Natural Resource Management – Natural Wealth Accounting

Evaluation of Global Research Project Activities in Madagascar, Mauritius and Morocco

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List of acronyms

€	euro
CIT	citizens
COP	conference of the parties
DAC	development assistance committee
DONOR	international donor community
EDU	capacity building providers
EP-NUFFIC	European Platform - Netherlands organization for international cooperation in higher education
GDN	Global Development Network
GDP	gross domestic product
GOV	government
ID	identifier
KPI	performance indicator
LRA	local and regional authorities
M	mandate
M&E	monitoring and evaluation
NGO	non-governmental organization
NRM	natural resources management
NRW	non-revenue water
NWA	natural wealth accounting
NWA-BUS	natural wealth accounting specialists (business)
NWA-GOV	natural wealth accounting specialists (government)
OECD	organization for economic cooperation and development
PES	payment for ecosystem services
PhD	doctor of philosophy
R	resources
RES	individual researchers
SDG	sustainable development goal
SEEA	system of environmental-economic accounting
SNA	system of national accounts
TEC	technical evaluation committee
TEEB	the economics of ecosystems and biodiversity
TMT	tailor-made training
UKP	British pound
US$	United States dollar
WAVES	wealth accounting and valuation of ecosystem services

Executive summary

GDN carried out a project on natural resources management – natural wealth accounting, in which the following research studies were implemented:

- Madagascar: Methodology for building of a national inventory of natural wealth;
- Mauritius: Governance and economic accounting issues in the Mauritian water sector - Towards sustainable management of a natural resource;
- Morocco: Supporting the sustainable management of coastal tourism In Morocco by quantifying the economic value of beach ecosystems.

The studies were selected from the response to a call for proposals in the three countries concerned. The research was supported by workshops (in Mauritius, Morocco and France) on research training, natural wealth accounting and communication and dissemination. Further guidance was provided by mentors and a scientific committee. The research resulted in a number of research papers and the start of a dialogue with decision-makers on enhancement of environmental policy. The activities took place in the period September 2014 – December 2015, with a total budget of € 250,000.

The purpose of the project is to increase knowledge and capacity with respect to natural wealth accounting in Madagascar, Mauritius & Morocco. This purpose was achieved. A number of lessons learnt were formulated that are reflected in the following conclusions and recommendations:

Conclusions

- The project has been very successful, in terms of relevance, effectiveness, efficiency and creating the potential to achieve impact and sustainability.
- The approach worked very well.
- Local development knowledge, subject awareness and professional visibility were increased.
- Tools for policy influence were provided. The three research studies that were implemented may not be perfect, but each study delivered output that is very relevant for policy and decision-making.
- The composition of the teams was not the best possible one.
- GDN managed to address a gap in the natural wealth accounting value chain by focusing on research training.
- The embedding in the local situation and the link with other natural wealth accounting initiatives was good, but could be strengthened more.
- The role of GDN as broker and facilitator was instrumental.

Recommendations

- Continue and expand the program.
- Apply horizontal expansion through a call for proposals, similar to the one in the current project, but in other countries.
- Apply vertical expansion that enables the partners from this project to submit a proposal with complementary partners to provide a more in-depth study, with flexibility in the subject.
- Facilitate networking and capacity building through open workshops.

- Create a knowledge base or publish results in an existing one.
- Link or strengthen the link with existing natural wealth accounting initiatives.
- Achieve a more balanced composition of the research teams.
- Assess the potential of the outcome of the research in terms of potential for policy influencing already in the proposal stage.
- Identify key success factors for proposal writing and share these with potential applicants to improve the quality of proposals that respond to future calls.

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1. Introduction and project overview

One of the aims of the Global Development Network (GDN) is to build research capacity in developing countries in economics and social sciences. In this framework a long-term effort to build research capacity in Sub-Saharan Africa was started.

One of the areas where capacity building in research is most needed is natural wealth accounting. Natural wealth accounting is important everywhere, but in developing countries, where exploitation of natural resources forms a large part of national income, it is especially important to account for natural wealth. In this way a more comprehensive measure of natural wealth becomes available, which goes beyond the conventional measure of Gross Domestic Product (GDP) and helps avoid or curb (further) deterioration of the environment and unsustainable use of natural resources.

Based on the discussions that took place in the workshop titled 'Policy lab on measurement and management of natural resources' organized by GDN in Dakar, Senegal in April 2014, GDN, with the support from the Agence Française de Développement and the Ministère des Affaires Etrangères et du Développement International, launched a 'Call for Proposals' in English and French to select 2 to 3 country studies in Africa: Morocco, Madagascar and Mauritius. The studies explore comprehensively the issues in governance, management and estimation of natural resources. More in particular, the studies supported by GDN:

- undertake valuation of key ecosystem services,
- explore challenges facing natural resource management systems (including political economic factors) and
- bring forth information and data on efficient management practices that can inform policy formulation.

The expected output of the studies captures:

- the availability of data for valuation of key ecosystems in these countries,
- potential use of these data in policy formulation and formulation of national accounts,
- policy-level awareness of ecosystem services, natural resource management and
- data gaps that need further research.

After the review and selection of the received proposals, the following research studies were implemented:

- Madagascar: Methodology for building of a national inventory of natural wealth;
- Mauritius: Governance and economic accounting issues in the Mauritian water sector - Towards sustainable management of a natural resource;
- Morocco: Supporting the sustainable management of coastal tourism In Morocco by quantifying the economic value of beach ecosystems.

A steering committee was established and mentors were appointed who provided guidance to the researchers. An important element of the project was the organization of workshops: one methodological (in Mauritius), one peer-review (in Morocco), and a policy-dialogue and research communication workshop, supplemented by training (in France). Special attention was given to dissemination and communication of research results.

The research support through GDN has the wider aim to:

- Connect the researchers to a network of experts of the field that are able to provide them with advice or to connect them to people in their country who can provide them with data;

- Help the researchers to anchor their research at the local level through the interaction with local stakeholders, including local policy makers, to influence the policy-making process;
- Provide the researchers with a global exposure to enable them to understand the current state-of-the-art in relation with their research questions and to encourage them to be more connected through research networks;
- Help the researchers to disseminate their research globally and locally to different audiences.

The total budget for the project was in the order of magnitude of € 250,000. The call for proposals was launched in September 2014 and the last workshop, in Paris, was held in November 2015.

2. Evaluation methodology and criteria

Evaluation methodology

The stakeholder analysis (presented in Annex 2) gives an overview of the main stakeholder groups that are participating in, or potentially affected by, the project and its results. The analysis lists the main interests of these groups, their resources and mandates (in general, but in particular in relation to natural wealth accounting) and the problems they face in face in realizing their mandate. The objective of the stakeholder analysis is to identify which groups are involved in a specific development problem, what their roles are, how they would respond to the proposed intervention and to see what possible conflicts of interest may arise.

The result of the stakeholder analysis is used as input for the problem tree, which is presented in Annex 3. The problem tree lists the main difficulties that are encountered by the stakeholders in relation to natural wealth accounting and shows how these problems are interrelated. The objective of the problem tree is to understand the general situation and to show how the project may contribute to solving (part of) the problems and how this will affect other elements of the problem tree. The problem tree also points to underlying assumptions that may affect project implementation and results (these assumptions are made explicit in the logical framework).

The problem tree is then converted into an objective tree (presented in Annex 4) to demonstrate the contribution of the project to solving problems and overcoming bottlenecks in natural wealth accounting. As is the case with most development interventions, the general area of play is much larger than the effect a single project can have. The objectives and corresponding problems that can be respectively directly reached and solved are indicated with a blue background hue and the ones that are affected indirectly by a red background hue. The aim of the objective tree is to show the relation between the output of the project, the problems that are addressed and how the different aspects are related. Apart from being an instrument to assess performance, an important function of the objective tree is to provide a framework for identifying possible follow-up activities that have a broader reach.

The information from the stakeholder analysis, the problem tree and the objective tree is used as input to elaborate the logical framework for the project (Annex 5). The logical framework states the activities, output, goal and purpose of the project and combines them in a table with performance indicators, means of verification and important assumptions. The goal is usually beyond the reach of the project itself and performs the role of higher-level ultimate aim to which the project contributes. The goal functions therefore as an important reminder of what the project is all about. The activities are the input for the project. Analysis of the indicators with the means of verification (taking the assumptions into account) gives the tools for assessing the activities and the achievement of the output. Similarly, the outputs are assessed with the means of verification for the indicators, based on the results of the activities and the purpose is assessed based on the output.

The logical framework indicates the main tools that will be used for this evaluation:
- Analysis of project documentation
- Analysis of research reports;
- Analysis of project budget and expenditure;
- Interviews with stakeholders;

- Interviews with GDN staff;
- Analysis of documentation on other natural wealth accounting capacity building initiatives;
- Analysis of (documentation on) other research training activities.

Evaluation criteria

The evaluation assesses the aspects of relevance, impact, effectiveness, efficiency and sustainability in accordance with the OECD-DAC definitions of these terms. An important element of the evaluation will be the formulation of possible forward-looking scenarios, where opportunities are sketched to make use of the lessons learnt and to build on the achievements of the project in future activities. It is with this in mind that a comparison of this project with other natural wealth accounting projects and other research training activities is part of the evaluation process.

Related to this, special attention will be given to the assessment of the role of GDN as knowledge broker in natural wealth accounting and as facilitator in the capacity building of teams for natural wealth accounting. As this is a relative new and innovative activity, it will be difficult to carry out a full counterfactual analysis, but based on the information available the added value and uniqueness of the GDN contribution to research capacity building in natural wealth accounting will be evaluated.

General set-up

The analytical part of the evaluation will focus on three parts:
- General: project set-up, management, funding and (internal) evaluation;
- Project activities;
- Forward looking aspects and comparison with other natural wealth accounting capacity building initiatives and research training activities in general.

The project activities can be brought under the following general captions:
- Research studies in Madagascar, Mauritius and Morocco (including selection of proposals);
- Guidance of activities through Steering Committee and mentorship;
- Workshops: on methodology (Mauritius), peer-review (Morocco) and policy dialogue and research communication training (France);
- Dissemination and communication.

The analysis assesses the performance indicators based on the means of verification described in the logical framework (Annex 5). As indicated this will be based on (project) documentation and interviews with stakeholders. Interviews can take place through Skype or alternatively through an email questionnaire.

Interviews

The interviews and survey carried out in the framework of the evaluation cover the following

subjects:

- With GDN staff (current and previous program management): general impression of the project, views on effectiveness and efficiency, quality of participants, achievement of objectives, instrumentality to achieve impact, follow-up ideas, dissemination and contact aspects.
- With the researchers: view on the research itself, usefulness of the workshops, timing and funding aspects, contacts with mentors, contacts with other stakeholders, effect on career perspective, main bottlenecks encountered ideas on how to further the cause of natural wealth accounting in each country.
- With scientific committee members and mentors: view on research and researchers, quality of research output, level of interaction, overall impression of the project.
- With the head of scholarships and subsidies department of the Netherlands organization for international cooperation in higher education (NUFFIC) on research training activities and experiences with program management.

3. Findings in relation to outcomes

The project can be divided roughly in five parts:
1. Proposals (call, review, selection);
2. Implementation of research studies;
3. Work of the scientific committee and mentorship;
4. Workshops; and
5. Dissemination and communication.

3.1 Proposals

In response to the call for proposals (1) 16 applications were received, which is considerable, taking into account the relative short period in which proposals could be submitted and that the call was directed at three countries only. The call itself is clearly formulated; the research topics are presented in sufficient detail, but are broad enough to leave room for own initiative. The requirements for submitting a proposal are not very complicated and GDN substantiates the support that researchers can expect during implementation.

GDN carried out a preselection of the proposals based on eligibility criteria, which is very good, because it reduces the amount of proposals for external review. The external reviewers assessed 11 proposals, of which 3 were selected. The rating is quite consistent, in only 3 proposals there is a significant difference between the reviewers and none has a consequence for the outcome of the selection. The proposal selected for Morocco and Madagascar are indeed number 1 and 2 in the joint ranking, the proposal selected for Mauritius ranks in 5th place. The criteria for evaluating the proposals consider all the important aspects. *A suggestion could be to also assess the potential of the outcome of the research in terms of potential for policy influencing (taking communication and dissemination aspects into account)*. The quality of the submitted proposals varies considerably. However, in most cases it is clear that research training is indeed a priority (formulation of clear research questions, research approach, etc.).

The composition of the team and the experience of the researchers were not ranked by the external reviewers. The interviews (and the lessons learned) indicate that *a balanced team composition, with respect to different disciplines (including at least one economist), is preferred.* Another suggestion was to *complement a more experienced principal investigator with junior researchers, who have just completed their PhD* (pointing at a combination of experience, flexibility and eagerness to acquire new knowledge and expertise).

Another valuable exercise could be to formulate key success factors for proposal writing, based on the information from the proposals and the assessment of the call (this could be done by GDN staff or in future calls by the external evaluators). The results can then be shared to improve the quality of proposals that respond to future calls.

1 This section is based on the text of the call for proposals, a brief analysis of all the proposals received and the ranking and comments of the external reviewers.

3.2 Implementation of research studies

3.2.1 Mauritius - Governance and economic accounting issues in the Mauritian water sector: Towards sustainable management of a natural resource

This research study assessed Mauritian water resources by making use of water accounting (2). The aim was to analyze trends in water use, with special attention to possible future water shortages, and to do this from an economic point of view. Climate change impacts and governance were important elements of the study. The main findings point to the possibility of water scarcity at the end of the winter season and reiterated the fact that 35 – 40% of drinking water is lost (unfortunately not a very surprising statistic, when viewed in an international context). The study also confirmed that the current charges to water users are not enough to finance the much needed long-term investments in the water sector. Again, this is the case for most countries, efforts to charge a "real" price for water have met with resistance and sometimes riots (compare Cochabamba, Bolivia in 2000). Finally the study identifies weaknesses in the way the water sector is structured in Mauritius. The study does not contain a spatial dimension, but this is also less relevant for the problem that is investigated. However, to use water accounting for long-term planning, the use of remote sensing and in-situ observations may increase the accuracy in determining the water balance and multi-annual trends considerably. Publishing of the final research paper is still pending. A discussion on water policy was started in Mauritius, but because of political sensitivity of the issue and vested interests, it will take some time and a lot more discussion before action is taken and the 'business-as-usual' scenario is abandoned.

Environmental accounts in Mauritius and spatial-based methods for water accounting

Water pricing is indeed a difficult issue. In the current situation, most developing countries opt for subsidizing water, both for drinking water and for irrigation. For agricultural purposes, there is mostly no charge at all, especially in the case of groundwater extraction. Charging the 'real' cost of water leads to prices the poor cannot afford to pay, the above mentioned problems in Cochabamba attest to that. Underpricing, however, leads to overuse of water. The focus has been therefore very much on non-revenue water (NRW) reduction, awareness raising for water saving, leading to water saving measures. Unfortunately the latter sometimes is not enough: according to El País, a Spanish newspaper, water saving actions in Mallorca are offset by an increase in tourism and the corresponding increase in water use (tourists use more water than locals, often showering twice a day). Non-revenue water reduction is getting more attention: recently the Dreampipe challenge was started that awards a prize of about 500,000 UKP to whoever comes up with a good solution. An additional option is the use of financial instruments. The IMF suggests a number of them: subsidizing water for the poor (granted that they have access), combined with a progressive rate for charging higher use and the issue of bonds for investment in water utilities. The IMF mentions one developing country, Burkina Faso, and one developed country, Singapore, as examples that made considerable progress. Still, the issue of determining the quantity of (available) water resources, especially groundwater, is quite a challenge. New developments in remote sensing, through an ensemble approach that includes other methodologies, could achieve a breakthrough in data provision and modelling for water accounting.

2 This section is based on presentation given by the Mauritian team on the study, the policy brief of the case study, feedback from the research team, scientific committee and GDN, and a chapter that introduces the case study.

3.2.2 Morocco - Supporting the sustainable management of coastal tourism in Morocco by quantifying the economic value of beach ecosystems

The Moroccan research study deals with beach erosion (3), caused by (often illegal) mining of sand from beaches and dunes for construction. Sand is used for the construction of infrastructure (hotels, etc.) for tourism. Beach erosion, however, drives the tourists away, making the whole exercise self-defeating. According to the study 70% of Moroccan beaches are affected. The study focuses on the area of Tétouan and calculates the lost benefits, if the beaches disappear. The conclusion is that losses in the tourism sector exceed the gains of the sand supply service. In the study area four beaches will completely disappear in the next 20 years and another three possibly in the next 40 – 60 years, if no action is taken. The tipping point with respect to profit and loss will occur somewhere in the next 35 years. The results of the study indicate towards a disastrous scenario and should convince authorities to take proper action. The team reported however that policy influencing is difficult, especially because there are strong lobbies to defend the traditional interests of the construction sector. Integration of environmental accounting aspects in education and research has been more successful. The study focuses primarily on the physical effects of beach degradation. The economic calculations are straightforward and provide a clear outcome, but the underlying assumptions, such as linearity between amount of sand disappearing and reduction of total tourist nights, could be questions. Applying various economic calculations for different scenarios or underlying assumptions, with a bit more attention for detail, can make the business case even more convincing.

Illegal sand mining and what to do about it

Although perhaps the general public is not aware of the issue, the availability of sand that is suitable for construction becomes an ever bigger problem. Several organizations, including UNEP, warn that sand will become increasingly scarce. It is no wonder then, that (illegal) sand mining from beaches and dunes is a problem in many countries, even when those same beaches and dunes are essential to tourism, a large source of income for the countries. Paradoxically, the sand is often used for infrastructure that serves the tourist sector. What to do about it? As indicated above, alternatives are often not readily available and more expensive. Like oil and gas, sand is a non-renewable resource. There are experiments to replace sand for construction with alternative materials, such as recycling glass into sand, making desert sand suitable for construction with bacteria or with solar-sand fusion, or by laser sintering any type of sand structure, but these are all still in the development stage. That leaves stricter regulation, enforcement of regulation, and conservation and rehabilitation measures as the remaining options. Indeed, in Spain, coastal activities are successfully regulated to prevent littoral destruction. In the 1960s and 70s a large part of the coastal environment was destroyed because of sand mining for tourist infrastructure and road construction. The 1988 Coastal Act, accompanied by stricter controls and enforcement and a programme for dune restoration, succeeded in tackling the problem. Of course, alternatives have to be found to replace the sand that can no longer be mined from beaches and dunes. Sources mention offshore sand mining as a solution for Morocco (although there are environmental issues here as well) and that some other countries have successfully applied rock crushing (mainly in the Caribbean).

3 This section is based on the research report of the Moroccan team, a presentation on the case study and feedback from the research team, scientific committee and GDN.

3.2.3 Madagascar – Proposed methodologies to inventory natural wealth in Madagascar

The study focuses on a protected area in the region of Antrema in the northwest of Madagascar (4). By analyzing land cover with remote sensing and in-situ observations a comparison is made between the situation in 2004 and 2014 (5). The changes in land use and biophysical accounts are used to identify changes in ecosystem infrastructure and for carbon calculations. The study has a strong geospatial component that serves to improve the natural wealth accounts and to better understand the relation between environment and socio-economic activities. This builds a stronger case for discussion with stakeholders with the aim to improve management of the protected area. The team reports that indeed they are now consulted as experts in natural wealth accounting and involved in discussion on protected area management. The means available are used to present natural wealth accounting in physical terms, to improve the link with the system of national accounts (SNA), a conversion of the results to monetary terms would have made the study stronger (but would also have required more time and effort). An additional study was carried out in the framework of the project into natural wealth accounting and expanded to aa whole administrative region.

The link between natural wealth accounting for protected areas and national environmental accounts

Madagascar is one of the pilot countries of the WAVES-initiatives. One of the aims of WAVES is to achieve sustainable financing of national protected areas in Madagascar. At the national level the estimates are that income from (eco-)tourism could potentially be 28 million US$/year and from watershed protection 20 million US$/year. Possible income from carbon measures is not very well defined yet. Environmental-economic valuation of protected areas is very important to determine the road to financial sustainability. Costa Rica has been quite successful with PES-schemes for a long time. A (small) tax on fuel generates the funding for the schemes. Whatever mechanism is adopted, the government plays a central role. In Madagascar the conditions to do this are not in place yet: there is no updated fisheries and coastal resources policy yet. Implementation of and connection with the regional level has been difficult. Although there are many local initiatives, integration between the local and national level still has to be achieved. The Antrema case study shows what steps need to be taken to achieve financial sustainability for the protected area (although at this stage presented only in physical terms). If this type of study is carried out for all the protected areas of Madagascar, essential information is provided for the assessment of what is needed in terms of ecosystems services, their feasibility and possible value at the national level. However, such services delivered are not a result of awareness raising and capacity building alone. As in Costa Rica, the central government will have to step up and not only assume the role of regulator and coordinator, but also as provider of complementary resources to make sustainable management possible.

4 This section is based on the Madagascar research report, feedback of the Madagascar research team, scientific committee and GDN and a presentation on the case study.

5 The study is a case-in-point that higher resolution images that are free-of-charge and easily accessible are desperately needed: hopefully the Copernicus program can contribute to addressing this need.

3.3 Scientific committee and mentorship

To support and provide guidance to the researchers, a scientific committee was established and mentors were appointed (6). The scientific committee consisted of three members and had as main responsibilities to monitor the quality of the work and to connect them to international and national initiatives in natural wealth accounting and natural resources management. A mentor was assigned to each research team to provide guidance on revision of the proposal, enhancement of the research questions, delivery of the final output and dissemination of results. The research teams expressed appreciation for the guidance of the mentors and scientific committee and confirmed that this helped increase their knowledge and improve research methodology.

For the Moroccan research study, the mentors provided a method for economic calculations and helped the team, because they had no economic expertise. The Mauritian team explicitly reported that they gained a lot from discussions with and the feedback from the mentors. The Madagascar team was also very positive, expressing that they received very interesting training and could work with the most influential persons in this field. Feedback received from the scientific committee was also positive on the three studies, rating the Mauritius case study as excellent and the Madagascar case study as the most promising in terms of policy influence.

Access to online scientific resources was mentioned as a potential bottleneck for some researchers.

3.4 Workshops

Three workshops were organized in the framework of the project: one on research methodology and two peer-review workshops (the last one was also dedicated to communication training). The first workshop was held in Mauritius (January 2015) with the aim to provide more detailed and better research proposals. A survey held with the 8 participants indicates that they reported an increase in self-assessment skills and that they were confronted with a reality check with respect to research question formulation, literature review skills, data collection and key techniques (for case studies). They also mention an increase in knowledge on theoretical frameworks, a better selection of approach and risk assessment, and an increase in NRM-related and research management capabilities. The workshop was considered effective and efficient and the direct interaction with the mentors was appreciated.

The first peer-review workshop was held in Casablanca, Morocco (June 2015) and focused more on the progress of the research and the sharing of experiences between teams. Again there were 8 participants. With respect to the Moroccan study the discussion focused on ecosystem valuation techniques. The Malagasy researchers received advice on making remote sensing data suitable for economic calculations. For the Mauritian study the integration of economic and financial aspects into general analysis was the central point of attention. This event was organized in connection with the GDN annual conference in Casablanca and accredited as a side event of the Conference "Our Common Future under Climate Change"

6 This section is based on feedback from the research teams, scientific committee and GDN.

The final peer-review workshop was accompanied by research communication training and held in Paris, France (December 2015). Apart from the discussion of progress and the draft final research papers, the increase of the visibility of the research and policy briefs were central themes. These aspects are discussed in the next section. That the activity was organized in the framework of COP21 is already a good example of how to increase visibility. Teams report an increase in communication skills as a result.

Feedback from all actors involved and interviewed on the workshops is very positive. Apart from knowledge increase, interaction on research methodology and peer review, the networking effect was very much appreciated. The fact that some of the workshops were organized in combination with a bigger event contributed to this.

3.5 Dissemination and communication

The policy dialogue (as part of the research communication training in France) focused on discussing natural wealth accounting at the policy making level and connecting researchers and policy-makers (7). One of the basic tenets of the project is that it is critical to support research in developing countries and provide local researchers with tools that enable them inform their society on the deterioration of natural wealth and the services provided by ecosystems.

To put this into practice, the researchers carried out various dissemination and outreach activities. Dissemination in Morocco consisted of meetings at ministries (2), paper presentation at conferences (2), speaking at international events (2) and student lectures at Mohammed V University. Dissemination in Madagascar included a workshop for Malagasy stakeholders (practitioners and policy makers) and the establishment of a website dedicated to natural wealth accounting. In Mauritius a workshop on water sector policy was organized and newspaper interview was given. For the project as a whole two web articles were published by WAVES and in a conference in Benin the session on natural accounting was attended by GDN staff and a Malagasy official.

The final impact of dissemination and outreach is difficult to measure and will also depend on the continuation of these activities, but in general it can be concluded that, given the limited timeframe, the effort put into communication for policy influencing and decision making is considerable. The emphasis given to communication aspects in the project right from the start has proven to be very effective and distinguishes this initiative from (most) other research projects. Feedback from Morocco indicates that policy influencing is (still) not very successful, while the response from Madagascar sketches a more positive picture. This is probably also due to the fact that the issue of (illegal) sand mining is much more conflictive than management of an area that is already recognized as protected. The response from Mauritius is somewhere in between: interaction has taken place, but there is still a long way to go before adaptive measures for a more sustainable water resources management are put in place.

7 This section is based on the report and presentations of the Paris workshop and interviews with the research teams, scientific committee and GDN.

3.6 Outcomes of the project

The last progress report gives a very good review of the achievements in relation to the outcomes of the project. This review is therefore presented here, with comments from the evaluation added.

1. **Local development knowledge.** The research teams confirm that each study created new local policy relevant knowledge. This knowledge should be relevant for policy-makers as the first dissemination of the results show. The multidisciplinary aspect of the studies makes them on the one hand interesting in terms of content and on the other hand useful to engage a discussion with the different stakeholders in the countries. Despite the limited amount of time dedicated to the project, which did not allow having more thorough analysis, the studies at least reveal some aspects to be considered and insights on how to deal with them. According to the Madagascar team, they are now seen as experts on natural wealth accounting for protected areas, which is a good indicator for the success of local knowledge development. In Morocco the situation was different: policy influence did not happen at all until now. The Mauritius study focused mainly on economic calculations, the Moroccan and Madagascar studies more on the physical aspects. *Balancing of the teams in terms of expertise could achieve more equilibrium in knowledge development across all the relevant disciplines.* The research teams, especially the junior members, also reported that the enhancement of their research methodology skills was very valuable.

2. **Subject awareness.** Even if the researchers will unlikely become experts in the field of natural wealth accounting, they have been able to deal with this notion and to include it in their work, which open the door for more collaboration with other disciplines and maybe continue working on this topic in the future. Mentorship and discussions with GDN help the team understand the concepts and build better methodologies. Feedback from the teams shows that they are now not only more familiar with natural wealth accounting, they also gained considerable insight in the subject of their case study: water management in Mauritius, sand mining in Morocco and management of protected areas in Madagascar.

3. **Professional visibility.** The international exposure, the mentorship process, as well as the originality of the studies through their multidisciplinary aspect help the research to be more visible in their country and perhaps to become focal point on the issues he/she deals with (coastal degradation in Morocco, water sector in Mauritius, biodiversity and land cover in Madagascar). The teams report an increase in professional visibility and international connections through networking.

4. **Policy influence.** It is obviously too early to speak about a real policy influence, but some discussions started between the teams and the decision makers of their respective countries. Real policy influence would be substantiated by decision makers taking adaptive measures based on the results of natural wealth accounting. On a more modest level, keeping the discussion going would also count as a considerable achievement. Indeed, policy makers should recognize the value of the findings, because the research process is grounded into the local context and it addresses local issues while using methodologies that are accepted worldwide. The studies were able to give insights to the policy-makers on current policy questions, with a multidisciplinary aspect. For example, the

Ministry of Environment in Morocco is currently interested in the question of the conservation of the coastal areas (8). The Moroccan research team, however, expressed concern about the ultimate impact on policy. In Madagascar, it seems that there is a strong political commitment towards the protection of biodiversity and the question of natural wealth accounting is present in the policy debates since Madagascar is one of the WAVES' partner countries. The fact that a high-level representative from Madagascar participated in the Benin conference (together with the GDN program leader) attests to this. In Mauritius authorities, notably the Central Water Authority expressed interest in new ideas on water governance, but it is (still) unclear whether this will lead to a change of policy.

3.7 General considerations

This section recapitulates information from previous section and analyses them in relation to the aspects of relevance, effectiveness, efficiency and impact (9). Then the sustainability, ownership and forward-looking scenarios for the initiative are discussed.

3.7.1 Relevance

The format adopted by GDN of a call for proposals, selection and implementation of research studies in combination with workshops and guidance and extra attention for dissemination and communication is very relevant in relation to the purpose: increased knowledge & capacity with respect to natural wealth accounting in Madagascar, Mauritius & Morocco. Especially the combination and integration of the different elements is a strong one. GDN is more closely involved in the implementation of the project, than most or organizations that facilitate this type of initiative, but this approach fits nicely with the brokerage role that GDN aims for. Other organizations involved in stimulating and coordinating research training, such as NUFFIC (see box at the end of section 3.7), indicated that in future they also would like to be more involved in project implementation in the role as broker. As the case studies were carried out in three different countries, the coordinating role of GDN ensures the link between the different initiatives.

The selected case studies themselves were also very relevant, as they aim to tackle real and important problems in the country and natural wealth accounting can make a significant contribution to solving that problem. Another indicator of relevance is that GDN addresses a gap in the "natural wealth accounting" market: although there are individual research fellowships on offer in environmental accounting, there are very few (if any at all) other initiatives on research capacity building in natural wealth accounting in developing countries.

3.7.2 Effectiveness

The project was very effective in terms of reaching the stated goals. The project addressed all the components that are needed to reach these goals:

8 This is a good sign, but, as is the case in many countries, the interests of the Ministry of Environment get less priority than those of the sector ministries.

9 This section is the own assessment of the evaluator, based on the available literature (see annex 6) and, when indicated, on interviews with stakeholders (see annex 8).

- Creating awareness through the communication and dissemination component;
- Increased funding for research capacity building by providing resources for the case studies;
- Provision of guidance to the researchers in research methodology and case study implementation.

This contributed to increased knowledge and capacity with respect to natural wealth accounting. This was confirmed by the project participants. The envisaged incubator-effect of the research studies, with the researchers as advocates for natural wealth accounting, was confirmed by the communication and dissemination activities in each of the three countries. Although this will not solve the problems in itself, the project definitely contributed to the integration of natural wealth accounting in the general development strategy and a more inclusive view on environmental protection.

A very strong point is the focus of the project to issues at the local level (10). The term 'local' here is defined by practical connotations: the case study appeals directly to the people of the area concerned, but also provides national policy and decision-makers with a concrete example that can be copied and used for policy at the national level. By tackling local problems through the application of natural wealth accounting, the results of the studies help improve natural wealth accounting at national level, because often there is quite some uncertainty in the valuation of natural wealth itself (shadow prices, reliable estimates) and the valuation and feasibility of ecosystem services (expected demand and supply, feasibility of services). Using information from the local level is very much needed for calibration and upscaling to the national accounts and improving the methodology used for, and the accuracy of, the national accounts. The use of more detailed economic calculations and scenarios would have made the business cases for Madagascar and Morocco stronger.

The project set-up ensured a very concrete focus on priority topics in an early stage of the project. This a pitfall of other capacity building projects, where a lot of time is lost in deciding on what subjects to focus or where the whole intervention is too general and/or tries to introduce too many different subjects at once.

3.7.3 Efficiency

For this evaluation no detailed analysis was made of the spending of funds and the use of other resources, but a comparison of the main budget elements and personnel input with other research training activities leads to the conclusion that the project was implemented efficiently. The total amount spent of about US$ 250,000 is by no means exceptionally for this type of project and the project remained within budget. As this was a pilot project, the number of researchers that participated in the workshops was relatively low (less than 10), but this can be explained by the preference to carry out the pilot in a controlled environment. *In possible follow-up projects, where there is more familiarity with carrying out this type of activities, workshops could perhaps be open to bigger groups of interested researchers, including those that are not participating in the project itself.*

10 Technically speaking this is not the case for Mauritius, but in view of the size of the country the size of the problem can be considered local.

The brokerage role of GDN was also carried out in an efficient way, striking a balance between involvement and not becoming overly hands-on in implementation. This makes the project a model for other development interventions in research capacity building. The limited timeframe available for carrying out the activities favors efficient project implementation. However, the research teams and other interviewees expressed the desire to have more time to do the research.

3.7.4 Impact

The impact of the project is of course difficult to measure, as the real impact will become only evident a few years after the end of the project (see also section 3.6 on policy influence). However, the conditions to achieve impact are created with the attention given to communication and dissemination aspects, and the follow-up actions related to policy influence. GDN, in its role as broker and coordinator, is well placed to support these activities, in combination with other initiatives, such as WAVES. The case studies also fit well in the research priorities indicated in the various SEEA documents, thereby increasing the impact potential. This concerns issues, such as identifying possible geospatial sources of information such as remote sensing data and other "big data" sources for ecosystem accounting, investigating techniques for linking data related to ecosystem measurement to geo-referenced social and economic data, and identifying the main ecosystem characteristics for the measurement of ecosystem condition and relevant indicators of condition for each type of ecosystem. The case studies also comply with (most of) the important elements presented in the TEEB guidance manual for country studies that are presented in annex 9. Feedback expressed interest in having more time to carry out a more in-depth study, but this is a trade-off between being an incubator and a provider of full research funding.

3.7.5 Sustainability, ownership and forward looking scenarios

Over such a short time span it is always difficult to assess the effect on sustainability, but the project definitely contributes to creating the conditions for sustainability. The targeted academic environment is relatively stable in terms of continuation of disciplines and research interest in a certain subject, although individual researchers may move (as is the case with Mauritius). The networking component is very important to achieve sustainability and should be maintained and strengthened. Similarly, the attention for communication and dissemination should be continued to increase the impact of policy influencing and achieve sustainable changes in the attitude and actions of government and other stakeholders with respect to environmental policy and management.

Equally difficult to measure are the ownership aspects. The teams definitely expressed a sense of ownership, which is a very positive sign. *They also stated that without the project, the research case studies would not have been possible. This implies that then also the ensuing policy influencing actions would not have taken place. This is a good indication that the involvement of GDN through the project makes a difference.*

This leads to possible forward-looking scenarios, building on the fact that the intervention of GDN with the project has filled a gap and created opportunities. *Horizontal expansion is an option: repeating the mechanism of case studies in other countries (or regions). The focus could then be on the same or other topics (again through a call for proposals). Another option is vertical expansion: carrying out more in-depth case studies in the same countries*

(most probably with the same teams with addition of complementary expertise) on the same topics. A combination is of course also possible. The workshops could then also be open to participants from previous projects, thus promoting networking and functioning as refresher courses. The creation of a knowledge base to share and make the experiences and results of the case studies available to a wider public could be another accompanying measure. This could be possibly done as part of the existing GDN working paper database or the WAVES database or the capacity building facility of the Group on Earth Observations (GEOCAB), as earth observation is part of all the studies.

The approach of the GDN natural wealth accounting project with the open call for proposals, implementation of research case studies with guidance from experts, accompanying workshops and emphasis on communication and dissemination of the results is very strong. In the box below the tailor-made course program of the Dutch organization EP-NUFFIC is described. Although there are differences, this program also provides research training and it is therefore interesting to make a comparison with the GDN approach. Two aspects are highlighted here:

- *For the vertical expansion suggested above, the EP-NUFFIC approach, where the organization (that has already been a partner in the past) provides a request for research training, may be more suitable than an open call for proposals.*
- *Linking with existing programs on natural wealth accounting, such as WAVES, is important and strengthens the GDN intervention.*

The tailor-made training program of EP-NUFFIC

EP-NUFFIC manages, among other programs, a tailor-made capacity building program (TMT) directed at developing countries for the Dutch programs. EP-NUFFIC has been responsible for implementation of this program (in several forms) for more than 20 years. In the current set-up there are two modalities: parties from developing countries can submit a proposal, which is then put out for tender (single application) or an entity from a developing country can team up with a partner from the Netherlands and submit what is called a joint application. The maximum budget for a single application is € 200,000 and for a joint application € 75,000. Research training is often the main subject of tailor-made course and the courses are mostly given in the developing country (cost saving).

Only countries that are in the Dutch development cooperation portfolio are eligible and within these countries only the subjects that are Dutch development cooperation priorities. The Embassy in the country and EP-NUFFIC carry out a pre-selection based on the eligibility criteria. Proposals that respond to a tender are evaluated by a technical evaluation committee (TEC) and EP-NUFFIC. EP-NUFFIC is responsible for (administrative) project monitoring; the actual implementation is done by the entity that won the tender.

EP-NUFFIC aims at becoming more involved and assuming a brokerage role: moving from administration to a closer support of the Embassies and establishing and monitoring of parameters that measure effectiveness and efficiency. For this purpose EP-NUFFIC is developing key performance indicators (KPIs), together with Deloitte, that fit within the central themes of Dutch development policy. Until now the monitoring role has been more output-oriented than outcome-oriented.

The TMT-program has been evaluated in Nepal, Uganda and Kenya/Tanzania (the latter was a combined study target at the fellowship program as a whole, of which TMT is a part). Not all the TMTs were dedicated to research training, but some were, which makes the outcome relevant. The findings point to several aspects that also play a role in the GDN project: improved communications skills as a result from the training, importance of staff continuity for sustainability, that without the external intervention the activity could not be undertaken or afforded, the importance of network effects and that the training had considerable impact. In addition, the formulation of action plans at the end of the training was mentioned as a positive point and the lack of budget for the local organization to sustain the initiative was considered a negative aspect.

The Kenya/Tanzania study recognizes the high level of effectiveness in virtually all tailor-made-trainings and gives an interesting insight into the reasons behind this:

TMTs were based on a sound needs and capacity analysis prior to the start of the project;
1. the requesting organization was involved in the design of the TMT project;
2. a large group of (or all) staff members of the requesting organizations were involved in the trainings;
3. the initiative was taken by the requesting organization, and
4. the quality of the design and training (the combination of theory and practice, concrete assignments, training, workshops, field visits, networking, coaching often complemented with in-kind support of materials and equipment.

In some cases, the TMT supported an already ongoing development cooperation program, with mutual benefits.

4. Lessons learnt

The GDN project on research capacity building in natural wealth accounting is a new activity. Research training on natural wealth accounting has been implemented, but mostly in developed countries. If such efforts were directed at developing countries, they were usually in the form of individual PhD (or postdoc) scholarships. Training in developing countries on natural wealth accounting focuses primarily on economists in government organizations. Increasingly, professionals and academics are trained in geospatial analysis for environmental purposes, but there the economic aspects are lacking.

In view of this, internal discussions took place to assess the results and lessons learnt were formulated that are discussed below.

Short time for research

All the teams and various other interviewees indicated that the time for research is quite short, but this is part of the set-up of the project. *It is recommended to continue with this 'catalyst'-approach: based on the results and experiences of the studies, people can look for additional sources of funding for further and more in-depth research. Continuing the GDN-initiative on natural wealth accounting with short follow-up research studies in the same country that build on the results of the previous ones is a valuable option to consider.* In Madagascar already a study for area whole administrative region was commissioned.

Two teams had no economist, the third consisted of only economists

Interdisciplinary teams are in a better position to tackle research studies on natural wealth accounting. *A composition with an economist, a specialist on the subject matter at hand and a geospatial / remote sensing specialist would be ideal.* The latter could also be replaced by a geospatial technician (what matters is getting good quality data to analyze). It is important that expertise concerning the spatial dimension, statistics and dealing with environmental and socio-economic data is reflected in the team.

The selection of very complex topics makes capacity building difficult

It is part of the nature of natural wealth accounting that different disciplines need to be integrated and that not only complex systems are studied, but that the way to study these systems is also complex and not very well defined yet. However, this is also what makes natural wealth accounting an excellent subject for research and research training. Research studies have been carried out elsewhere and the results are available. Likewise, through the SEEA and other documents there is extensive information on methodologies and frameworks for natural wealth accounting. *The three research studies that were implemented may not be perfect, but each study delivered output that is very relevant for policy and decision-making.* That is an important achievement and an indication that, although capacity building is difficult, it is possible and produces results.

It is difficult to produce cutting edge economic content

This is true, but looking at the previous paragraph on the very complex topics that are part of natural wealth accounting *it should be possible to find topics that are both relevant and cutting edge from the viewpoint of economics, particularly economics dedicated to natural wealth accounting.*

The multidisciplinary aspect is very positive

Indeed, this topic is discussed in the paragraph on the composition of teams. This aspect was confirmed by the research teams and they also indicated appreciation for the peer-review element and the opportunity to get in touch with other scientists and professionals through networking.

The project provides an opportunity to do something that is not possible (currently) in local conditions

This point is very relevant and a raison d'être of the project. Conversely, if the project would fund activities that are already possible in the local conditions, the intervention would not be very useful. The teams confirmed that without the external intervention the research would not have taken place.

The project provides international exposure, networking and access to knowledge and advice

This is another positive finding, which coincides with the objectives of the initiative. The exposure, networking and access to knowledge and advice also make participation more interesting for researchers. It also provides the researchers with a more comprehensive view on the subject and with the opportunity to acquire more general research skills. The teams expressed appreciation for these aspects, which would not have been possible to such an extent without the project.

The project stimulates integrating economics into environmental applications

Again, this is a very positive finding that is in line with the objectives of the project. The integration could have been strengthened by incorporating economists in all the teams (or perhaps by training the other researchers more in the accounting aspects).

More studies like these are needed and useful

Indeed, as highlighted in section 3, the GDN-initiative fills a niche in what is happening in the field on natural wealth accounting. Long-term research focuses more on academic achievement, making it difficult to translate the results into something that is relevant for policy making. Training as such is mostly provided to government officials with a background in economy to work on natural wealth accounting at the national level or to people working for NGO's (in that case the accounting is more directed at protected areas). Research studies of relative short duration thus fill a gap and, as mentioned above, can function as a catalyst for other natural wealth accounting initiatives.

More capacity building to take natural wealth into account is needed

This is indeed needed, with special emphasis on the communication aspects (awareness raising) to get the issue also on the political agenda. The summer school organized at the Université de Québec à Montréal in 2016, although not part of the project, is a good example of how this capacity building can be provided. Two researchers from the Malagasy team attended this summer school.

More knowledge on natural wealth and ecosystem services, methodology, economic theories and institutional structures is needed

This is also very true: information in the form of scientific and grey literature is available, but it is sometimes difficult to find and not well structured. *Perhaps the existing GDN working paper database or the WAVES database or the capacity building facility of the Group on Earth Observations (GEOCAB), as earth observation is part of all the studies, could contribute to addressing this issue by having a special section on natural wealth accounting.* Related to knowledge is the issue of data gaps: although these were identified in the individual studies, no general overview was made. *A general overview on common data gaps that were identified (also published in the GDN database) could help improve follow-up studies and general practice.*

Proper institutional setting is critical for achieving Sustainable Development Goals and Aichi targets

A conditio sine qua non: without it will be very difficult to get the necessary baseline information and to monitor progress. This in turn is a necessary condition for policy and decision-making. The GDN-initiative helps by strengthening the research capacity and by providing case studies with practical recommendations, thus creating a platform for discussion on natural wealth accounting and showing the steps that are needed to create sufficient national capacity to achieve the SDGs and the Aichi targets. All the stakeholders interviewed confirmed this as a positive aspect of the program.

5. Conclusions and recommendations

5.1 Conclusions

1. Allowing for the short-time period of implementation and other limitations, **the project has been very successful,** in terms of relevance, effectiveness, efficiency and creating the potential the achieve impact and sustainability. The supporting evidence for this conclusion is presented in section 3.7 on outcomes.

2. **The approach worked very well.** This includes the mechanism of the call for proposals (and the assessment of proposal), carrying out a concrete research assessment in a limited amount of time, guidance by experts, international exposure and peer-review and training in and attention for communication and dissemination. The approach combined a clear structure with flexibility and a targeted focus, creating possible incubators on natural wealth accounting that can have a catalyst effect in the countries concerned. The teams completed the research on time and appreciated all the components of the project. This conclusion is based on section 3.7.2 on effectiveness and the lessons learnt.

3. **Local development knowledge was increased.** This concerned research capabilities, knowledge of natural wealth accounting and communication and dissemination aspects. The issue of (common) data gaps could have received a bit more attention. This conclusion is based on section 3.2 on the research studies, section 3.6 on outcomes (local development knowledge) and the lesson learnt on 'more knowledge is needed…'.

4. **Subject awareness was increased.** Awareness about natural wealth accounting, how to apply it and how to use it as an instrument for policy influence was raised and the results of the case studies were applied to increase general awareness through communication and dissemination. This conclusion is based on section 3.2 on the research studies, section 3.6 on outcomes (subject awareness) and the lessons learnt.

5. **Professional visibility was increased.** The participants benefited from and appreciated the international exposure, opportunities for networking and the guidance that was provided through the project. They confirmed that this would not have been possible without the project. This conclusion is based on section 3.3 on the scientific committee and mentorship, section 3.4 on workshops, section 3.6 on outcomes (professional visibility) and the lesson learnt.

6. **Tools for policy influence were provided.** After the studies and communication training, the researchers were able to demonstrate the relevance of natural wealth accounting related to concrete problems to policy and decision-makers. Policy influencing is a long-term process, but the necessary tools were provided. **The three research studies that were implemented may not be perfect, but each study delivered output that is very relevant for policy and decision-making.** This conclusion is based on section 3.2 on the research studies, section 3.5 on communication and dissemination, section 3.6 on outcomes (policy influence), section 3.7.4 on impact, section 3.7.5 on sustainability and the lesson learnt on proper institutional setting.

7. **The composition of the teams was not the best possible one.** This is reflected in the fact that some studies gave less attention to the spatial component and others less to the economic accounting aspects. This conclusion is based on the findings related to the as-

sessment of proposals (section 3.1) the three research studies (section 3.2), the interviews and the lesson learnt on team composition.

8. Although the subject of natural wealth accounting is complex and quite some background knowledge is required, **GDN managed to address a gap in the natural wealth accounting value chain by focusing on research training.** There are initiatives in PhD education abroad in natural wealth accounting and training for professionals, but there are very few efforts dedicated to research training in developing countries. This conclusion is based on section 3.7.1 on relevance and section 3.7.4 on impact.

9. **The embedding in the local situation and the link with other natural wealth accounting initiatives was good, but could be strengthened more.** In Madagascar there was a connection with the WAVES program (now ended), in Mauritius with initiatives to improve natural wealth accounting at the national level, for Morocco no such link could be identified. The chances of achieving sustainability and success increase if countries are selected for the call for proposals where robust initiatives in natural wealth accounting already take place. This conclusion is based on section 3.6 on outcomes (policy influence), section 3.7.4 on impact, section 3.7.5 on sustainability and the lessons learnt on very complex topics and proper institutional setting.

10. **The role of GDN as broker and facilitator was instrumental.** GDN has successfully, effectively and efficiently carried out the coordination and project management function, with a good equilibrium between administrative responsibilities and dealing with natural wealth accounting content. This conclusion is based on section 3.7 on general considerations and the comparison with EP-NUFFIC in particular.

5.2 Recommendations

1. **Continue and expand the program.** The project was successful, fills a gap in capacity building for natural wealth accounting and creates the conditions for successful policy influencing. (from conclusions 1 – 6, 8, 10)

2. **Apply horizontal expansion** through a call for proposals, similar to the one in the current project, but in other countries (or other subjects/areas in the same countries) and with consideration for recommendation 8 and 9. The focus should still be on the tackling of local problems through natural wealth accounting, but the opportunity to compare the studies with similar research efforts and to learn from each other should be provided. The goal is then to create an active and interactive community of researchers on natural wealth accounting from developing countries that ultimately has success in policy influencing (11). (from conclusions 1 – 7, 9, 10)

11 This would be an intangible outcome that is quite difficult to predict. There are however cases known, where it worked very well: a group of professionals from Central America that part participated in disaster reduction training eighteen years ago is still in touch with each other (and most of them still work in disaster reduction, some in quite senior positions).

3. **Apply vertical expansion** through the EP-NUFFIC TMT approach (the partners from this project submit a proposal with complementary partners) to provide a more in-depth study, with flexibility in the subject. Here a balance would have to be struck between not funding full-fledged research activities and still having enough impact to create an incubator or catalyst. Madagascar seems the most appropriate country to start an experiment with a pilot. (from conclusions 1 – 6, 10)

4. **Facilitate networking and capacity building:** invite others to the (future) project's workshops, including 'old' partners (if any because of the vertical approach) to have a broader reach and create a natural wealth accounting research community in developing countries (see also section 3.7.3 and 3.7.5). When possible, workshops should be organized in combination with a bigger event (see section 3.4 on workshops and links could be made with initiatives, such as the summer school in Montreal. (from conclusions 1, 2, 5, 6, 9, 10)

5. **Create a knowledge base or publish results in an existing one** dedicated to natural wealth accounting. This could be possibly done as part of the existing GDN working paper database or the WAVES database or the capacity building facility of the Group on Earth Observations (GEOCAB), as earth observation is part of all the studies. The issue of how to deal with (common) data gaps could also be addressed here. (from conclusions 1, 2, 3, 4, 8, 10)

6. **Link or strengthen the link with existing natural wealth accounting initiatives** to increase the probability of achieving sustainability and successful policy influencing. There are various options: projects or programs funded through international organizations or bilateral agreements, but also commitments from the governments concerned or initiatives from NGOs, (or a combination). (from conclusion 9)

7. **Achieve a more balanced composition of the research teams.** A composition with an economist, a specialist on the subject matter at hand and a geospatial / remote sensing specialist would be ideal. This will enhance the probability that all aspects of natural wealth accounting get due attention. Similarly, the combination of a principal researcher and junior researchers that have just completed their PhD seem to be ideal. The composition of the team should also be assigned a ranking in the assessment of the proposal, see also section 3.1 on proposals. (from conclusion 7)

Additional recommendations:

8. A suggestion could be to also **assess the potential of the outcome of the research in terms of potential for policy influencing** (taking communication and dissemination aspects into account) in the proposal stage, to increase the potential impact.

9. Another valuable exercise could be to **identify key success factors for proposal writing,** based on information from the proposals and the assessment of the call (this could be done by GDN staff and/or in future calls by the external evaluators). **The results can then be shared with potential applicants to improve the quality of proposals that respond to future calls.**

Annexes

Annex 1. Terms of reference

Natural Wealth Accounting

The Global Development Network (GDN) invites expressions of interest from a Principal Evaluator/Evaluation Team for undertaking the evaluation of the Global Research Project Natural Resource Management Natural Wealth Accounting. Expressions of Interest with complete proposals must be submitted to consultants@gdn.int by Friday, 15 July 2016. Details of the program and tasks are given below.

The program

The program is a research capacity building program that aimed at understanding contextualized challenges for natural resource management and natural wealth accounting in three Francophone Africa countries: Madagascar, Mauritius and Morocco. The Natural Resource Management Natural Wealth Accounting program aims at mobilizing local researchers to carry out study that use natural wealth accounting for natural resource management.

The program is a specific part of a broader initiative at GDN that focus on Africa, the Africa Initiative. This initiative includes 3 modules:

Doing Research in Africa: this part aims at evaluating the research environment in two francophone countries

Skills Building for African Researchers. This part aims at:
- To do some useful and good quality research work on a theme related to sustainable development
- Build specific research skills for African researchers
- Engage them in a substantial dialogue with policy-makers
- The mediation between research and policy.

The Natural Resource Management Natural Wealth Accounting program corresponds to module B. It specifically aimed at:
- Mobilizing local researchers around natural wealth accounting
- Train them on particular aspects of their research
- Encourage them to engage with policy makers
- Train them in better communicate their results.

GDN selected three teams in November 2015, provided them with a 20,000 USD grant. The program supported research teams in Madagascar, Mauritius and Morocco during one year to carry out the study they proposed.
- The program provided each team with mentorship by a Scientific Advisor
- The program was oversighted by a three member Scientific Committee.

GDN offered specific workshops:
- A methodology workshop to refine the proposals and provide some knowledge on natural capital accounting (Mauritius, January 2015)
- A mid-term peer-review workshop to review the intermediate results of the research and provide advice to grantee to carry it forward (Morocco, June 2015)

- A research communication workshop that trained researchers on written and oral communication (Paris, November 2015)

The program was concluded by a Policy Dialogue in Agence Française de Développement in November in 2015. The teams were able to present their results before policy makers of their own countries, a representative of WAVES, and a representative of the French Ministry of Foreign Affairs and International Development. The Policy Dialogue was also followed by discussion with the audience.

- The program required each team to organize local dissemination events.
- The program encourages using GDN's program to network and connect with potential stakeholders.

This program is considered as a pilot program for GDN and it tries to understand:

- How does this program through mobilizing local researchers contribute to a better ownership of the knowledge and increase policy relevance and uptake?
- What are the implications of having different disciplines interacting in the program?
- What are the consequences of the different approaches chosen to measure natural capital?

The project in Mauritius has been expanded to complete the dissemination due to the pregnancy of one grantee. In addition, another 3-months grant has been given to the Malagasy team to conduct the same kind of research but in a broader area.

Purpose

The objective of the evaluation is to track and critically evaluate the extent to which the program achieves its stated objectives, and to qualify what GDN did to make the grantees' projects – and the program as a whole – succeed, if at all. The evaluation will assess the performance of the program against its intended goals and objectives, moving between the program and the project levels in the three countries of the grantees, and offering evidence and recommendations that will shape the future of the program.

It is expected that the evaluation plan will clearly articulate an approach to linking the review of the three grantee's projects (review of the research proposals, achievements, and challenges) and the program level (review of support provided and challenges), including by embracing elements of both results-oriented and process-oriented evaluation methodologies,

- in order to assess the program, and
- to generate key lessons for future strategic and programming decisions.

Scope

The evaluation will cover the three grantee teams located across Madagascar, Mauritius and Morocco. The key evaluation areas may (and are not limited to) cover the following aspects:

Program Management:

- Assess the process of selection of the grantee teams in accordance with the program criteria;
- Gauge the quality, relevance and outcomes of the mentoring and peer review inputs provided by the mentors and GDN's Program Management Unit;
- What trade-offs or adjustments have been made by the program in order to drive efficiency;
- Gauge the quality, relevance and outcomes of the different workshops;
- Gauge the quality, relevance and outcomes of the Policy Dialogue.

Contribution of the program:

- Explore the overall contribution to the program to the research process and research output and how GDN's support, including mentorship and workshop, has contributed instrumentally to the quality of the research process and output;
- Explore the research and research training gaps that the program has filled, if any;
- Examine the extent to which the program impacted the grantee visibility across national and regional stakeholders;
- Assess if the project allowed the teams to focus on a new stream of work or reinforced an existing one.

Projects by the grantee teams:

- Evaluate the process/approach employed by the grantees in implementing the research proposals;
- Assess the degree to which each project has achieved its stated goal;
- Assess the relevance, usefulness, quality and outcomes of the final report and to what extent they have achieved the stated objectives;
- Gauge to which extent the program and the project involve multidisciplinarity and its impact on both the quality and relevance of research outputs and process;

Lessons Learnt:

- Provide GDN with lessons learnt and recommendations in terms of its approach to working on natural wealth accounting, and embracing a multidisciplinary approach;
- Explore GDN's value added in supporting such local research studies carried by local researchers compared to other initiatives like TEEB, WAVES and VINTAGE;
- Where appropriate, the evaluation will also highlight unexpected results (positive or negative) and missed opportunities; and provide an analysis of how GDN has positioned itself, present key findings, draw upon key lessons and provide a set of clear options leading to strategic and actionable recommendations for similar activities.

Approach and methods

GDN seeks a robust evaluation approach appropriate for this project and the pertinence of the approach in the field of natural wealth accounting. The team will have access to grantee teams, GDN and to program and project documentation, including monitoring

paperwork. The evaluation plan will be developed in close consultation with the M&E Unit at GDN.

Data sources will include, among others:
- Call for Proposals
- Inception and interim workshop reports
- Project team proposals and budgets
- Progress reports
- Completed reports
- Communication products and outputs
- Workshop and events feedback.
- Reports to donors
- Surveys/interviews with institutions, mentors, Steering Committee members.

Profile of evaluator/team

GDN wishes to contract the services of either a single Principal Evaluator or an evaluation team comprising of one Principal Evaluator and one or more team members. The Principal Evaluator will either be an evaluation expert or a senior academic with experience in the field of Evaluation and Research with (all are essential):
- demonstrated technical expertise in designing innovative, multi-country evaluation methodologies, and previous proven skills and experience in
- undertaking evaluations related to research and capacity building, preferably based on strong academic credentials;
- a strong background and experience in evaluating research programs dealing with environmental valuation and/or natural capital accounting.
- excellent research and communication skills (in English) as evidenced by academic degrees (Ph.D. preferred) and a record of publications;
- high analytical skills with experience in case study methodology, possibly process-oriented evaluation, conducting interviews and surveys and interpreting data and information, assessing quality of reports generated by developing country researchers
- team members can complement or add to the expertise of the Principal Evaluator.

Timeline, reporting and budget

Timeline	The evaluation timeframe is from 1 August to 1 October 2016.
Travel	No travel is required
Reporting	The Evaluator will report to Shelly Dahiya, Program Manager and Coordinator-Monitoring and Evaluation, GDN

Outputs

The following written outputs will be produced:
- An Inception Report to be produced prior to undertaking any data collection activities outlining the M&E for the project. The report will cover the evaluation questions to be answered, a detailed design matrix, and the methodology and work plan to answer the evaluation questions. It is expected that the methodology will be finalized in discussion

with GDN.
- A Progress Report to be produced early September 2016, after an initial collection of data from grantee institutions, mentors and Steering Committee members.
- A Summary Report to be produced containing findings and recommendations of the evaluation, before the production of the Final Report, for discussion with grantees and GDN.

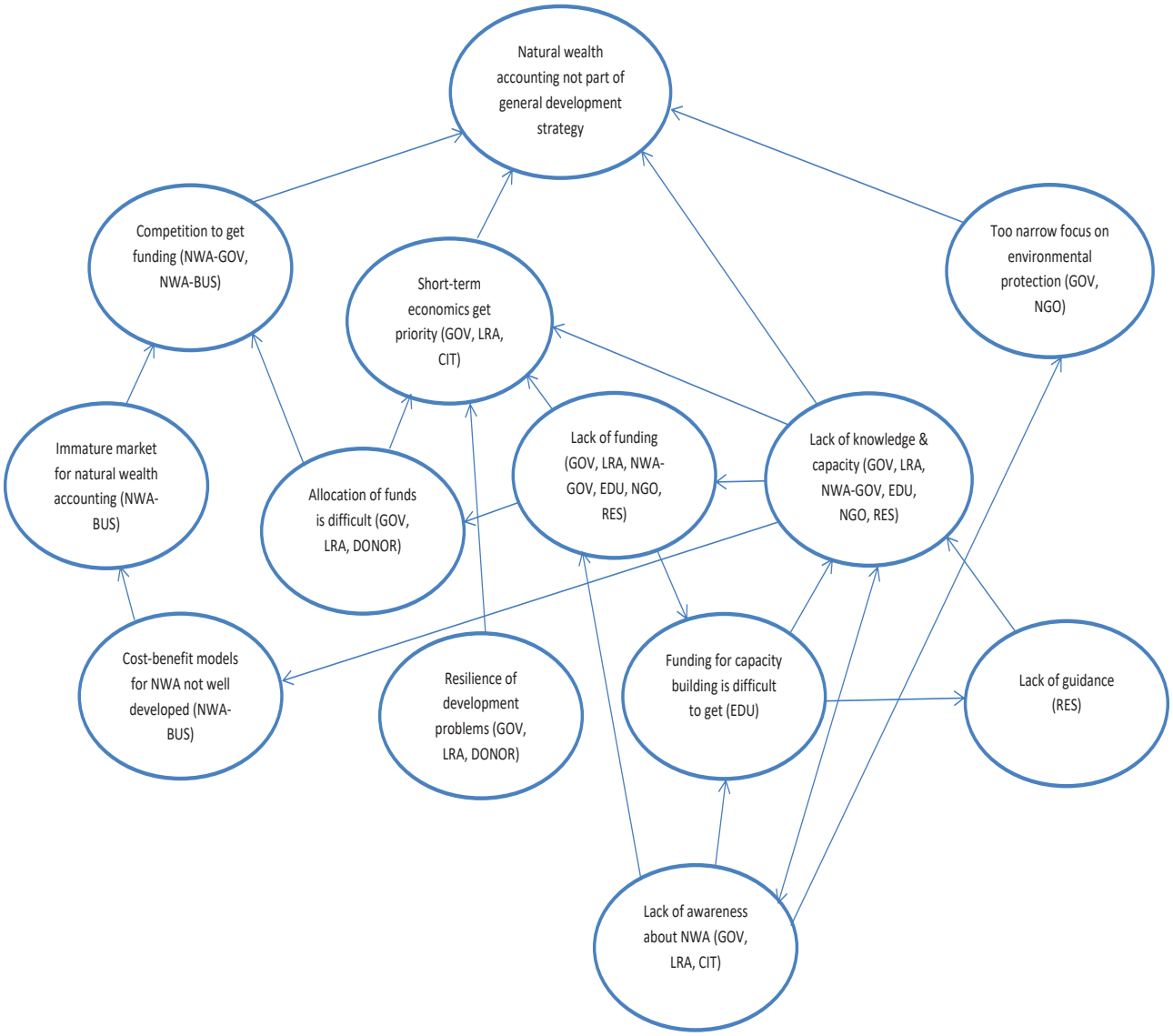
A Final Evaluation Report to be produced by 1 October 2016.
The report must cover the following sections:
- Title Page
- Table of Contents
- Abbreviations / acronyms page
- Executive summary (maximum 2 pages)
- A short introduction to the project
- Evaluation methodology
- Findings in relation to outcomes
- Lessons learnt
- Conclusions and Summary of Recommendations.

Annex 2. Stakeholder analysis

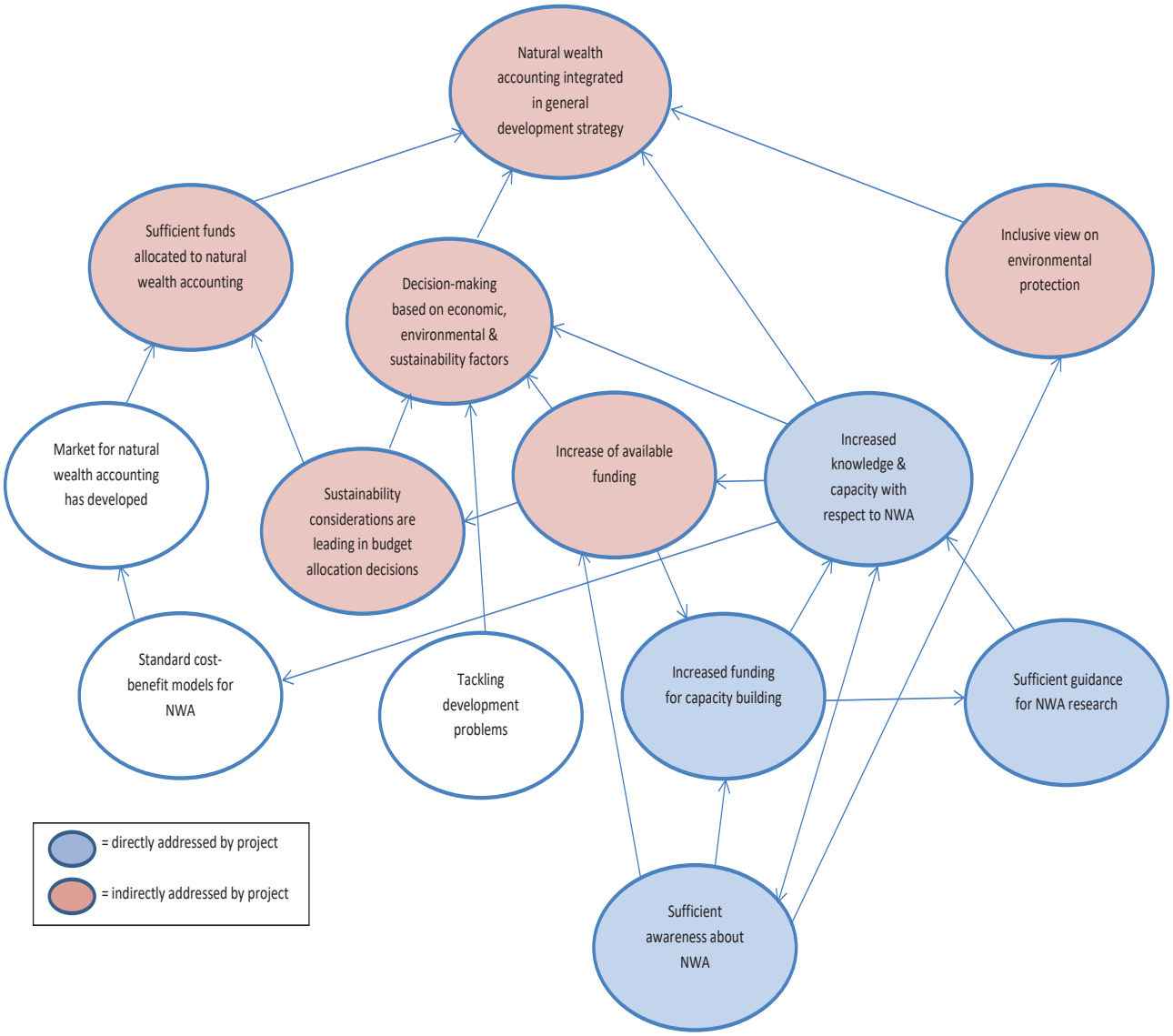
Stakeholder group	ID	Interests	Resources & Mandates	Problems
(Central) Government	GOV	1. well-being of citizens 2. environmental protection 3. capacity building 4. sustainable development	R1 general budget R2 budget for environment R3 education & science budget M1 formulation & implementation of national policy M2 formulation & implementation of environmental policy M3 stimulate economic & sustainable development M4 knowledge development & capacity building	• effective & efficient allocation of funds is difficult • lack of funding • lack of awareness about natural wealth accounting • lack of knowledge and capacity on natural wealth accounting • short-term economic goals get priority over long-term sustainable goals • resilience of development problems • focus on environmental protection in the narrow sense
Local & regional authorities	LRA	1. well-being of citizens 2. solving local & regional problems	R1 local budget M1 formulation & implementation of local & regional policy with respect to environment	see GOV
Agencies and specialists in charge of natural wealth accounting (government)	NWA-GOV	1. implementation of natural wealth accounting 2. sustainable development	R1 budget allocated to natural wealth accounting M1 design & implementation of natural wealth accounting	• lack of funding for environmental wealth accounting • lack of knowledge and capacity on natural wealth accounting • competition to get funding from government budget is fierce
Natural wealth accounting specialists (business)	NWA-BUS	1. continuity, profit & growth	R1 expertise & experience M1 provide products & services to organizations & individuals	• market for natural wealth accounting is immature (& dominated by GOV) • competition to get funding from government budget is fierce • cost-benefit related to natural wealth accounting is not well developed
Capacity building providers	EDU	1. research 2. growth of income & students	R1 tuition fees R2 government subsidy R3 knowledge/equipment M1 capacity building M2 institutional & international cooperation	• obtaining funding for capacity building is difficult • lack of awareness about natural wealth accounting with government / clients • lack of own capacity, knowledge & funding • lack of awareness about natural wealth accounting with potential students

Stakeholder group	ID	Interests	Resources & Mandates	Problems
International) donor community	DO-NOR	1. solving development problems 2. reduce poverty 3. promote sustainability	R1 funding from government / individuals M1 formulation & advice on development policy M2 implementation of development projects	• competition to get funding from donors is fierce • effective & efficient allocation of (obtained) funding is difficult • development problems are resilient
NGOs (environment)	NGO	1. protect the environment 2. promote sustainability	R1 budget of organization M1 provide specific service to society	• lack of own capacity, knowledge & funding • focus on environmental protection in the narrow sense
Individual researchers	RES	1. academic career 2. serving society	R1 research funding M1 carry out research in natural wealth accounting	• access to knowledge and capacity • lack of research funding • lack of guidance
Citizens	CIT	1. sufficient income 2. health 3. safety 4. quality of life	R1 Income from work & other activities R2 intellectual capacity R3 social networks M1 responsibility for individual & family M2 social responsibility	• material wealth gets priority • lack of awareness about real magnitude & effect of environmental problems

Annex 3. Problem tree



Annex 4. Objective tree



Annex 5. Logical framework

	Performance indicators	Means of verification	Important assumptions
Goal Natural wealth accounting integrated in general development strategy	• Number of countries where natural wealth accounting is accepted & applied systematically • Number of countries where natural wealth accounting is applied on a project basis • Quality of natural wealth accounting systems and implementation	• Ex-post evaluation of the impact of the GDN capacity building initiative as incubator in the countries concerned • Ex-post measurement of ripple effect of the GDN capacity building initiative as incubator in other countries	• Continued international support to natural wealth accounting • Acceptance of natural wealth accounting as mechanism to measure well-being & as basis for sustainable development
Purpose Increased knowledge & capacity with respect to natural wealth accounting in Madagascar, Mauritius & Morocco	• Increased knowledge & capacity on natural wealth accounting (number of persons trained, workshop participants, quality increase) in Madagascar, Mauritius & Morocco • Potential of initiative to act as incubator for increase of knowledge & capacity (uptake of results)	• Project documentation • Interviews with stakeholders	• Sufficient means & time to realize leverage effect on project funding • Cooperation of all essential actors involved in the initiative • Economic & political stability during the project period • Sufficient sources of information are available
Output Studies that capture: 1. The availability of data for valuation of key ecosystems in these countries, 2. Potential use of these data in policy formulation & formulation of national accounts, 3. Policy-level awareness of ecosystem services, natural resource management 4. Data gaps that need further research.	Results of the activities, compared to similar initiatives	• Derive increased availability of data from research report • Assess potential use of data from research and workshop reports & interviews with stakeholders • Check increase of policy-level awareness from workshop reports & interviews with stakeholders • Assess identification of data gaps from research reports	• Good cooperation between project partners • Commitment of authorities in Madagascar, Mauritius & Morocco • Acceptance by and successful interaction with stakeholders, including resource providers • Economic and political stability during the project period • Sufficient & good quality data available to carry out the research studies
Activities 1. Research studies Madagascar, Mauritius and Morocco 2. Guidance through Steering Committee and mentorship 3. Workshops: methodological (Mauritius), peer-review (Morocco), policy-dialogue and research communication training (France) 4. Dissemination and communication	• Budget and in kind contributions for each activity • Indicators to measure guidance (timely/ adequate), measure relevance of workshops to project team members, goal of the project, relevance to the program objectives, relevance for GDN in long-term outreach indicators – conferences, media interface, outreach to policy spheres- interaction and sharing of knowledge outputs with policy makers, and indicators to gauge their reactions to the usefulness of the studies	• Compare results and expenditure for activities with project budget • Interviews with GDN staff, researchers and mentors	• Timely disbursement of project funds • Honouring of input commitments by all project partners and associates

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Annex 7. Survey and interview questions

Interview Questions GDN Natural Wealth Accounting
Experiences of researchers

A. Local development knowledge

a. Do you think your knowledge on natural wealth accounting increased on the subject, because of the project? Could you give some examples?
b. Do you think your knowledge on policy aspects and policy influencing increased, because of the project? Could you give some examples?
c. How useful were the activities related to research skills and methodology to you? If applicable, please give an example of what was especially useful and what maybe was not that useful.
d. Did you miss something in the project with respect to acquiring more knowledge? Please specify.

B. Subject awareness

a. How does the knowledge you acquired on natural wealth accounting help you in your professional work or research?
b. Are you planning to use natural wealth accounting in future activities (projects, lectures, research, outreach, etc.)? If so, please give some examples.

C. Professional visibility

a. Did you benefit from the international exposure that the project provided and in what way does that help you in your work and career?
b. Do people now see you as an expert or contact point for the subject matter of the study? If so, could you give some examples?

D. Policy influence

a. Did communication and outreach for policy influence continue after the end of the project? Could you describe the actions?
b. Are the findings of your research now used for policy and decision-making? If yes, please give examples; if no, could you indicate what action is still needed and what the bottlenecks are?

E. General

a. How would you rate the general experience of participating in this project (ranging from very positive to very negative)? Please indicate the main reason why.
b. What suggestions do you have for follow-up actions or improvements?

Interview Questions GDN Natural Wealth Accounting
Experiences of scientific committee members and mentors

A. Local development knowledge

a. Do you think the knowledge of the researchers on natural wealth accounting increased on the subject, because of the project? Could you give some examples?
b. Do you think the knowledge of the researchers on policy aspects and policy influencing increased, because of the project? Could you give some examples?
c. How did the researchers benefit from the activities related to research skills and methodology? If applicable, please give an example of what was especially useful to them and what maybe was not that useful.
d. Was something missing in the project and/or should something be added to future initiatives with respect to knowledge development? Please specify.

B. Subject awareness

a. Did the knowledge of the researchers in natural wealth accounting increase and in what way?
b. Were sufficient conditions created to continue with natural wealth accounting research and communication in the future? If so, please give some examples.

C. Professional visibility

a. In your view, how did the researchers benefit from the international exposure (workshops, networking, guidance)?
b. At the end of the project, were the researchers sufficiently positioned as experts in the subject matter of their research? If so, could you give some examples?

D. Policy influence

a. Do you think the researchers have acquired sufficient skills to achieve policy influence in the course of the project? Could give examples of successes or progress?
b. What do you think are the main bottlenecks and actions needed to remove these bottlenecks that are still needed to enhance policy influencing?

E. General

a. How would you rate the general experience of this project (ranging from very positive to very negative)? Please indicate the main reason why.
b. What suggestions do you have for follow-up actions or improvements?

Annex 8. List of people interviewed

Surname	Name	Position / role	Type
Bergholtz	Chris	Head of scholarships and subsidies department, EP-NUFFIC, the Netherlands	Face-to-face interview
Bertrand	Pierre	Program management, GDN	Skype conversation, email correspondence
Peroo	Aleksandra	Principal investigator, Mauritius team	Survey response, email correspondence
Rakotondraompiana	Solofo	Principal investigator, Madagascar team	Survey response, email correspondence
Snoussi	Maria	Principal investigator, Morocco team	Survey response, email correspondence
Soriot	Annie	Université de Rennes 1, previous program management GDN, France	Survey response, skype conversation
Sultan	Riad	Researcher, Mauritius team	Survey response, email correspondence
Weber	Jean-Louis	European Environment Agency (retired), scientific committee, France/Moldova	Survey response, skype conversation
Weits	Vicky	Program officer, scholarships and subsidies department, EP-NUFFIC, the Netherlands	Face-to-face interview

Annex 9. Guidance manual for TEEB country studies-recommendations

1. **Make nature's values visible** – e.g. by assessing and communicating the role of biodiversity and ecosystem services in the economy and to society.

2. **Assess the value of ecosystem services and integrate these into decision making** – to improving the evidence base for decisions.

3. **Account for risks and uncertainty** – e.g. by understanding them and applying safe minimum standards or precautionary principles.

4. **Value the future** – by looking at sufficiently long timescales to account for future generations and making explicit the costs and benefits of decisions and policies using different discount rates.

5. **Measure better to manage better** – investing in improved biodiversity and ecosystem service indicators, mapping and assessments, and national accounts that take account of the roles and value of nature.

6. **Work with nature for poverty reduction** – identify synergies between nature, livelihoods and wellbeing, and target investment in public goods. Human dependence on ecosystem services and particularly their role as a lifeline for many poor households needs to be more fully integrated into policy, strategies and implementation.

7. **Encourage corporate disclosure** that goes beyond the bottom line and encourage due action and compensation for adverse impacts that cannot be avoided – ensure 'no net loss', including through in-kind compensation ('offsets'), aim for 'net positive impact' and disclose externalities and liabilities.

8. **Change the incentives** – reform of market signals (subsidies, full cost pricing, taxes and charges, fees and fines) as well as property rights, liability regimes, consumer information and other measures can green the supply chain, stimulate private investment in conservation and sustainable use.

9. **Designate, manage and invest in protected areas** – to ensure a comprehensive, representatives, effective and equitably managed network. Protected areas offer value for money.

10. **Invest in ecological infrastructure** – to support climate change mitigation and adaptation, water security and other policy goals.

11. **Mainstream the economics of nature** – into different ministries, sectors and associated policies e. g. in economy and finance, trade and development, transport, energy and mining, agriculture, fisheries, forestry, planning and water.