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GOS-UNDP-GEF

**ECOSYSTEM BASED ADAPTATION TO
CLIMATE CHANGE IN SEYCHELLES
(EBA Project)**

INCEPTION WORKSHOP REPORT

Thursday, 30 October 2014

STC Meeting Room, Victoria

1. INTRODUCTION

The GOS-UNDP-GEF Project “Ecosystem Based Adaptation to Climate Change in Seychelles” (“EBA”), was signed between Government of Seychelles (GOS) and UNDP in September 2014. The project has started implementation with the recruitment of the UNDP Project Manager as of September 2014. The inception workshop is among the first activities under this project. It serves to assist the stakeholders to understand and take ownership of the project’s goals and objectives, and to discuss the project work plan on the basis of the project logframe. This report documents the proceedings and outcomes of the inception workshop.

2. AGENDA AND PARTICIPANTS

The workshop was held on Thursday, 30 October 2014, at the STC Meeting Room in Victoria. Participants were the project implementers, the main stakeholders and Steering Committee members. See ANNEX I for the Agenda and ANNEX II for the List of Participants.

3. GOAL, OBJECTIVES & OUTCOMES

The **Goal** of the Workshop was: *EBA Project understood and owned by stakeholders, so that the project will be effectively implemented.* The specific **objectives** were the following:

- *The GOS-UNDP-GEF EBA Project explained and discussed;*
- *Implementation modalities and responsibilities, including reporting and monitoring, explained and agreed;*
- *Logical Framework (logframe) matrix reviewed and validated, including risks & assumptions*
- *Draft 2015 Annual Work plan discussed*

The **Outcomes** of the workshop were therefore: validated EBA Project log frames, including risk analysis, and agreed elements for project work plans.

4. PRESENTATIONS

Mr Selby Remy, UNDP-GEF EBA Project Manager, welcomed the workshop participants and presented the Agenda of the Workshop (see ANNEX I).

Next, the Workshop was officially opened by Mr Alain Decommarmond, the National Project Director. He started by saying that this was a historic day for Seychelles in its efforts to adapt to climate change as the EBA Project was the largest ever project looking at the adaptation of Seychelles to climate change. He pointed out that the project had three components, one on water resources, one on coastal flooding and erosion, and one on policy, guidelines, education and awareness. The special thing about the project was its mixed approach, consisting of action on the ground and the engagement with the local community on the one hand, something that would be facilitated by the project’s unique structure, and the review and adaptation of the policy framework on the other hand. The project would be active on Mahe and Praslin, but there was scope to look at other areas as well. He emphasized that this was the workshop’s participants’ opportunity to be involved as the project cut across all sectors; it was very important for people to give their opinions and expectations of the project as adaptation to climate change is very important. The Ministry of Environment, the Steering Committee and the National Climate Change Council (NCCC) would all ensure that, at the end of the 6 years of the project, the outcomes would be satisfactory. He thanked the project partners and the workshop participants and their organisations for attending the workshop and declared the workshop open.

Mr Simon Springett, the UN Resident Representative for Mauritius and Seychelles, expressed his great pleasure in joining the participants for the workshop. He introduced the project by saying it focused on two key issues, water scarcity and flooding. The climate change projections for Seychelles indicated

that problems would get worse. The topography of small islands put constraints on water storage capacity, so water supplies depended to a large degree on rainfall. In addition, the coastal zones were vulnerable to flooding as a consequence of rising sea levels and increased storm surges in the Western Indian Ocean. The project would reduce these vulnerabilities by spearheading ecosystem-based adaptation to climate change.

Mr Johan Robinson, UNDP-GEF, who had been involved in the project from the beginning, having written the initial project document, was the next to speak. He emphasized that the EBA Project is the largest project in the UNDP Seychelles portfolio at the moment. He said that one of the big problems of climate change was that the poorest people are affected worst although they contribute least to the problem. As a consequence, the Adaptation Fund had been initiated. However, he underlined that funds to adapt to climate change needed to be provided in addition to what is available already, not instead of. He mentioned that the Project Document had been signed in June 2014. The project focused on water scarcity, especially during the dry season, and the sea level rise, which led to coastal erosion and flooding. Watershed management was needed to improve adaptation to the more extreme conditions created by climate change. He pointed out that there was a similar project on La Digue, the Integrated Water Resource and Wastewater Management (IWRM) Project. The EBA Project would be active on Praslin and on Mahe.

Mr Remy then presented the institutional framework of the project, starting with the project structure (see ANNEX III).

Mr Lindsay Chong-Seng, PCU, made the point that while there often were water shortages during the dry season, Seychelles actually received 3m of rainfall in a year. He talked about Johannesburg, where legislation had been introduced concerning half-flush toilets and other water-saving devices. He suggested that maybe cutting water consumption should be looked at at the same time as other project activities were ongoing. He wondered how expensive water storage facilities would be and whether there would be subsidies for people putting up water tanks.

Mr Robinson answered that there was some provision for water-saving activities in the project, also legislation could be looked at under this aspect, but the project could not provide subsidies. He suggested looking elsewhere for additional funding for these sorts of activities.

Mr Hervé Barois, PCU, pointed out that as the watershed area on Mahe was mostly located in the National Park, a National Park representative should be included in the Rivers Committee. Also, the NCCC did not include people who could assess the impact of climate change on biodiversity. This needed to be addressed.

Mr Decommarmond responded to the latter point by saying that the NCCC had only been activated this year. There was a Government representative for biodiversity conservation on the NCCC and a representative of LUNGOS. LUNGOS had been asked for a nomination for someone to go on the NCCC and LUNGOS had suggested S4S. Other organisations had also shown interest to join the NCCC. At the next NCCC meeting, other NGOs would be considered, specialist NGOs or even individual scientists. The NCCC was agreeable to open participation up to get as much specialization as possible. Discussions on this were ongoing. Mr. Barois said that he hadn't been talking about NGOs but rather that someone needed to be on the NCCC who was capable to assess the impact of climate change on biodiversity.

Mr Chong-Seng added that there should also be representation from NGOs dealing with marine biodiversity.

Mr Barry Nourice, Seychelles Agricultural Agency, questioned whether the impact of climate change on the farming community was addressed by the project, particularly the issue of salinization. He pointed out that farmers had to deal with salinization for 4-6 months a year, compared to flooding, which happened only three or four times a year. He had given Joseph Rath, the national consultant

involved in this project's development, a 17-page document on salinization – he wondered whether that had been taken up in the project document.

Mr Roland Alcindor, UNDP, said that there would be an EU project on salinization on La Digue next year. He said attempts would also be made to address this issue under the EBA project.

Mr Remy said that the EBA project already includes a small component on salinization. Also he pointed out that agriculture representatives were involved at all levels including the Rivers Committee.

Mr Frankie Dupres, PUC and Rivers Committee, admitted that the Rivers Committee had been dormant for a time, but now the Committee wanted to increase its powers. Some Government members were on it, but it was going to find out whether it would be possible to have more.

Mr Remy said that the project is calling for local committees in each of the target sites to oversee project activities. He had already met with some of the local authorities to see how this might be structured. He pointed out that every district is different, which has implications for how the districts want to do this. Bel Ombre for example, is well advanced, whereas others are not.

Mr Chong-Seng had a question for Mr Dupres. He said that, during his walks, he frequently saw people tapping water illegally from streams, so he wanted to know whether the Rivers Board would have its own enforcement unit or whether it would continue to rely on the police.

Mr. Dupres responded that, at the moment, they didn't have that power but they wanted to have this in the future.

Mr Benjamin Vel, Project Manager for the UNEP coastal EBA project, pointed out that one had to be careful when organizing the local committees: meeting with the DAs beforehand would risk that the committees would turn out very one-sided.

Mr Remy responded that the project team was aware of this and wanted to have public meetings so that there would be proper buy-in of the project processes.

After a tea break, Mr Remy gave a presentation on what the EBA Project will deliver – project objectives, components and key outputs (see ANNEX IV). He started with Component 1. The five sites selected for Component 1 were Praslin and Mare aux Cochons, Caiman River, Baie Lazare and Mont Plesir on Mahe.

Mr Chong-Seng voiced his concern that before any dredging was done at Mare aux Cochons, whether the marsh was actually silted up should be investigated first.

Mr Remy assured him that the project had to go through the proper EIA process before doing anything. He said there were areas where there were water problems and areas where there were no water problems. Baie Lazare was an area of major conflict between agriculture and PUC. The barrages and dams mentioned under Component 1.2 were maintained by PUC.

Mr Barry Nourice said that agricultural interests were not out to cause trouble. The PUC Act gave the PUC the power to take water for consumption. The EBA Project should look into how to make the best out of a limited resource. He insisted that agriculture was not a hindrance to development and he would appreciate it if the project could convince all the stakeholders of the importance of agriculture.

Ms Mia Dunford, S4S, also raised her concern about dredging at Mare aux Cochons as the biodiversity in that area was very sensitive. She asked for the dredging to be cancelled.

Mr Ashton Berry, University of Seychelles, asked how the five project sites had been selected.

Mr Robinson answered that the consultants involved in project development had suggested them and that the sites had been approved through the national consultation process.

Mr Decommarmond added that Mare aux Cochons was also a Ramsar site, i.e. a wetland of international importance, so everybody was aware of the importance of the biodiversity at Mare aux Cochons. Any action would have to be backed up by scientific evidence. The evidence available to date suggested that the Mare aux Cochons had visibly shrunk and silted up quite a bit, so dredging was a possibility, with consequences for watershed management. In reference to different uses he said that this was one of the issues that the project would resolve with legislation, guidelines, etc. The project was not just about increasing water resources but also about how to use wisely the little that was available. He hoped that getting the local committees involved would help to do this.

Mr Barry Nourice gave an example of how bad the situation was: in Grande Anse, originally, there had been a barrage and a 4-inch pipe taking off water for agriculture and everything had been fine. Then one day there had been no water and when he checked, he found that PUC had installed an 8-inch pipe in the same barrage without any consultation. So there was no more water for agriculture.

Mr Vel suggested that the selected sites might need to be re-evaluated as they might no longer be valid.

Mr Robinson pointed out that that was not possible without going back to the donors and re-writing the project document.

Mr James Changtave, MLUH and Planning Authority, suggested that it should be determined who had been on the site first.

Mr Barry Nourice asked why Grande Anse had not been selected as a project site as this had been recommended by stakeholders at the time.

Mr Robinson apologized for the omission, but he hadn't been in the country at the time and he was sure that the participants at the validation workshop, which agreed the final list of sites, had been a cross-section of stakeholders.

Mr. Remy then introduced the sites for Component 2, Anse Royale and North East Point on Mahe.

M. Chong-Seng asked whether the project counteracted in any way the poaching of sand from beaches as it didn't seem to make much sense to put money into improving sea defences while the locals were taking away the sand at the same time.

Mr. Decommarmond agreed that sand poaching had significantly increased since the nineties but that it was already regulated by law. Enforcement was an issue, as Seychelles was such a small country, everybody knew everybody else and people were hesitant to give details.

Dr Christopher Kaiser-Bunbury, PCU consultant, raised two issues. Firstly, he wondered about the timing of the different components. Secondly, he pointed out that all watershed areas were protected by law – was it actually legally possible to do things like chopping down trees in these areas?

Mr Remy answered that all the components would run at the same time and that the legislation allowed things to be done in the national park.

Mr Chong-Seng pointed out that maybe we should not be surprised if houses built on a flood plain got flooded. Formerly, people used to build houses away from flood plains and so flooding had not been an issue. He thought that the number of houses that were flooded regularly was not that great, and, as a result he wondered whether maybe these houses should be re-designed rather than investing in drainage.

Mr Changtave suggested that most flooding in residential areas was caused by human factors such as rubbish in the drains, etc. People were not sufficiently educated. The people in the communities needed to be educated not to throw things into drains and waterways.

A participating student from University of Seychelles disagreed: she thought that both human and natural factors should be taken into consideration.

Mr Dupres asked where in the project structure construction activity in watershed areas was considered.

Mr Remy answered that this was taken into consideration in Component 3.1.

Mr Decommarmond said that the project was looking more at the ecosystem level, not at individual activities. The project needed to look at how people can co-habit with the natural ecosystem. In order to do that, what had been done so far, such as within the context of Land Use Planning (LUP), needed to be investigated.

Mr James Changtave pointed out that the LUPs were still at an early stage.

Ms. Philina Lablanche (Planning Authority) added that the two LUPs for Praslin had already been approved and therefore the project had come at the right time to assist in implementing those LUPs.

Mr Victorin Laboudallon, TRASS, said that in the sixties, all the houses on La Digue had been built on pillars, but now they were being built flat on the ground. He also pointed out that islands that didn't have any buildings on them at all still flood. He concluded that it's the buildings that needed to be adapted. The department that gives permission for constructions, the Planning Authority, needs to consider this in approving designs.

Ms. Philina Lablanche (Planning Authority) pointed out that the Planning Authority already considered this in approving applications to build houses; if the houses were in flood areas, they needed to be raised by 1 metre.

Mr Changtave pointed out that in the process of house construction, the first stage was a consultation with various Government agencies. The Planning Authority came in next and included representatives of various sectors including the private sector. He insisted that applications were never approved just like that, they were only approved with a list of conditions. If the conditions were not fulfilled, the Planning Control came in. These days, people complained that the conditions were too strict. However, conditions had to be met.

Mr Andrew Grieser Johns, PCU, then presented the results framework of the project, its indicators, targets and risks (see ANNEX V).

Mr Roland Alcindor, UNDP, gave details on the project budget, reporting procedures, monitoring and evaluation, and informed participants of a potential further contribution to the project from the EU.

A number of points were raised in the following discussion.

Mr Chong-Seng asked whether the reduction of water consumption in households couldn't be made another indicator of project performance. Secondly he asked whether the 700,000 USD for the dredging of Mare aux Cochons could be used for something else if it was decided not to dredge.

Mr Grieser Johns responded by saying that although the project logframe was four years out of date and could have included some more indicators, he understood that it was next to impossible to change the logframe of an Adaptation Fund project. However, Mr Robinson was going to find out about the flexibility of the Adaptation Fund in this respect. On the second point he pointed out that many activities were proposed in addition to dredging/excavating of Mare aux Cochons. Which activities would be carried out in the end would ultimately depend on the EIA and the stakeholders.

Mr Selby pointed out that the project might not need to go up to the Mare aux Cochons Marsh after all, because the PUC had found that all the water from there is coming down into a small area which may be tapped without difficulties anyway.

Mr Robinson said that if the stakeholders decided not to dredge, then that would be fine, but the money would have to go to another ecosystem-based activity.

Mr Kaiser-Bunbury said he liked the quantifiable targets but they would be difficult to achieve. An ecosystem had a lag in response time, and the project was required to report every year. Within the 5-year timeframe of the project it would be quite difficult to achieve the targets.

Mr Decommarmond pointed out that the IWRM project was another regional water resource project looking at storage of water and efficiency of use.

Ms Helena Sims, Manager for the GOS-UNDP-GEF Protected Areas project, asked in relation to the North-East Point intervention whether there was a baseline and whether the capacity to monitor the activity existed in Seychelles. She wondered whether there would be a possibility to revisit targets at the mid-term evaluation. She considered the project targets as very ambitious and wondered what would happen if the project did not achieve the targets.

Mr Robinson answered that yes, there would be an opportunity to revise the logframe, but not at the beginning of the project. He also pointed out that there was a big difference between forest rehabilitation and restoration – restoration meaning getting the forest back to its normal state, and rehabilitation meaning re-instating the ecosystem services to the humans. Only 60 ha were to be restored by the project.

Ms Sims insisted that even 60 ha was a big target.

Mr Robinson agreed, but said that it could not be changed at this point.

Mrs Dunford asked what the project could do with funds not spent on Mare aux Cochons. She pointed out that Seychelles is not a farming country and in view of the fact that Seychelles does not have much land, maybe the project could look at hydroponics. This form of horticulture would also protect plants better from insects and other pests.

Mr Robinson pointed out that there were restrictions to switching money from one project component to another.

Mr Chong-Seng pointed out that maybe it would be possible to share costs. He said that while the Nature Seychelles model could be used as an example, there were others: he understood there were examples where artificial reefs had been constructed with wire mesh.

Ms Sims pointed out that the method for creating an artificial reef proposed by the EBA project, involving first re-creating the physical structure of the reef, was not the way Nature Seychelles do it.

Mr Decommarmond pointed out that the project was not only looking at capacity building in Government, but also outside of Government. As to the Mare aux Cochons – this was not just a small wetland at the top, but rather it included the whole watershed area. The project would use best practices, but which best practices will be decided with the expert team, with all of the stakeholders.

Mr Barry Nourice asked whether the Mare aux Cochon also feeds Grande Anse. He said the first area he had taken the consultant Joe Rath to had been Grande Anse, which had not been included in the project, which he still considered as unfortunate. As to salinization, he considered anything above USD 300,000 as a good starting point, but the project budget only allocated USD 175,000. The equipment for monitoring salinity alone would cost more than this.

Ms Elvina Henriette underlined that if anything was done in Mare aux Cochons, an impact assessment on biodiversity was required, not only on environment. She asked whether the management plans for the sites would be done first or at the same time as the activities.

Mr Remy answered that they would be done at the same time, as the project would be very late in implementing actions if it waited for the management plans to be in place. Priority actions could already be identified prior to completion of the management plans.

Mr Decommarmond pointed out to Mr Barry Nourice that both the SAA CEO and the PS had been involved in the development of the project in 2012. Nonetheless, the project needed to look at the sites and possibly identify areas where it could move funds between sites, if this was allowable. He emphasized that the participants' points were taken on board.

After a break for lunch, Mr Remy introduced the project work plan and budget (see ANNEX VI).

Mr Chong-Seng said, considering that Mr Barry Nourice wanted at least USD 300,000 to be able to develop feasible actions to counter salinization, and most of that was equipment costs, maybe there wasn't enough money in the budget to do any implementation.

Mr Robinson said that he had been talking to Mr Nourice over lunch and that Mr Nourice and Mr Remy would come up with a solution to help at least some of the farmers.

Mr Grieser Johns noted that the Project Document stressed the importance of engaging with the University of Seychelles in developing training programmes.

Mr Barois made two points. Firstly, he said that there was no budget allocation for the Rivers Committee. Secondly, he stressed that the project needed to ensure that the local committees were empowered once they were set up. For this purpose, the community needed to be educated – which was not reflected in the budget.

Mr Remy answered that support for the Rivers Committee is incorporated in the budget even if it is not specifically mentioned. Similarly, he thought that there was enough money in the budget for training the community where needed.

Mr Chong-Seng said that in Baie Lazare, everybody used to have a pig in the backyard, then the Planning Authority had moved the pigs out to Val d'Andorre and set up intensive animal husbandry, which had different water requirement from individual small farmers.

Mr Remy answered that things were what they were and if there was a problem, it would be addressed.

Mr Kaiser-Bunbury noted that Mahe is geographically very small and therefore what was done in one place would affect other places. Although this was an ecosystem-based project, very little in the budget addressed landscape, most of the project activities were designed in isolated fragments.

Mr Grieser Johns agreed that everything being so small is an issue, but there are some aspects like the national watershed monitoring system, which included a functional connectivity monitoring system, that would address the above comment. In terms of budget, he said that the budget table is still being constructed and there was still an opportunity for people to come up with suggestions / questions / ideas.

Mr Remy agreed and said that guidance from people on the ground who knew what was going on was needed.

Mr Barois drew attention back to activity 3.3 and pointed out that the project would require a proper economic evaluation of the ecosystem services. This would cost more than the budgeted 3,000 USD.

Mr Robinson pointed out that a mechanism for this was already in place: a percentage of every litre of water taken from PUC went somewhere, but he was not sure where. He thought that some of it should go into national watershed management.

Mr Chong-Seng asked again what could be done about reducing water consumption as a large percentage of water supplied was said to be lost due to leaking pipes. He wondered whether some of the project money could be used to repair pipes.

Mr Alcindor answered that was not an option (not related to ecosystem-based adaptation).

Mr Decommarmond mentioned an incoming water management project that would address this issue. He added that the SR 25 in environment levy added to the payment for every litre of PUC water had been reduced to SR 15 and it was now called a 'management levy' – i.e. it was not specifically related to protection of the watershed any more. As there currently was no Minister, no decision could be made on how to use these SR 15.

Mr Barois said that as it was now called a 'management fee' it could be used for many things such as dealing with waste water. He asked how much it actually amounted to.

Mr Frankie said there were 20,000 households in the country, each received a bill, and each household was paying the levy.

Mr Grieser Johns pointed out that the project document estimated there to be 23,000 households, and the project target was based on the payment of SR 25. So if the amount paid for each litre had gone down from 25 to 15 Rupees, the project would immediately run into trouble in meeting the target.

Finally, Mr Robinson summed up the discussion. He emphasized that in Baie Lazare, where there is a conflict between PUC and agriculture, the project needed to set up a local institution to resolve the conflict, like a local watershed management committee. The role of the project was to support the mediating structure, not to mediate directly.

Mr Barois re-iterated that community representatives themselves should be on the Rivers Committee. Mr. Robinson answered that the Rivers Committee seemed to be working towards including representatives of the local committees.

Mr Decommarmond said that the project would have to revisit budget lines to take inflation into consideration, etc. However, Mr. Robinson said that to move money from one sub-activity to another might be possible, but to move money from one activity to another was not. Mr Grieser Johns translated that to mean that it might be possible to move money e.g. from Baie Lazare watershed management to Caiman watershed management, but not to move money from watershed rehabilitation to coastal damage control.

Mr. Robinson said that to spend money on control structures like barrages and dams was easy, but the emphasis of the project is on rehabilitation, and rehabilitation takes longer. And with that summarizing remark he closed the workshop.

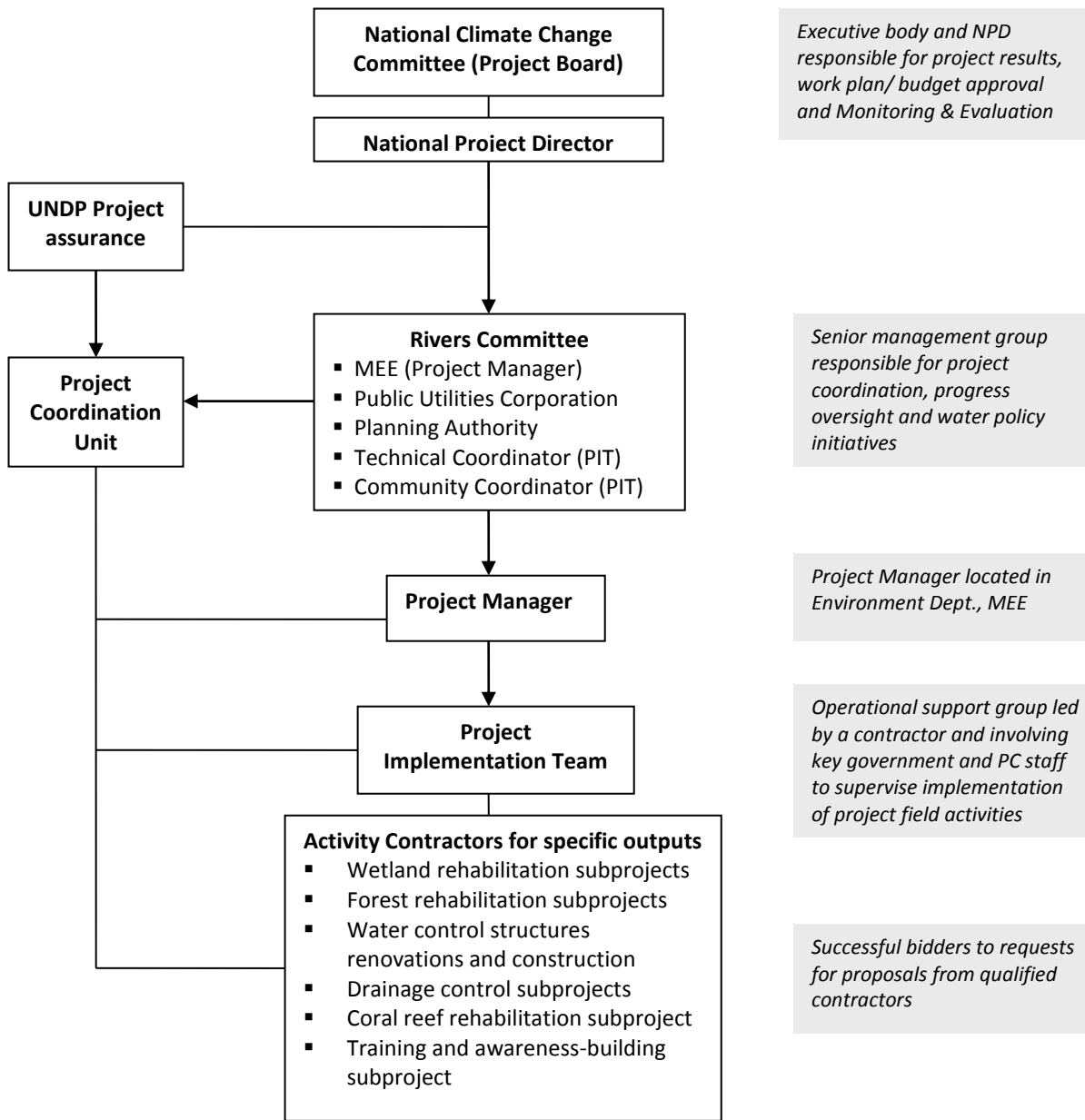
ANNEX I. AGENDA

Schedule	Programme	Presenter
8:30 – 9:00	Registration	
9:00 – 9:05	Welcome	Selby Remy
9:05 – 9:15	Opening of workshop	Alain Decommarmond
9:15 – 9:25	Remarks from the UNDP Regional Representative	Simon Springett
9:25 – 9:35	Introduction of participants	Selby Remy
9:35 – 9.50	Introduction to the EBA project: <ul style="list-style-type: none"> • The Adaptation Fund • Briefing on the development of the EBA project: how priorities were defined 	Johan Robinson
9:50 – 10:10	The institutional framework of the project <ul style="list-style-type: none"> • Project structure • Project Implementation Team • Local management committees 	Selby Remy
10:10 – 10.40	Tea Break	
10:40 – 11:q0	What the EBA project will deliver: <ul style="list-style-type: none"> • Project objective, components and key outputs 	Selby Remy
11:10 – 11:30	<ul style="list-style-type: none"> • The results framework: indicators and targets 	Johan Robinson
11:30 – 11:40	<ul style="list-style-type: none"> • Risks 	Andrew Grieser Johns
11:40 – 12:10	Administrative issues: <ul style="list-style-type: none"> • The project budget • Technical and financial reporting procedures and obligations (quarterly reports, annual PIRs, audit) • The monitoring and evaluation plan; the role of stakeholders in M&E • The potential further contribution to the project from the EU (GCCA+) 	Roland Alcindor
12:10 – 12:30	Discussion	
12:30 – 1:30	Lunch (provided)	
1:30 – 2:30	Project operations: <ul style="list-style-type: none"> • Work plan and budget for 2014 and 2015 	Selby Remy
2:30 – 3.15	Discussion	
3.15 – 3.30	Summing up and Closing of Workshop	Johan Robinson

ANNEX II. LIST OF PARTICIPANTS

<u>No</u>	<u>Names</u>	<u>Organisation</u>	<u>Contact/ E-Mail Adresss</u>
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ANNEX III. PROJECT STRUCTURE



ANNEX IV. PROJECT RESULTS FRAMEWORK (LOGFRAME) AND RISKS LOG

Objective & Components	Indicators	Baseline	Targets	Source of Verification	Risks and Assumptions
Project Objective: To incorporate ecosystem based adaptation into the country's climate change risk management system to safeguard water supplies, threatened by climate change induced perturbations in rainfall and to buffer expected enhanced erosion and coastal flooding risks arising as a result of higher sea levels and increased storm surge.	Ecosystem services and natural assets maintained or improved under climate change and variability-induced stress	Project watersheds and coastal areas are regularly subject to water shortages and flooding events	Reduced water shortages and flooded area involving about 4,000 ha of watershed and coastal ecosystems	Project Monitoring Reports on the Status of Project Watershed and Coastal Ecosystems	Impacts of climate change do not outpace project adaptation responses (this will be alleviated by the project's interventions targeted build resilience)
	August mean daily discharge on two rivers (Mare aux Couchons & Baie Lazare) with increased base flows ¹	Mare aux Couchons August Avg Mean Daily Discharge: 261.1 L/S Baie Lazare August Mean Daily Discharge: 33.4 L/S	Mare aux Couchons and Baie Lazare: Aug. baseline flows +20 – 30%	PUC stream gauge data	Annual variability in rainfall and discharge can mask improvements PUC stream gauges stay functional
	January mean daily discharge on two rivers with decreased flood flows	Mare aux Couchons January Avg Mean Daily Discharge: 595.4 L/S Baie Lazare January Mean Daily Discharge: 173.1 L/S	Mare aux Couchons and Baie Lazare: January baseline flows -20%	PUC stream gauge data	Annual variability in rainfall and discharge can mask improvements PUC stream gauges stay functional
Component 1: Ecosystem-based adaptation approaches along the shorelines of the Granitic Islands	Number of water users with more reliable water supply	10% of PUC water supply customers in project watersheds without fully reliable surface water supply	100% of PUC customers in target watersheds with more reliable water supply	Water use directives and reports by PUC	Continued high dependence on catchment area water resources
	Number of days per year water supply is not available	Number of days per year when stream flows at critical	0 days of no water availability per year in project watersheds	PUC stream flow gauge data	PUC stream gauges stay functional

¹ Baseline stream flow data for Mare aux Couchons are averages for 9 years available data within 2000 – 2011 stream flow records; baseline data for Baie Lazare are averages for available 2007 – 2011 stream flow records. Seychelles Public Utilities Corporation

Objective & Components	Indicators	Baseline	Targets	Source of Verification	Risks and Assumptions
reduce the risks of climate change induced coastal flooding	at two sites: Baie Lazare and Mare aux Cochons ²	low: Baie Lazare: avg. 18 days Mare aux Cochons: avg. 75 days (2010 – 2011)			
	Volume of raw water production from PUC facilities in project watersheds	Annual water production at: <ul style="list-style-type: none"> Mare aux Couchons: 614,336 KL Baie Lazare: 191,232 KL 	Annual water production figures increase by 20%	PUC stream flow gauge data	PUC stream gauges stay functional
	Number of hectares of watersheds covered by site-based water management plans	0 hectares	3,000 ha of critical watersheds	Ministry of Environment and Energy reports on water management planning process	Water use conflicts are resolvable
	Area of rehabilitated water provisioning and watershed flooding attenuation ecosystems	Total hectares of watershed with increased resilience to climate change: 0 Total area of watershed that has undergone total rehabilitation: 0	Total hectares of watershed with increased resilience to climate change: 3000 ha Total area of forest that has undergone total rehabilitation: at least 60 ha	Field reports from project and PUC staff	Forest rehabilitation has not been tested in Seychelles previously
	Active community watershed committees (with gender balance)	No watershed committees established	At least 4 watershed committees established with gender balance	Minutes of committee meetings	Communities are mobilised and committed

Outputs
1.1: Technology application to rehabilitate critical watershed so as to enhance stream base flows and control erosion to reduce climate change induced water scarcity and watershed flooding
1.2: Management and rehabilitation of critical watersheds to enhance functional connectivity and the resilience of these areas to climate change and reduce water scarcity and watershed flooding

² Days below ‘Dry weather flow’ threshold for the stream: Baie Lazare dwf = 7.1 L/S; Mare aux Cochons dwf = 25.8 L/S; the baseline numbers are based on available PUC records – i.e. 1999 – 2010 annual average for Baie Lazare River and 2010 – 2011 (only available) annual average for Mare aux Couchons River. Seychelles Public Utilities Corporation

Objective & Components	Indicators	Baseline	Targets	Source of Verification	Risks and Assumptions
Component 2: Ecosystem based adaptation approaches along the shorelines of the Granitic Islands reduce the risks of climate change induced coastal flooding	Area of rehabilitated coastal ecosystems	# of tidal sluice gates installed: 0 Little wave energy attenuation provided by reef (5% of the pre-1998 bleaching event reef size) Total hectares of wetlands rehabilitated to provide flood attenuation services: 0 ha Total km of rehabilitated beach berms providing a barrier for coastal floods: 0 km Total hectares of mangroves, wetlands, fringing reef, beach berms and other ecosystems with increased resilience to climate change impacts: 0	# of tidal sluice gates installed: 2 by end of project 150 m of artificial breakwater providing substrate for coral growth and wave energy attenuation and more than 10% of original reef area rehabilitated at NE Point Total hectares of wetlands rehabilitated to provide flood attenuation services: 17 ha Total km of rehabilitated beach berms providing a barrier for coastal floods: 5 km Total hectares with increase resilience: 1,000 ha	Project reporting Follow-up field surveys	Local communities are active participants in the project Effects of flood attenuation are measurable at the project sites
	Farm pond salinity levels reduced	Up to 6.0 ppt salinity levels in farm ponds during dry season	70% less salinity levels in farm ponds during the dry season	Discussion with residents and farmers	Farmers are involved in cost sharing
	Number of hectares of coastal ecosystems covered by Integrated Shoreline Management Plans	0 hectares	1,000 ha of coastal ecosystems	Ministry of Environment and Energy reports on coastal	Local stakeholders and administration participate in project implementation

Objective & Components	Indicators	Baseline	Targets	Source of Verification	Risks and Assumptions
				management planning process	
Outputs					
2.1: Ecosystem based measures for flood protection on an urban shoreline					
2.2: Ecosystem based measures for flood protection and mitigating salt water intrusion in an agricultural and tourism development area					
Component 3: Ecosystem-Based Adaptation mainstreamed into development planning and financing	Approved water management policy framework being implemented for watershed areas	No policy and financing framework	Approved water management policy for watershed areas Core annual funding for local watershed management provided by tariffs and fees: \$ 500,000 ³	Policy documents approved by Cabinet Funds collected by PUC for watershed management	Government is committed to policy development Funds allocated or generated for watershed management are targeted at relevant programmes
	Capacity developed for EbA methods: <ul style="list-style-type: none"> Rivers Committee meet regularly A National Watershed Monitoring System developed, applied and influences watershed management decisions Technical standards established for watershed, tidal wetland and beach and reef 	No institutional mechanisms Little information available regarding functional connectivity, watershed integrity and water balance of watersheds Incomplete and ad hoc specifications for ecosystem rehabilitation	River Committee meets every quarter to discuss and address issues Institutionalised and operational watershed monitoring system ensures adaptive management of watershed systems. Technical standards are established and provide the basis for training	Records of meetings of Rivers Committee Data on key indicators regarding functional connectivity, watershed integrity and water balance available	Local residents committed to watershed and coastal ecosystem management Technical standards are adequately tested in the project interventions.

³ This figure is based on approximately 23,000 households served by PUC x 26 rps/mth = 598,000/mth income (\$43,490) based on fixed monthly water “environmental charge” established by the PUC Schedule on Water & Sewerage Charges.

Objective & Components	Indicators	Baseline	Targets	Source of Verification	Risks and Assumptions
	rehabilitation <ul style="list-style-type: none"> Number of trainees by gender skilled in EbA methods 	Few government or NGO staff experienced in watershed or wetland rehabilitation	50 persons (gender balanced) trained in watershed, tidal wetland and beach and reef rehabilitation	Survey of methods to rehabilitate forests and ecosystems Manuals and protocols produced to guide practitioners Post training surveys	
	Number of knowledge products on watershed and coastal ecosystem-based adaptation	Limited awareness of EbA methods related to watersheds and coastal ecosystems	10 knowledge products produced to assist awareness building	Project reporting Experience sharing workshops	The knowledge products address user needs and practical methods appropriate for local communities

Outputs

3.1: Policy and legal frameworks for watershed and coastal climate change adaptation

3.2: Capacity development for ecosystem based adaptation methods

3.3: Lessons learned and Knowledge Dissemination

ANNEX V: RISKS LOG

Type	Date Identified	Description	Date	Comment or Mgt Response	Critical Flag
INSTITUTIONAL	08/01/2014	Policy makers prioritize economic benefits over sustainable and resilient ecosystems	08/01/2014	Project will also build capacity of the relevant national stakeholders at central and local levels. Moreover, awareness raising activities will be implemented at the target sites to convince and change behaviour of decision makers towards ecosystem roles in climate change adaptation.	N
			27/10/2014	Land use planning guidelines have been developed that incorporate ecological considerations. However, the risk remains since developers may still challenge the LUP classifications and/or Planning Authority may base planning decision on other considerations.	
ENVIRONMENTAL	08/01/2014	Extreme natural disasters affect confidence of local community to adaptation measures	08/01/2014	Timing of the period of field activities and design of the interventions will take account of weather conditions and extreme rainfall and storm events that can sometimes overwhelm ecosystem rehabilitation projects and these risks will be incorporated into the operational contingencies.	N
			27/10/2014	Risks to be considered in timing of interventions within the first annual work plan (for 2015) and thereafter.	
ENVIRONMENTAL	08/01/2014	Environmental impact of structures in watercourses and reefs	08/01/2014	Environmental factors will be part of the project activity and water structure designs, particularly in considering water supply development and upland wetland conservation at Mare aux Couchons and other sites, and improving reef integrity and functions consistent with international standards for reef enhancement.	N
			27/10/2014	Environmental impact assessments will be undertaken before commencing activities in ecologically sensitive areas, particularly Mare aux Couchons.	
ENVIRONMENTAL	08/01/2014	Methods of ecosystem rehabilitation need better testing for hydrological impacts	08/01/2014	Ecosystem rehabilitation experiences will need to be adjusted and refined to address hydrological variables, including informed understanding of forest cover change and watershed runoff and infiltration using biological technologies as well as other methods. Intensive discussion on the selection of appropriate methods and species, and the monitoring systems to assess performance will be	N

Type	Date Identified	Description	Date	Comment or Mgt Response	Critical Flag
				designed into the process	
			27/10/2014	A scientific and technical advisor is to be hired as a part-time member of the PIT to ensure these considerations are included within the design of interventions.	
SOCIAL	08/01/2014	Adaptation measures increase inequity	08/01/2014	The project will ensure that the adaptation measures are gender sensitive and demonstrate at the local level that they do not limit the participation of women and the disabled as beneficiaries. Disconnection of illegal water abstractions may create some resentment but the issue will be managed within a community-based water planning process in collaboration with local authorities.	N
			27/10/2014	A community engagement specialist is to be hired as a full-time member of the PIT to ensure community engagement and buy-in, and to ensure that interventions are relevant and beneficial to communities. Conflicts in water abstraction by PCU for household use and by farmers for agriculture will be handled through local community watershed management associations organized in collaboration with the districts concerned.	
FINANCIAL	08/01/2014	The cost of the proposed measures may be higher than expected.	08/01/2014	Project activities have been designed and costed as accurate as possible in its development stage. MEE (including the Project Management Unit) and UNDP will provide permanent support for the contracting, monitoring and financial reporting in order to determine spending levels versus achievement against the results framework. The project will also strengthen the institutional basis for accessing public and private sources of Climate Change finance for EbA approaches in the future to attract additional funding. The key strategy is to internalize management in the public works programmes and forest management in Seychelles, and the necessary recurrent costs should be brokered. The scale of interventions can also be reduced if additional funds cannot be raised in time.	N
			27/10/2014	Additional funds are being leveraged. In particular, the EU has	

Type	Date Identified	Description	Date	Comment or Mgt Response	Critical Flag
				agreed to contribute around \$1.8 million to component 2, although these fund are designed to expand interventions to La Digue rather than provide additional support for the target districts on Mahe. Adaptation is a key feature of the Government's Blue Economy approach such that Government up-take of costs might be expected as the new National development Strategy unfolds.	
POLITICAL	27/10/2014	The legislative framework does not adequately support adaptation interventions (NEW RISK)	27/10/2014	The process of approving legislation that forms the enabling environment for certain interventions (Environmental Protection Act, Physical Planning Act, Land Use Plans for the target districts) us very slow. The absence of the clear legislative framework may hamper the ability ofthe project to design integrated solutions for watershed management, etc.	N

ANNEX VI. DRAFT WORK PLAN FOR Q4 2014 AND 2015

	Output	Activities	ATLAS Budget		2015
			Description	CODE	
Outcome 1: Ecosystem-based adaptation approach to enhancing freshwater security and flood control in Mahé and Praslin under conditions of climate change					795,000.00
Output 1.1 Management and rehabilitation of critical watersheds to enhance functional connectivity and the resilience of these areas to climate change and reduce water scarcity and watershed flooding	1.1.1: Mare aux Cochon Rivershed management	i. Set up of Local Committee, ii. formulation of watershed management plan, iii. Monitoring and evaluation plans.iv Starting of Invasive species management programme. V. Consultancy on the need to rehabilitate the Wetland	International consultants ii and iii	72150	180,000.00
	1.1.2 Mont Plesir	i. Set up of Local Committee; ii formulation of watershed management plan, iii.Ecosystem based water resource adaptation assessment, iv Monitoring and evaluation plans. V. Starting of Invasive species management programme.		74200	46,000.00
	1.1.3 Baie Lazare Water shed management	i. Set up of Local Committee, ii. formulation of watershed management plan, iii. Monitoring and evaluation plans.iv. Starting of Invasive species management programme. v. Assessing the impact of conflicts on water Resources. vi, Initiation of consultative meetings between stakeholders. vii Study on impact and design for wetland rehabilitation		75700	84,000.00
	1.1.4 Caiman Watershed Management	i. Set up of Local Committee, ii.formulation of watershed management plan, iii.Monitoring and evaluation plans.iv. Starting of Invasive species management programme.		71600	68,000.00
	1.1.5 Praslin Fond B'Offay/Nouvelle Decouvert Watershed Management	1. Set up of Local Committee, ii. formulation of watershed management plan,iii. Monitoring and evaluation plans.iv Starting ofvegetation manangement and replanting. v. Starting up of nursery. vi. Study and mitigate the impact of increased landslides on water resources in Fond Boffay area	International consultants ii and iii		133,000.00

Output 1.2: Small-scale water storage and detention facilities designed and constructed or rehabilitated in critical waterways for communities to benefit from enhanced ecosystem functioning by forests	1.2.1 Mare aux Cochons River control structures	i. Renovation of downstream barrage. li. Assessment of impact of plans to abstract water by PUC			90,000.00
	1.2.2 Mont Plesir River Control	i. Barrage Renovation.ii. Assessment of water quality,iii Local consultancy looking at alternative water sources such as rain water			30,000.00
	1.2.3 Baie Lazare River Control	i. Construction of additional barrages. li. Study to determine water source protection zone.iii. Study to determine pollution from agriculture			70,000.00
	1.2.4 Caiman River Control structures	i. Renovation of downstream barrage. li. Assessment of potential for further abstraction			23,000.00
	1.2.5 Praslin Fond B'offay/ Nouvelle Decouvert River control structures	Assessment of the need for new Check dam as a response to fire			44,000.00

Outcome 2: Ecosystem-based adaptation approaches along the shorelines of the Granitic Islands reduce the risks of climate change induced coastal flooding USD 569000

Output 2.1 : Ecosystem based measures for flood protection on an urban shoreline (NE Point)	2.1.1 Intergrated Shoreline Management Plan	Consultancy to develop shoreline management	International Consultant	71200	50,000.00
	2.1.2 Wetland rehabilitation	Consultancy for hydrological balance	Local consultants		50,000.00
	2.1.3 Reef Rehabilitation	Consultancy on Reef rehabilitation plus artificial reef structure	International Consultant		50,000.00
	2.1.4 Beach Berm enhancement	Rehabilitation of beach berm (only to be addressed in partnership with Jica project, Assessment of sand nourishment impact)			134,000.00
Output 2.2 : Ecosystem based measures for flood protection and mitigating salt water intrusion in an agricultural and tourism development area (A.Royale)	2.2.1 Integrated Shoreline Management Plan	Consultancy to formulate Plan Taking into account what was done by MCSS Coastal zone management plan	International Consultant		50,000.00
	2.2.2 Stream channel and wetland rehabilitation	Consultancy wetland function	Local consultants		10,000.00
	2.2.3 Shoreline rehabilitation	Installation of bollards and start replanting. Need for additional surveys/ study	local action		50,000.00
	2.2.4 Ecosystem based salination control measures	Consultancy to gauge the impact of salt water intrusion with possible solutions including alternative water supply	Local/ International consultant		85,000.00

Outcome 3: Ecosystem based adaptation mainstreamed into development planning and financing.					
Output 3.1 Policy and Legal Frameworks for watershed and coastal climate change adaptation	3.1.1 Watershed management policy framework	Comprehensive analysis of legislations and policies impacting on watersheds, including management arrangements	Local Consultants	71300	10,000.00
	3.1.2 Legislative, regulatory and advisory measures	Dependent on 3.1.2 Survey on people's reaction to various management regimes			5,000.00
	3.1.3 Financing mechanisms for watershed protection	To be initiated, by discussing with ETF			3,000.00
Output 3.2 Capacity development for ecosystem based adaptation methods	3.2.1 Training programme development	National Consultant	PCU to coordinate	71300	10,000.00
	3.2.2 Training programme delivery	All the project components will carry a training programme aspect. To start with, Forest Rehabilitation and Beach Berm management	PCU to coordinate		25,000.00
	3.2.3 Institutional support	Institutional support will be provided to the Baie Lazare Watershed as a priority. Lessons learned to be used in other areas			10,000.00
Output 3.3 Lessons learned and Knowledge Disseminator	3.3.1 Communications strategy	To be tendered out	Local Consultant		5,000.00
	3.3.2 Knowledge products	Public and professional materials to be provided to the public			5,000.00
	3.3.3 Experience exchange	For year 2			1,000.00
	Project Implementation team				92,000.00