> <ol style="list-style-type: none"> Expected Overall Goal: N.A. Project Purpose: The supporting basis is developed for coastal ecosystem conservation and adaptive management. 				
Activities of the Project	<ol style="list-style-type: none"> Project sites: Municipality of Bolinao (Pangasinan Province), Puerto Galera (Oriental Mindoro Province), Boracay Island (Aklan Province), Banate Bay (Iloilo Province), Laguindingan (Misamis Oriental Province), Laguna Lake (Metro Manila) Main activities: 1) development of database on environmental factors and biodiversity in coastal ecosystems, damage potential map, Continuous and Comprehensive Monitoring System (CCMS) and Integrated Decision Support System (IDSS) for policy making, 2) piloting CCMS and IDSS at project sites and development of guidelines for coastal ecosystem conservation and adaptive management, 3) trainings on coastal ecosystem conservation and adaptive management and development of networks among stakeholders including overseas organizations. Inputs (to carry out above activities) <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>Japanese Side</p> <ol style="list-style-type: none"> Experts: 26 experts Trainees received in Japan: 57 persons Long-term trainees in Japan: 4 persons Provision of machinery and equipment: Electric Resistivity Meter, vehicles, Acoustic Doppler Current Profilers (ADCPs), AAQ177 (aquatic quality meter), ES3 Multibeam echo sounder, Sub bottom profiler, Diving PAM (Pulse Amplitude Modulated), Dissolved Oxygen (DO) meters, Salinometer, etc. Local operation costs: Travel expenses, cost for local consultants, etc. </td> <td style="width: 50%; vertical-align: top;"> <p>Philippine Side</p> <ol style="list-style-type: none"> Staff allocated: 25 persons Land and Facilities: Office space at the University of the Philippines Marine Science Institute (UP MSI) Operational Cost: Maintenance cost for equipment, travel expenses, maintenance cost for vehicles </td> </tr> </table> 			<p>Japanese Side</p> <ol style="list-style-type: none"> Experts: 26 experts Trainees received in Japan: 57 persons Long-term trainees in Japan: 4 persons Provision of machinery and equipment: Electric Resistivity Meter, vehicles, Acoustic Doppler Current Profilers (ADCPs), AAQ177 (aquatic quality meter), ES3 Multibeam echo sounder, Sub bottom profiler, Diving PAM (Pulse Amplitude Modulated), Dissolved Oxygen (DO) meters, Salinometer, etc. Local operation costs: Travel expenses, cost for local consultants, etc. 	<p>Philippine Side</p> <ol style="list-style-type: none"> Staff allocated: 25 persons Land and Facilities: Office space at the University of the Philippines Marine Science Institute (UP MSI) Operational Cost: Maintenance cost for equipment, travel expenses, maintenance cost for vehicles
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Project Period	February 2010-February 2015	Project Cost	(ex-ante) 300 million yen, (actual) 409 million yen		
Implementing Agency	University of the Philippines Diliman (UPD), UP Visayas (UPV), Mindanao State University (MSU)				
Cooperation Agency in Japan	Tokyo Institute of Technology, Kochi University, Hokkaido University, University of Tokyo, Nagasaki University, University of the Ryukyus, Japan Agency for Marine-Earth Science and Technology, Okinawa Prefectural Government, and LEAD-JAPAN				

II. Result of the Evaluation

< Special Perspectives Considered in the Ex-Post Evaluation >

The Master Plan and Plan of Operation attached to the Record of Discussion (R/D) mainly specified the project activities and statements of Outputs and Project Purpose but not the corresponding indicators. In order to evaluate the project, the Terminal Evaluation Team in September 2014 identified indicators for each Output statement and Project Purpose. Based on those indicators, the Terminal Evaluation Team assessed the project performance and concluded evaluation judgments. The ex-post evaluation uses the indicators identified by the Terminal Evaluation in 2014.

1 Relevance

<Consistency with the Development Policy of Philippines' at the Time of Ex-Ante Evaluation and Project Completion>

The project was consistent with the Philippines' policies focusing on conservation and rehabilitation of the environment such as "The Philippine Development Plan (PDP)" (2011-2016).

<Consistency with the Development Needs of Philippines' at the Time of Ex-Ante Evaluation and Project Completion>

The project was consistent with the Philippines' development needs for improving local economy, industry and livelihoods of coastal communities while developing coastal ecosystem conservation and adaptive management.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

¹ SATREPS: Science and Technology Research Partnership for Sustainable Development

The project was consistent with the “Country Assistance Program for the Philippines” (2008) prioritizing assistance for the empowerment of the poor and improvement of living conditions of the poor.

<Evaluation Result>

In light of the above, the relevance of the project is high

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was achieved by the time of project completion. The project successfully established the supporting basis for coastal ecosystem conservation and adaptive management in the Philippines through development of the IDSSs compiling results of analyses; development of simulation models and establishment of CCMSs. Scientific and socio-economic knowledge basis was developed by researchers and the knowledge basis was disseminated in close communication and involvement of local stakeholders such as in the development of CCMS.

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have been partially continued since project completion. Some of the research outputs have been utilized such as the CCMS-Naawan for continuous monitoring of specific water parameters for further research. On the other hand, other CCMS (such as those in Bolinao, Banate Bay, Puerto Galera) are not utilized due to non- maintenance and malfunction of the sensors, and so on. In areas where there are sensors that are still functional, UPD decided to pull it out due to the fear of being stolen and no research project to use the sensors. Although IDSS has been used by UP MSI and UP Department of Geodetic Engineering (UP DGE) for their researches, most of IDSS installed at the pilot Local Government Units (LGUs) have not been used because of technical constraints including poor internet connectivity and limited human resource capacity of LGUs due to transfer of former personnel involved in the project to other work stations and some of IDSS have not been in functional conditions since they have been broken by typhoon. On the other hand, the results of the simulation models were utilized by LGUs and relevant organizations, including UP MSI and Laguna Lake Development Authority (LLDA) for assessment of ecological conditions of water bodies to improve their environment management strategies. The Damaged Potential Map developed by the project have been utilized as reference materials for disaster mitigation at the study sites and used for two projects (the Blue Carbon Project and Phil-LiDAR 2 [Light Detection and Ranging] Coast Map Project). The data on Boracay Island green tide has been used for ecological monitoring. In addition, the advocacy materials developed have been used for enhancement of the Biosphere Reserve by UNESCO and LGUs.

On the other hand, some organizations started new researches based on research outputs produced by the project. Also, there were researches related to the outputs generated which are continuously conducted or recently completed. CCMS have been used for two new research projects of UPD (a study on effect of coastal acidification and a research on remote sensing of Laguna Lake water quality). Furthermore, the Integrated Assessment and Modelling of Blue Carbon Ecosystems for Conservation and Adaptive Management (IAMBlueCECAM)² which is ongoing program, has been utilizing the Laguna Lake hydro-dynamic and water quality model.

The Guidebook: The Coastal Ecosystem Conservation and Adaptive Management (CECAM) Approach: An Innovation of Existing Integrated Coastal Zone Management (ICZM) Frameworks (or CECAM Guidebook for short) was disseminated to LGUs and other partner organizations. The CECAM Guidebook contains abstracts and summary of key findings of researches completed. But most municipalities have not used the guidelines because its technical contents were not simplified and there was no follow-up explanation or presentations by the researchers after the project due to both manpower and financial constraints of UP. Also, UPD, UPV and MSU were not able to explore applicability among LGUs in terms of policy decisions related to coastal resource management due to the lack of budget.

Some of the major facilities or equipment such as sub bottom profiler, diving PAM, fluorometer, ADCPs Turbidity-meter, DO-meter, Multi-parameter, Salinometer, Current meter have been continuously utilized by UP MSI Bolinao Marine Laboratory (BML), UP Institute of Civil Engineering, and Training Center for Applied Geodesy and Photogrammetry (UP TCAGP) since project completion.

<Status of Achievement for Expected Overall Goal at the time of Ex-post Evaluation>

Expected utilization of research outcomes of this SATREPS project was not clearly achieved at the time of ex-post evaluation. There was no instance that LGUs have prepared policies, programs or countermeasures to reduce or mitigate environmental stress and conserve ecosystem based on scientific analytical results using the project’s IDSS. However, it can be reasonably presumed that the SATREPS project has somehow contributed to policy making of LGUs. According to UPD, some data produced by the SATREPS project were used by Malay Municipality in drafting their Environment Code, which was enacted into law by said municipality. Also, according to UPD and representatives of the Philippine Chamber of Commerce and Industry- Boracay Chapter, the data produced by the SATREPS project were used in the Senate legislative discussions that led to the closure and rehabilitation of Boracay Island in Malay Municipality in 2018.

<Other Impacts at the time of Ex-post Evaluation>

There have been some positive impact confirmed at the time of ex-post evaluation. Research capacities of researchers involved in the project have improved or enhanced in the areas of: (a) use of methodology for other water parameters; (b) coastal resource mapping; (c) primary data gathering and data analysis; and (d) numerical modeling.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose) The supporting basis is developed for coastal ecosystem conservation and adaptive	Indicator 1: The supporting basis with various scientific and socio-economic knowledge and their integrated tools like IDSS combined with CCMS is developed and implemented for	Status of the Achievement: Achieved (Partially Continued) (Project completion) The results of analysis and simulation using various models developed by the project were incorporated in IDSSs which were installed in 15 sites. The database to compile monitoring data from the networked CCMSs was developed and integrated in the Network The project team successfully developed and established CCMSs at all prioritized 6 project sites.

² IAMBlueCECAM program is led by Dr. Ariel C. Blanco, UPD and with funding support from the Department of Science and Technology - Philippine Council for Industry, Energy and Emerging Technology Research and Development (DOST-PCIEERD)

management.	coastal ecosystem conservation and adaptive management with the establishment of cooperative partnerships and networks among local communities (LGUs), academic institutions and governmental organizations.	<p>A scheme to set Marine Protected Area (MPA) networks and conservation policies was developed based on clarification of coastal ecosystem network.</p> <p>(Ex-post evaluation)</p> <p>The following research outputs have been utilized but many of them including CCMS and IDSS, were not.</p> <table border="1" data-bbox="587 241 1544 891"> <thead> <tr> <th data-bbox="587 241 783 338">Research Outputs of the Project</th> <th data-bbox="783 241 1007 338">Utilizing Organization</th> <th data-bbox="1007 241 1273 338">How Utilized</th> <th data-bbox="1273 241 1544 338">For What Purpose</th> </tr> </thead> <tbody> <tr> <td data-bbox="587 338 783 533">CCMS-Naawan</td> <td data-bbox="783 338 1007 533">UP MSI, MSU-Naawan, LLDA, Tokyo Institute of Technology Blue Cares Project³</td> <td data-bbox="1007 338 1273 533">For continuous monitoring of specific water parameters using data-logging sensors</td> <td data-bbox="1273 338 1544 533">Research development and model input generation</td> </tr> <tr> <td data-bbox="587 533 783 757" rowspan="2">Simulation models developed by the project</td> <td data-bbox="783 533 1007 689">UP MSI, LLDA, Tokyo Institute of Technology IAMBlueCECAM Program</td> <td data-bbox="1007 533 1273 689">For assessing the ecological condition of water bodies under varying environmental stressors</td> <td data-bbox="1273 533 1544 689">Research development and management of the water body under consideration</td> </tr> <tr> <td data-bbox="783 689 1007 757">DGE, Study sites</td> <td data-bbox="1007 689 1273 757">Reference material</td> <td data-bbox="1273 689 1544 757">Understanding coastal phenomena</td> </tr> <tr> <td data-bbox="587 757 783 824">IDSS</td> <td data-bbox="783 757 1007 824">UP MSI, DGE</td> <td data-bbox="1007 757 1273 824">Research, Instruction</td> <td data-bbox="1273 757 1544 824">Enhancement of research and instruction</td> </tr> <tr> <td data-bbox="587 824 783 891">Damage Potential Map</td> <td data-bbox="783 824 1007 891">Study sites</td> <td data-bbox="1007 824 1273 891">Reference material</td> <td data-bbox="1273 824 1544 891">In disaster mitigation</td> </tr> </tbody> </table>	Research Outputs of the Project	Utilizing Organization	How Utilized	For What Purpose	CCMS-Naawan	UP MSI, MSU-Naawan, LLDA, Tokyo Institute of Technology Blue Cares Project ³	For continuous monitoring of specific water parameters using data-logging sensors	Research development and model input generation	Simulation models developed by the project	UP MSI, LLDA, Tokyo Institute of Technology IAMBlueCECAM Program	For assessing the ecological condition of water bodies under varying environmental stressors	Research development and management of the water body under consideration	DGE, Study sites	Reference material	Understanding coastal phenomena	IDSS	UP MSI, DGE	Research, Instruction	Enhancement of research and instruction	Damage Potential Map	Study sites	Reference material	In disaster mitigation
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(Expected Overall Goal)	-	<p>Status of Achievement: Not achieved</p> <p>(Ex-post Evaluation)</p> <p>The project installed and donated IDSS to all pilot LGUs. But after project completion, these systems have not been utilized by any LGU in generating, analyzing and producing scientific information which the LGUs could have used in formulating policies or implementing programs or countermeasures that reduce or mitigate environmental stresses and conserve ecosystems.</p>																							

Source: Terminal Evaluation Report, Project Completion Report, Questionnaire surveys and field interviews with UP Diliman, UP-Visayas, LGUs, Private Sector

3 Efficiency

Although the project period was as planned (the ratio against plan:100%), the project cost exceeded the plan (the ratio against plan: 136%). The project outputs were produced as planned. Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

Before the project, the municipality of Bolinao and neighboring coastal towns (Alaminos-Bolinao-Bani-Anda or ABBA cluster) already had a collective agreement concerning promotion of coastal ecosystem or marine environment. The Banate Bay municipalities through the Banate Bay Resource Management Council, Inc (BBRMCI) also had a collective agreement to promote conservation of coastal resources long before the SATREPS project. While the Environment Code of the Municipal Government of Malay was drafted using some data generated by the research activities of the project, CECAM or JICA was not cited as basis or reference. Other than the Municipality of Malay, there was no policy made by any of the other LGUs that was based on the scientific and analytical results of IDSS to promote conservation of coastal ecosystems.

<Institutional Aspect>

Although there was no formal organizational or institutional arrangement concerning utilization of project outputs between UP Diliman, UP MSI BML, UP Visayas and MSU, the organizational arrangements to continue research activities related to the monitoring of coastal resources and to extend new research activities based on the SATREPS project have been sustained at the research institute level... The Memorandum of Agreement (MOA) executed by the project and Malay LGU and some private sector groups and NGOs did not explicitly specify such arrangement as of May 2014.

Also, although there was no formal organizational/institutional arrangement for the utilization of research outcomes between government authorities and researchers, most LGUs covered by the project had already collective institutional arrangements with neighboring municipalities concerning promotion, protection, conservation and management of communal coastal resources e.g., Bolinao (ABBA cluster), Banate Bay (BBRMCI), and so on. LGUs and other partner organizations were also provided with the CECAM Guidebook through the local chief executives but was not generally shared with the concerned staff and therefore not utilized for any decision-making. On the other hand, research papers of previous students and professors have been used as references by new students.

The operation and maintenance of IDSS was reported to have been turned over to LGUs and LLDA (for CCMS) but there was no formal agreement (e.g., MOA on O&M) or related document signed by LGUs and the project counterparts to this effect. Some LGUs inspect the CCMS platforms through their "Bantay Dagat" (Sea Watch) program (e.g., Bolinao).

<Technical Aspect>

Only a few of the 27 former project counterparts (10 researchers and 17 research assistants) remain working for coastal ecosystem research. On the other hand, researchers who have remained with UP have sustained their skills and knowledge by continuously conducting primary data gathering and data analysis. The availability of various monitoring sensors and equipment in areas where these items are still functional makes data gathering and analysis

³ Comprehensive Assessment and Conservation of Blue Carbon Ecosystems and Their Services in the Coral Triangle (Blue CARES), an ongoing SATREPS project.

deeper and more complete. Also, numerical modeling has become faster and more efficient using advanced computational tools and software.

While staff of UP and MSU were able to sustain skills and knowledge, support to LGUs and local stakeholders through trainings, seminars or workshops has stopped after project completion. Some LGUs however are still being visited as part of the activities of new researches. These include Banate Bay in Iloilo Province by UP Visayas and Boracay Island in Aklan Province by UPD and UP MSI. Nevertheless, follow-up trainings to sustainably operate IDSS and CCMS have not been provided.

After project completion, 11 students finished their researches (thesis, dissertation papers) using research results of previous students involved in the project (2016-2019). In future, some of these students may become government officials and decision-makers of private sector groups who may continue working for integrated coastal ecosystem conservation and adaptive management.

While policies and programs to promote coastal ecosystem had already been in place in most of the LGUs before the SATREPS project, awareness and scientific knowledge of LGU staff involved in the project was enhanced to a certain extent through seminars, training, workshops and presentations in local conferences. However, there is no policy or program formulated or implemented at LGU levels using research outputs of the project, although there may be informal understanding between and among universities i.e., UPD, UPV, MSI-BML, and MSU, about utilization of facilities and equipment including completed research papers by new students, professors and researchers.

<Financial Aspect>

UPD and MSU-Naawan have continuously exerted efforts to secure funding for related researches using project research outputs. UPD and MSU completed 6 researches until 2018 and have 5 ongoing researches until 2021. Funding for these researches come from various sources such as: Australian Centre for International Agricultural Research (ACIAR), Commission on Higher Education (CHED), Department of Agriculture-Bureau of Fisheries and Aquatic Resources (DA-BFAR), Department of Science and Technology- Philippine Council for Industry, Energy and Emerging Technologies Research and Development (DOST-PCIEERD) and DOST-Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARD), Department of Environment and Natural Resources (DENR) and from an NGO (Foundation for Philippine Environment or FPE). These enabled university researchers to visit some LGUs and use some CCMS platforms. UPD (UPV and MSU) have tried to secure enough budget for the operation and maintenance of research facilities (e.g., CCMS) and equipment (e.g., sensors, IDSS at UPD, laboratory, etc.) but were so far unsuccessful. Costs for operation and maintenance of project facilities and equipment were assumed to be covered by UP's annual budget on "Maintenance and Other Operating Expenses/MOOE" but there is no specific budget allocation for CECAM's facilities and equipment. Hence, the absence of sufficient funds explains the non-calibration of most equipment provided by the project, for instance and therefore non-utilization.

Government agencies cited above providing grants to academic researches acknowledge the relevance and necessity for such research activities and therefore continuously provide grants to research proposals from state universities. However, the process of approval takes a long time and procedures are quite tedious.

<Evaluation Result>

In light of the above, there have been challenges encountered by the implementing agencies from the policy, institutional, technical and financial aspects. Therefore, the sustainability of the effects through the project is fair.

5 Summary of the Evaluation

The project achieved the Project Purpose through developing and disseminating scientific and socio-economic knowledge as basis for coastal ecosystem conservation and adaptive management, as well as capacity development. However, the utilization of research outcomes have not been fully maximized at the LGU/community levels though research outputs have been utilized for other and new research undertakings. As for sustainability, there have been challenges to promote scientific evidences for policies and program formulation for coastal conservations by LGUs while the research institutes and universities have sustained their research activities on ecological systems in the coastal areas. As for efficiency, the project cost exceeded the plan.

Considering all of the above points, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency (UPD MSI and LGUs):

It is recommended that UPD MSI undertake the following actions to enhance the sustainable use of IDSS and CCMS as well as the CECAM Guidebook developed by the SATREPS project:

- Upload and make available the CECAM Guidebook in the UP website
- Prepare draft project sustainability agreement between UP and pilot LGUs containing UP's provision of necessary trainings to LGU staff in-charge of IDSS, simplified presentation of research findings to local executives and decision-makers of LGUs; and LGU's responsibility to properly operate and maintain IDSS and CCMS including data generation, monitoring and analysis, among others
- Secure organizational approval of the draft project sustainability agreement
- Make an action plan to conclude and implement the project sustainability agreement, and
- Conduct dialogues; practical hands-on trainings for the operation and management of IDSS as well as CCMS; organize workshops to understand research findings; and advocate for policy/program formulation on sustainable coastal resource management to LGU chief executives and concerned officers

Lessons Learned for JICA:

- For this SATREPS project, utilization of research outputs and outcomes has not been fully understood and utilized by LGUs and other local stakeholders as their involvement was limited only to assisting the research activities of main project researchers. Additionally, at the onset, the project design failed to set clear project objectives and strategies for promotion of utilization of the research outputs for ecological conservation in the coastal areas. Defining indicators in the beginning of project implementation can provide proper guidance to Project Team in aligning research activities to achieve development results and eventual adoption of policy recommendations at the LGU and community levels. JICA may also consider providing support in organizing workshops for relevant stakeholders after project completion to partly address dissemination of research outputs and hopefully adoption of policy recommendations.
- It is important to consider possibilities of local procurement for research-related equipment under SATREPS projects to ensure proper maintenance, efficacy and cost-effectiveness. A well-planned procurement plan should also be developed in consultation with stakeholders that will rationalize the required equipment items and timing of procurement of such items.



Water Sample Processing



Banate Bay Sensor Deployment