

**National Climate Change and Environment Fund (FONERWA)**  
**Full Project Document (PD)**  
**COVER SHEET**

(Attach this sheet to the front of your submission. *Please do not exceed one A4 side of paper.*)

<b>Project Title</b>	Rooftop Rainwater Harvesting in high density areas of Nyarugenge, Gasabo, Kicukiro, Musanze, Nyabihu and Rubavu Districts (RWH)
<b>Project Summary</b> <i>(In 75 words or less please summarise what your project intends to achieve and how)</i>	The targeted Districts are recurrently threatened by flooding. Rainwater harvesting (RWH) is identified among other mitigating measures. Four types of interventions are proposed in this project according to category of beneficiaries: (i) Strengthening the existing loan scheme on RWH facilities; (ii) Supporting a subsidy & loan system basing on Ubudehe categorization; (iii) Disseminating very low cost (artisan) RWH techniques for rural poor households; (v) Constructing RWH systems for selected public buildings and collective household systems.
<b>Anticipated Start Date</b> <i>(DD/MM/YYYY)</i>	1/1/2014
<b>Project Duration</b> <i>(in months)</i>	36
<b>Funding Requested</b> <i>(RWF)</i>	2,255,846,638
<b>Name of Lead Organisation</b>	Rwanda Natural Resources Authority
<b>Type of Organisation, which best describes the Lead Organisation</b> <i>(please select only one box)</i>	<input checked="" type="checkbox"/> Government Institution
	<input type="checkbox"/> Non-Governmental Organisation (NGO)
	<input type="checkbox"/> Private Sector Enterprise
	<input type="checkbox"/> Academic Institution
	<input type="checkbox"/> Other <i>(please specify)</i>
<b>Partner Institutions</b>	Kigali City, Districts of Nyarugenge, Gasabo, Kicukiro, Musanze, Nyabihu, Rubavu, Banks and tank suppliers
<b>Full Office Address</b>	Rwanda Natural Resources Authority P.O Box 433 Kigali E-mail: info@rnra.rw
<b>Website Address</b> <i>(if applicable)</i>	Http://www.rnra.rw/
<b>Contact Person</b> <i>(the person who will have ultimate responsibility and be accountable for delivering this project)</i>	<b>Name:</b> KABALISA Vincent de Paul <b>Position :</b> Deputy Director General/IWRM <b>Email :</b> kabalisa@hotmail.com <b>Tel:</b> (+250 0785545307)

**For Internal Purposes Only: To be Completed by the Fund Manager**

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**Technical Appraisal Score:** \_\_\_\_\_ **Rank:** \_\_\_\_\_

**National Climate Change and Environment Fund (FONERWA)  
Full Project Document (PD)**

(Please provide a complete answer to each question, even if the answer is duplicated elsewhere. This PD should not exceed 35 sides of A4 size paper.)

**SECTION 1: INFORMATION ABOUT THE APPLICANT**

<b>Q 1.1</b>	<b>What</b> is the Lead organisation's total number of full-time employees?
	150
<b>Q 1.2</b>	<b>What</b> is your organisation's experience of managing similar projects or activities ( <i>please explain why you think your organisation and partners are capable of managing the project</i> )?

From its creation in 2011, RNRA took over the implementation of a pilot project for the introduction of rainwater harvesting techniques in Rwanda. This pilot project started in 2006 by the Ministry of Natural Resources with the support of the African Water Facility and FAO, to address challenges related to water scarcity, environment degradation and food insecurity in the rural and dry area of Bugesera.

During this project, 288 RWH facilities were built for selected schools, communities and individual vulnerable households; 26 farm ponds installed for irrigation purposes; 22500 fruits and agroforestry trees planted; capacity for water and soil management improved through awareness raising, trainings and study tours. The activities funded by FAO and AWF Development partners were closed in 2011, but RNRA through its ordinary budget, prolonged the project to June 2013, to assure smooth transition towards replication and up-scaling. During this transitional phase, RNRA supported the development of the National Strategy for Rainwater harvesting and the feasibility study and designing for the current project and tested the loan scheme (as one of the financing approach proposed in the designed project).

During the implementation of the pilot project, RNRA captured a number of lessons that could guide further interventions:

- Rainwater harvesting is found wide, covering aspects of surface runoff collection for irrigation, rooftop rainwater harvesting for domestic uses and the rainwater storage in soil profile (in situ techniques). For the effective development of RWH in Rwanda, a National Strategy to engage all relevant stakeholders was needed. This project will be more focused on rooftop RWH systems ;
- Rooftop RWH contributes to reducing surface runoff, where for instance, a tank of 5m<sup>3</sup> can retain up to 60% of the water falling on the roof. However at a large scale, the impact could be more significant in the high density area and when the technique is adopted in mass. This guided the choice of the project intervention zone ;
- In terms of providing water, rooftop RWH has the higher potential in the high rainfall area, where the dry

period is shorter;

- During the pilot phase, there was no financial contribution by beneficiaries. This was not only a weakness for the ownership and sustainability but also a barrier for the up scaling due to limited resources. There was a need for designing innovative financing approaches to cover a large number of households. This is why the new project proposes a loan and subsidy structure based on income to engage beneficiaries and to improve uptake;
- The assessment on different construction techniques (metallic, ferro-cement, masonry, plastic tanks, biological reinforced (bamboo) tanks, ...) showed that for small size storage capacity (>10 m<sup>3</sup>) the plastic (PE) tank remains the cheaper and easier option;
- It is risky to target very poor families with relatively high cost systems, because of their limited capacity to contribute, maintain and to capitalize the system (value addition, leveraging income generating activities, etc.). It was found appropriate to develop the low cost artisan techniques targeting poorer households in rural area.
- RWH may present some risks such as cracking, ineffective gutters system and water contamination, when some precautions are not taken care of. In the current project, attention will be paid to these issues (first flush, flush drain, cleaning, water filter and sterilization, keeping a minimum amount of water for the permanent tank moisture, etc.) during the systems designing, trainings and maintenance and use manuals to be produced;
- Construction works should be planned in way they are completed during a raining season to enable easy verification of all technical defects and to ensure moisture required for the hardening of the tank.

RNRA has successfully tested the innovative rainwater harvesting loan scheme (RWHLs)". The RWHLs is an innovative approach designed by RNRA in collaboration with private institutions (bankers and water tank manufacturers) to facilitate household's access to loans for purchasing rainwater tanks under affordable conditions. The scheme is established by a collaborative agreement (MOU) between a District, a Bank and a Manufacturer/Supplier under the facilitation of RNRA.

The MoU indicates responsibilities and obligations for each part that can be summarized as follow: (i) for the District, to ensure the mobilisation and communication between the private partners and beneficiaries; and to screen and validate applications from beneficiaries; (ii) for the bank, to provide this special loan product in a form of leasing, in order to avoid any guarantee or mortgage and at a low interest rate (10% flat per annum was applied during the pilot); (iii) for the supplier, to supply the tanks and to take it back (to buy it from the bank) in case of failure in repayment by a beneficiary and (iv) for RNRA, to support in designing, coordinating, negotiating and monitoring the implementation of the scheme.

The RWHLs was implemented in Rubavu, where 82 tanks were installed. Later the scheme has been introduced in 4 other districts that are Nyabihu, Gasabo, Nyarugenge and Kicukiro. The results that came out from joint evaluation by all stakeholders in Rubavu, showed a satisfaction on the system and high intention to expand it. A number of adjustments were suggested to achieve that expansion.

- To integrate RWH in Imihigo<sup>1</sup>, especially at Sector levels
- To strengthen awareness and communication;
- To customize the tank sizes (5-2 m<sup>3</sup>, needs vary depending on house size&design, available space for installation and financial capacity);
- To discuss how the loan payment period can be extended to two or three years instead of one year;
- To assess possibility of a subsidy system to improve uptake

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<sup>1</sup> Imihigo: Performance contracts

RNRA tested also the FFS (farmer field school) approach to disseminate low cost (artisan) rainwater harvesting systems. The “mad brick tarpaulin lined tanks” widely adopted in Shangasha Sector of Gicumbi District, was identified and recommended during an assessment of existing low cost techniques, conducted during the identification of this project (the feasibility study). The "shangasha" technology is a simple design that uses predominantly local materials, which makes it extremely cheap with the storage capacity of 6,000 liters at a cost varying between 80,000 to 100,000 Rwf. This type of RWH facility seems to be practical and very well adapted to the local conditions.

In order to promote this technique, RNRA implemented on-field trainings in Nyabihu and Rubavu Districts, where 375 local technicians were trained and at the same time 120 tanks were constructed.

**Q 1.3** List the name, position, and email of key personnel involved in the project, such as the project executive, project manager, and core technical staff. (Provide a CV for each of the key personnel as an attachment to this PD)

Project executive : Dr Nkurunziza Emmanuel, email: enziza2001@yahoo.com  
 Project Manager : Mr Ndayisaba Karuhanga Gaston, email:ndagaston@yahoo.fr  
 Project accountant: Mrs Rosalie Semigabo, email:rosemigabo@yahoo.fr  
 Two field technicians (to be recruited)

**Q 1.4** Lead Organisational Finances. Provide a copy of these from the most recent audited annual accounts (income and expenditure statement & balance sheet in RWF, as well as the main sources of funding) as an attachment to this PD.

## SECTION 2: INFORMATION ABOUT THE PROJECT

**Q 2.1** Why is the project needed (*clearly state the problem this project will address and the evidence base for its justification. Where possible, refer to international, national and/or sectoral strategies.*) ?

Rwanda has ample water resources with two rainfall seasons. However on another hand, Rwanda is among the countries having the lowest per capita water availability and storage capacity in Africa. Besides this problem, there are others such as the vulnerability to soil erosion, land sliding, floods and other forms of hazards related to rainwater. This rainwater harvesting project is therefore justified, on one hand, by the opportunity for optimizing the utilization of available water resource, and on another hand, by the challenge for mitigating the hazards related to that resource.

The UNEP report (2009), recognized that "multiple effects of rainwater harvesting interventions on ecosystem services in urban areas are two-fold: firstly, it can reduce pressures of demand on surrounding surface and groundwater resources. Secondly, the rainwater harvesting interventions can reduce storm flow, decreasing incidence of flooding and short peak flows".

Nowadays, with a high population growth and extension of cities, the proportion of catchment areas covered by house-roofs is increasing. Roofs having a high runoff coefficient, these results in the reduction of surface infiltrations and the important increase in surface runoff. For the particular in Nyarugenge District, a recent study carried out by RNRA (with SHER consult), confirmed with evidence that recurrent very dangerous flash flood problems at Nyabugogo are caused by the very small Mpazi catchment, heavily urbanized and with steep slopes. Therefore, the flood risk mitigation strategy for the Nyabugogo catchment developed by RNRA included rainwater harvesting among priorities.

In addition to this, rainwater harvesting has increasingly been promoted and implemented worldwide to provide additional water for multiple uses. In Rwanda, both the Water Supply and Sanitation and the Water Resources Management Strategies recognize rainwater harvesting as an effective way to increase access to water. The Economic Development and Poverty Reduction Strategy (EDPRSII) fixed an ambitious target to cover 100% of people with access to an improved source of drinking water by 2018 (from 75% in 2012).

Rainwater harvesting was captured in the District Development Plans for the targeted Districts, as a strategic action to address issues of water and sanitation, environmental protection and disaster prevention, set among their priorities. For instance the District of Kicukiro fixed clearly the target to achieve 100% of new buildings and 80% of existing buildings with RWH facilities by 2018, while Rubavu intends to achieve 46,125 RWH systems installed by 2018 from 290 in 2012. However rainwater harvesting would affect implicitly other District priorities such as agriculture, livestock, women and youth empowerment and greening infrastructure in Kigali City.

**Q 2.2**

**What** change is this project intended to achieve (*state specific objectives, expected results/impact and long-term legacy. To address the core environment and climate change objectives of the project, it would be helpful to refer to national and sectoral climate change and environment objectives. Provide measurable indicators, within a log-frame matrix. In addition, make a note of the expected impacts on employment and poverty reduction, as well knowledge and technological transfer.*)?

### **1. Overall objective (Impact):**

The project overall objective is “Renewable energy and other environmentally sustainable, low carbon and climate resilient technologies adopted, developed and/or improved for use in Rwanda”. This objective statement is extracted from FONERWA Logical framework, under its result pillar number 2. The objectively verifiable indicator is also directly inspired from FONERWA output indicator 2.4: “Number of Rwandan citizens who have built resilience to climate change impacts”.

### **2. Project purpose/outcome:**

The project purpose (outcome) is “Surface runoff reduced and livelihood improved through multiple use of rainwater”. This purpose is in line with the problem discussed above and directly linked to the project overall objective. In fact, RWH is among practices of integrated water resources management, which was identified as priority number 1 among the immediate options proposed by the National Programmes of Action to Climate Change, with the aim “to reduce the vulnerability of ecosystems, population and sectors due to the quantitative and qualitative shortage of water resources and the damages caused by the runoff due to climate Change” (NAPA, MINITERE, 2006). Three indicators will be used to measure the achievement of this objective:

**Outcome indicator 1:** “Volume of rainwater harvesting facilities installed”: It is well known that the more the rainwater storage capacity in place, the lower will be the surface runoff and therefore the more the soil erosion and risks to flash floods will be mitigated. The target is to achieve 65,250 m<sup>3</sup> RWH facilities installed by the project adding to 1475 m<sup>3</sup> existing.

**Outcome indicator 2:** “Number of households with access to rainwater”: The RWH facilities to be installed will provide water for multiple uses, contributing to improve livelihood and to reduce poverty. It is expected that

at 17,332 households will have access to rainwater at the end of this project, from 232 existing.

**Outcome indicator 3:** “Number of green jobs created”: The project will create new jobs temporarily during the implementation of various project activities but also sustainably through capacity building and technology transfer. This will also contribute to improve livelihood and reduce poverty. The project is expected to create 9123 green jobs, adding to 224 created in the previous phase.

### 3. Project results (outputs):

In order to achieve the above objectives, the project will deliver 3 outputs corresponding to three different approaches/strategies used to reach a maximum number of beneficiaries with efficient use of resources, basing on categories of beneficiaries and on income levels, as illustrated in the table below:

Interventions	approach	Target beneficiaries		Output
		Average monthly income	Ubudehe	
Household based	Loan scheme and free market	above 120,000 Rwf	(6)Well-off (5)Middle:	Output 1
	Loan & subsidy scheme	120,000-60,000 Rwf	(4)Surviving (3) Poor	
	Low cost artisan RWH systems	below 60,000 Rwf and rural	(2)Poorer (1)Poorest	Output 3
	Collective systems	Villages, high dense settlements	-	Output 2
Institution based	Public systems	Selected public institutions		

**Output 1: “Effective loan/subsidy system on rainwater harvesting facilities established and sustainably supported”:** This output will cover activities for strengthening the existing loan scheme and supporting a loan &subsidy system for the medium category of households, to enable them to afford the water tanks. It is expected to reach 13,000 households in total, 3000 through “loans only” and 10,000 households through “loan & subsidy”. This outcome will be monitored using the indicator “Amount of money disbursed to subsidize RWH”. The target is to disburse up to 956,520,000 Rwf at the end of the project.

**Output 2: “Public and collective rainwater harvesting systems constructed”:** This outputs will cover construction of RWH facilities for public building with an important social function (schools, health facilities, markets, administrative offices, etc) and households collective systems. The component is incorporated in this project because, there is still an important number of institutional buildings without rainwater harvesting facilities, yet they have often the largest roof area and therefore the higher risk of contributing to runoff causing erosion and floods. Other advantages are that, on one hand, those institutions face problems of water insufficiency, and on the other hand, they constitute perfect places for demonstration of benefit of RWH. The target is fixed to construct 70 institutional systems and 5 household collective systems.

**Output 3: “Low cost and artisan RWH techniques promoted in rural area”:** Poor families in rural areas would not be able to afford the plastic tank even when the loan and subsidy facilities are available. These will be supported for adopting low cost artisan systems. It is expected that at the end of this project, 576 local technicians will be trained on construction of these systems, and 4,000 tanks will be constructed with contribution of beneficiaries.

#### 4. Long-term legacy:

In addition to the direct changes mentioned above, from a general point of view, the project is expected to contribute to the sustainable development of RWH in Rwanda. In fact, the exposure and experience created by the project to a large number of people and at different levels, will contribute to positive behaviour change toward rainwater management.

**Q 2.3**

**How** will the project objectives be achieved (*include a detailed Work Plan as an appendix highlighting key deliverables and activities and responsibilities. Clearly describe the approach and methodology to be followed and the sequence of activities planned.*)?

An number of activities will be carried out in order to achieve the project objectives:

**OUTPUT 1: EFFECTIVE LOAN/SUBSIDY SYSTEM ON RAINWATER HARVESTING FACILITIES ESTABLISHED AND SUSTAINABLY SUPPORTED IN THE TARGETED DISTRICTS**

**Activity 1.1.: Conducting informative and consultative workshops:** From the beginning of the project, a workshop will be organized, to update all stakeholders on the project in general, but in particular, to get their inputs to refine the MoU template, the loan and subsidy application form (the form will be updated adding information on Ubudehe category for the applicant), the loan contract template and to confirm the selected Ubudehe categories for the subsidy eligibility. The workshop will enable stakeholders understanding and participating to the establishment of loan& subsidy scheme for the ownership during the implementation.

**Activity 1.2.: Selecting private partners (bank and Suppliers/Manufacturers) and establishing or updating agreements:** Trough competitive and transparent procurement procedures, private partners will be selected. Banks will be selected basing on the acceptance of the general terms pre-defined, inspired from the existing loan scheme. Other selection criteria will include (but not limited to) the loan interest rate, grace period and number of branches in the targeted districts. Suppliers would primarily accept the general conditions of the existing scheme (type and quality of tanks, acceptance to refund the money in case of failure in the loan repayment by beneficiaries, etc.) with special selection criteria including prices for different size of tanks, in the specific districts.

After the selection process, a new (MoU) will be signed by RNRA, banks, suppliers and Districts. The MoU will cover both the "loan only" and the "loan and subsidy" sub-components. It is to be noted that during procedures of incorporating the subsidy in the new MoUs, the existing loan scheme will not be stopped, rather it will be strengthens.

**Activity 1.2: Raising awareness by implementing a communication and media plan:** After coming up with the new agreements, a strong awareness campaign will start. The awareness will use different channels and will focus on following aspects:

- Informing the public and local authorities on the existence of the project and different types of support to the population;
- Communication on requirements and procedures specific for accessing the loan, and specifically on steps in the implementation of the loan/subsidy scheme, with special attention to local authorities (for example where to find application forms, list of applicants whom the requests have been accepted, schedule of contract signature, date of delivery, etc.);
- Promotion of RWH in general and education of the public on its advantages both for economic and environmental benefits; and

- Education on use and maintenance of tanks.

**Activity 1.4: Supervising and controlling the quality of tank installation:** Following the awareness, it is expected that applications from potential beneficiaries will be received. After the process of analysing those applications and approval of the loan-subsidy, the project field officers will supervise the activity of water tanks delivery and installation to insure the quality. They will also approve the delivery notes and invoices for the subsidy to be paid at the project level.

**Activity 1.5: Supporting households in purchasing water tanks (catering for 30% of the cost) by the loan/subsidy system:** The project will support a subsidy that will cover 30% of the total cost (Total cost means the cost for acquiring a tank, installation and bank interests), while the remaining 70% will be covered by the beneficiaries contribution, 58% as a bank loan and 12% as a contribution in cash or in kind (installation). In terms of money, for instance for the system of 5m<sup>3</sup> capacity, these percentage correspond respectively, to the amounts of 150,000 Rwf, 290,000 Rwf and 60,000 Rwf. However, small systems such as 3.5, 2.5 and 2m<sup>3</sup> will also be included, meaning that, the subsidy will be the same in terms of the proportions but different in terms of amounts of money.

The selection of families will be done by local leaders basing on “Ubudehe” categorization<sup>2</sup>. The applicant will fill a form specifying his/her category of ubudehe, get it certified by the Cell and the Sector. The applications will be submitted to the bank partner for screening and approval of the loans. After approval of the loan, the applicant will sign the loan contract with the bank, with particular closes for beneficiary eligibility to the subsidy.

The loan contract will specify the total amount of the loan, a part of the loan that will be paid by RNRA as subsidy and conditions for the applicant to benefit this subsidy (apart from being in the accepted category of Ubudehe, the beneficiary will accept to contribute on the installation of the tank, and certify that the subsidy will serve exclusively the purpose of paying a part of his/her loan, before getting the subsidy). After the process of contract signature between the bank and a beneficiary, the bank transfers the money (total loan) to the supplier and the last proceeds for supplying the tanks. After installation, the payment will be made on the account of beneficiaries by the project, upon presentation of the tank delivery note by the beneficiary and the certified by a project field Officer, for its proper installation.

It will be specified in the MoU, that in case of failure to repay the loan, the tanks will be taken back by the supplier, and the supplier will refund the money to the bank, and the subsidy will be refunded to RNRA.

**Activity 1.6: Organising joint evaluations of the scheme with all stakeholders:** A joint mechanism is needed to monitor this scheme that involves different actors, with different levels of understanding and probably with different interests. This is why a regular joint evaluation will be organized to assess and to settle all problems found on the ground. This evaluation will include field visits, discussion and formulation of recommendations on, where the enforcement of the terms and conditions is needed, strategies of speeding up the processes, new facilitation for beneficiaries both on application and loan payments, for instance

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<sup>2</sup> Ubudehe is a program developed in Rwanda to support social protection interventions basing on the idea that citizens analyze their own poverty among the community and develop solutions together to solve the identified problems (Participatory Poverty Assessment). The classification has become a key tool for the implementation of social protection programs and the targeting of beneficiaries. The following are 6 categories defined in the Ubudehe approach by a set of social economic criteria and respectively the proportions of households within each category: Poorest: 2.7%; Poorer: 22.7%; Poor 59.3%; Surviving: 11.5%; Middle: 0.6%; Well-off 0.2%; uncategorized: 3.1% (source: Rwanda Local Development Support Fund, 2013). For the purpose of this project it is estimated that the income between 60,000 and 120,000 Rwf fall under the categories of “poor” and “surviving”.



using update technologies, and on MoU addenda or amendment where necessary.

**Activity 1.7 Training, demonstrating and disseminating household based water treatment solutions:** The water quality issue was mentioned in the environmental risks analysis. This issue will be addressed partially, through trainings, demonstration and distribution of water treatment solutions. This activity will be complemented by incorporating the water quality aspects in the awareness, designing, use and maintenance programs.

#### **OUTPUT 2: PUBLIC AND COLLECTIVE RAINWATER HARVESTING SYSTEMS CONSTRUCTED**

**Activity 2.1: Conducting a workshop to raise awareness and participatory selection of beneficiaries:** The information workshop will be organized at for relevant technicians at District level, to explain the purpose of the intervention, schedule and requirements for the beneficiaries and local authorities, during the selection, designing study, construction and after completion construction works.

For selecting beneficiaries, Districts will be officially requested to propose a list of sites and buildings under their priorities, but the demand may be very higher than the number for which the available resources can cover. The selection will be done basing on a number of criteria including (but not limited to) (i) the social importance (schools, health facilities,..); (ii) size of roofs (larger buildings contribute more to surface runoff); (iii) the location (up spread or in the high risk zone); (iv) status of access to water (high need or inadequate access to other sources of water) and (v) the willingness to contribute. The workshop also will discuss and approve the draft list of 70 institutions and 5 sites selected for construction of collective systems.

**Activity 2.2. Conducting detailed designing studies and Developing use and maintenance and use manuals:** Using national qualified firms, the study will be conducted for a detailed designing (quantities, plans and drawing,) that will be use in the Tender Document. The firm also will be assigned to prepare the maintenance and use manual and to ensure a supervision of construction works (quality). The tender will have a separate lot for conducting the EIA for the works.

**Activity 2.3. Constructing rainwater harvesting systems:** National firms also will be hired to execute construction works. The tender can be divided into different lots depending on the type of structures and the geographical distribution.

#### **OUTPUT 3. LOW COST AND ARTISAN RAINWATER HARVESTING TECHNOLOGIES PROMOTED AND ADOPTED BY FAMILIES IN RURAL AREA OF THE TARGET DISTRICTS**

**Activity 3.1 Organizing study tours:** The exchange visits are organized to raise the awareness and to create demand among the population, before the on-field training take place. In total 150 people will participate in these exchange visits or 25 people from each district. The most recommended site (but not obligatory) to visit would be Shangasha Sector in Gicumbi District, were this technique was adopted in mass (visibly more that 90% of household have this type of tank) and where people can witness its impacts.

**Activity 3.2 Organizing on-field demonstrations/trainings on low cost rainwater harvesting technologies:** After creating a demand, the second question is how to find local technicians who can help them to implement this cheap and effective technique. To address this, the on-field (practical) trainings will be organized. Six trainings, one per district, will be conducted for 576 local technicians in total or 96 per district.

**Activity 3.3 Supporting poor rural families (providing basic construction materials) in constructing low cost systems:** Since a small group will have a chance to undergo the exchange visits, locally poor people will need

to see really the advantages of the introduced technologies. For this reason, basic construction will be supplied as incentive to the first families who will accept to adopt these RWH facilities for a wide spread. Materials will be provided upon demand. The eligibility will be determined by being in the accepted category of ubudehe, and showing starting works of construction at a certain level (elevation).

**Q 2.4**      **How** does the project address cross-cutting issues such as gender and youth?

Water is a natural resource which touches all domains of life, whether economic, social or cultural. This project will be dealing with water conservation and supply, and it will contribute either directly or indirectly to the cross-cutting issues. The following cross cutting issues will be covered in particular:

**1. Capacity Building,**

Although this RWH is not directly a capacity building project but technology/approach transfer project, the institutional and management capacity concern has been considered at certain levels. Specifically activities related to raising the awareness on the RWH techniques and their benefits with a maximum of people and institutions, stakeholders and possible users, throughout the country will have educative orientation.

According to UNEP (2009), promoting RWH harvesting rainwater itself is building capacity in terms of Water resources management. The RWH technology is recognized as simple and cheap and highly decentralized, but contributing empowering individuals and communities to manage their water.

The National Strategy for RWH discussed the issue of capacity building where it recommends a number of interventions in order to develop and improve national competency in developing (design and construction) and operating RWH systems. These interventions include (but not limited to): Organizing technical exchange between local and public and private sector, preparation of RWH guideline and standard manuals, training communities in operation and management of community RWH systems, etc. These aspects are taken into account in the components related to the dissemination of low cost rainwater harvesting systems, development of public and collective RWH systems.

This project is also expected to put in place an innovative loan-subsidy system that can be a formula replicable to other aspects of Natural Resources. This approach can constitute an experience for others on how different stakeholders can be mobilized and brought together to contribute effectively and efficiently to the achievement of a specific objective. The physical structures to be put in place also will enable demonstration of RWH benefits and possibly they can constitute a field for experimentations for further and deeper researches in the field of RWH. Moreover this project was formulated in parallel and in complementarily with a thorough study on the impact of RWH on floods.

**2. Family and Gender,**

Equity of access for women is one of the guiding principles of Integrated Water Resources Management (IWRM) for community development. In fact youth and women are the most affected by water related environmental hardships.

Although there is no specific “gender” planned component within the project, this issue will be considered as a cross cutting concern. The project will then systematically include the “gender” concern in all decisions and activities. Moreover a considerable number of the project beneficiaries are expected to be women, as the women heading households in Rwanda count for 27.7% (Third Integrated Household Living Conditions Survey).

Considering the aspects of this project regarding providing supplementary water for domestic uses, one may note that in the families, women and children are principally in charge of water provision and more generally the domestic chores. Children and particularly young girls may be deprived of education due to the need to assist their parents in collecting water from far-away sources. In this case the project is expected to contribute a lot providing additional water both at institutional and at household levels.

The project using a « Cost sharing » approach, there is a risk of generating unbalances between men and women, to the detriment of the last, especially the decision making for using family incomes to acquire rainwater harvesting facilities. The project is fully aware of the risk and anticipated the RWHS using application forms that engage the commitment of both a man and a woman. This issue will also be considered in the awareness and communication efforts planned in this project. Gender aspects in particular will be considered in the project monitoring and evaluation both in designing questionnaires and in sampling methodology. Where possible the synergies will be pursued through partnership with pro gender institutions and NGOs to strengthen this aspect.

### **3. HIV/AIDS and NCDs,**

This RWH project will positively impact on the living conditions of the beneficiaries in general but in particular on people living with HIV/AIDS and NCDs. In fact, the prior pilot phase has widely demonstrated such consequences. The foreseeable socio economic potential improvements for the beneficiaries at family and community level are many and include the improvement of quantity and quality of drinking water<sup>3</sup>, the better diet as water will be used in households garden for vegetable and fruit trees growing (mini scale irrigation), better sanitation and hygiene as water availability for domestic purposes will be improved, increases incomes due to money saving by reduced the water supply costs and productive use of rainwater for home-based economic activities such as livestock, brick making etc.

### **4. Disability and Social Inclusion**

Water is essential to life, as result; water is not just an economic good but is also a social good. This principle was articulated at the United National Conference on Environment and Development (The Earth Summit); Rio de Janeiro, 1992.

The project will subsidize a larger fraction of the equipments for less wealthy families and for social institutions. These families having people with disabilities would be encouraged to adhere to this facility to help them improve their living conditions.

Possible conflict may be raised from the management of collective systems. This issue in taken into account and will be considered in the site selection, mobilization and organization of families beneficiary. Local authorities will be involved in both selection of beneficiaries and oversee the management of these structures.

**Q 2.5**

**Who** are the stakeholders affected by the problem, and who are the stakeholders influential in solving the problem? How have they been incorporated and involved in project design and delivery?

<sup>3</sup> While the quality of rainwater does not usually meet the WHO guidelines for drinking water quality (bacteriological quality, mineral levels) this issue can be solved trough household-based treatment

Stakeholders are individuals or groups who, indirectly or directly are stand to gain or loose from a given Project. In this RWH project stakeholders can be grouped different categories.

1. Primary stakeholders (beneficiary): 17,000 households, 5 collective systems for 100 households, 70 institutional systems benefiting 70,000 people in 6 Districts, Nyarugenge, Gasabo, Kicukiro, Musanze, Nyabihu and Rubavu.

2. Secondary Stakeholders (affected by the problem): When you consider the consequences of flooding on transport and prices of foodstuffs, the whole population of Rwanda is concerned in one or another way.

3. The key stakeholders (influential in solving the problem): Districts (local Government), beneficiaries and Private Sector (bankers, suppliers/manufacturers) will play key roles in the implementation of this project.

Already almost the key stakeholders have participated in the designing, piloting and evaluating the rainwater harvesting loan scheme. The present project is formulated basing on expressed needs and suggestions from those stakeholders in order to strengthen and extend the already existing initiative. Five Districts out of 6 targeted in this project, have already established the scheme.

**Q 2.6** | **How** will the benefits of the project be sustained after FONERWA funding comes to an end?

The project is based on demand driven, participatory and cost sharing approaches which ensure the ownership of the project by beneficiaries and therefore the sustainability. The institutional arrangement is also set in a way to optimize the involvement of decentralized entities, which is also a factor of ownership and capacity building for the sustainability. This will help in another stage, to enforce construction regulations integrating RWH systems.

The project is expected to be accepted by beneficiaries due to a number of positive environmental benefits such as runoff control, improved access to water for domestic uses and economic activities (e.g. animal watering), and mitigating floods.

With respect to gender equality the RWH project will impact on socio economic improvements such as: (i) health improvement (clean water, hygiene and sanitation, and better nutrition); (ii) Improved economic situation through savings on water expenses and income generating activities; and (iii) through the improved living conditions (work load, time savings, skills development, etc.)

It is expected that this project will be a catalyst for other donors to support RWH in Rwanda. The National Strategy for RWH targets set an ambitious objective to increase 10% the number of households and institutional buildings equipped with appropriate RWH facilities. However to achieve this objective, the mobilisation of resources and enhancement of the mechanisms of coordination of different actors are needed. The success of this project will be a tool to attract more partners both public, NGOs and private. In this intention, during this project implementation, the preparation of steps for a further extension is planned in this project, including networking with different Stakeholders and drafting new project proposals to target various source of financing. African Water Facility, and Dutch Embassy in Rwanda are potential donors who are likely to support the extension of best practices of this project.

**Q 2.7** | **What** is the scope for income generation from the project?

Indirectly water collection itself is a source of income by selling water. Currently some families made RWH a

viable business, collecting rainwater and selling it to neighbours on a prices varying between 50 and 100 Frw per a jerry can of 20L. This kind of business is frequent in the City of Kigali. This should be encourages especially during the raining season because water needs to be used in order to create a new empty space in the tank for a new rain. In that situation the tank harvests more water for income and local social benefits, but most importantly this will create more impact in reducing surface runoff. On another hand, this RWH project will enable saving household expenses on water collection or water bills.

On another hand water is an input for various economic activities such as livestock and mini irrigation. The pilot phase demonstrated that RWH in schools enable mini-scale irrigation for school garden activities which may be a source of income.

The strategy behind training local technicians on low cost RWH technologies is to give skills to a large number of local technicians who may be grouped and organized in constructing those affordable systems for their neighbours as a business activity. As mentioned previously the main technique to be disseminated was started in Gicumbi District. The promotion of this technology is a king of encouragement and valorisation of their innovative initiative. This project therefore will contribute to market their skills and create more jobs.

The construction of RWH systems for public institution and collective households is expect to provide temporal jobs for different levels of technicians, engineers, medium and local technician. This activity has multiple objectives including demonstrating the technology to beneficiaries, users and more especially to the technicians who will participate in the execution of works.

<b>Q 2.8</b>	<b>Preparation:</b> Has a feasibility or pre-feasibility study been conducted ( <i>If yes, then please attach a copy to this PD</i> )?
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The pre-feasibility study has been conducted however a number of adjustments and updates have been considered in this project document in order to adapt it to FONERWA requirements and to the latest status of the problem.

<b>Q 2.9</b>	<b>Preparation:</b> Are there any outstanding regulatory or legal requirements that need to be met before the project can proceed ( <i>access to land, planning consent, use of new technologies</i> )?
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None

<b>Q 2.10</b>	<b>Preparation:</b> Has an Environmental Impact Assessment been conducted for the project ( <i>If yes, then please attach a copy to this PD</i> )?
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None

<b>Q 2.11</b>	<b>How</b> will the performance of the project be monitored and evaluated ( <i>both during and after the project</i> )?
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The project M&E plan was prepared comprising two main components: (i) The internal and continuous monitoring of project activities, results and use of project resources and (ii) the external assessment that will focus on evaluation of the project outcome and impacts.

For the Internal monitoring, an M&E project Officer will be recruited to ensure a regular collection, treatment and recording the project data and to prepare the progress report (including activities, financial and procurement progress). The logical frameworks and the M&E plan will guide on specific indicators to be monitored and reported on.

For the external evaluation, a national specialised firm will be hired to conduct the baseline survey for establishing the initial situation, and then it will undertake respectively the mid-term and final project performance evaluation. The external evaluation will wider and will cover both qualitative and quantitative data on the project impact on social economic conditions.

**Q 2.12**      **How** will you involve the beneficiaries and other stakeholders in monitoring and evaluation?

The M&E Project officer will work hand in hand with Districts both in data collection and communication to stakeholders.

In order to optimize the participation of beneficiaries and stakeholders in the M&E, the project will establish a Steering Committee with a broad representation (including Districts, Government Institutions, Private Partners and FONERWA) not only to provide strategic orientation but also to participate in the process of validating the project annual work plans and reports. The project will actively participate in the District Joint Action Forums; to enable maximizing synergy and interaction with other actors operating in the respective Districts.

**Q 2.13**      **Which** Output from the FONERWA's overarching M&E framework will be contributed to in the project's M&E Framework (if possible **choose an indicator** from *FONERWA's M&E framework*)?

The project's M&E framework will be contributing to the FONERWA Output 2. Research & Development and Technology Transfer and Implementation, more specifically on two complementary areas; (i) Water Storage, Conservation and irrigation technologies and (ii) Disaster Risk Reduction.

The chosen indicator from FONERWA is "Number of green jobs created" (project outcome indicator 3).

**Q 2.14**      **Lesson Learning:** Please explain how the learning from this project will be disseminated and shared during (and at the end) of the project, and to whom this information will target (*e.g. Project stakeholders and others outside the project*)

It is important to compile and communicate best practices on what works well and what does not work properly for a given geographical area and socio-economic conditions as well as the impact of such practices after implementation.

During the project implementation of different types of RWH systems, the user manual and guidelines will be produced, printed and disseminated. Public service announcements (PSAs), TV documentaries, radio/TV panel discussions and articles in newspapers and magazines will be used for raising awareness on the facilities provided by the project and to promote RWH and water conservation in general. These will be designed to coincide with significant commemoration days (World Water Day, March 22<sup>nd</sup>, World Environment Day, June 5<sup>th</sup>. The RNRA Website also will be use to communicate key achievements of the project.

The project final evaluation report will be summarized with emphasizes on best experience and lessons from this project in a booklet and a DVD that will be multiplied and disseminated to stakeholders.

**Q 2.15**      **Risk Management:** Please outline the main risks to the successful delivery of this project indicating whether they are high, medium or low. If the risks are outside your direct control, how will the project be designed to address them?

Since the project is demand-based, the main risk for the project success would be the possible disinterest of the potential beneficiaries and /or local authorities. This may results in the low absorption rate and therefore the poor project effectiveness.

This risk is ranked medium because in the project designing the level of income of beneficiaries were considered. As described above the interventions are designed according to category of beneficiaries where the "medium" and "poor" categories will benefit subsidy support. A strong awareness/ education actions are also planned to avoid that risk.

The low commitment and insufficiency of the private partners (banks and providers) also can be ranked "medium". This may delay in the global progress of project plan or cause the unsatisfactory quality of devices which would also result in disinterest. To avoid this risk the Partners were involved in designing of this financing approach and will be continually involved in the process of the project monitoring and evaluation. Regarding the quality, in addition to the role of the beneficiaries certifying for their satisfaction before any payment, the project structure foreseen the technical staff and involvement of local authorities in quality control and approval to ensure the sustainability of the devices to be put in place.

This above state risk should be considered high because of the level they can affect the project. However they will be ranked medium because the approach has been already introduced, all actors are experienced, possible bottlenecks are known and taken into account in designing, and so far minimum problems has been encountered.

The thorough risk analysis and mitigation measure are provided in the table below:

<b>Risk</b>	<b>Level</b>	<b>Mitigation measure</b>
Possible disinterest of the potential beneficiaries and /or local authorities	Medium	Interventions designed according to category of beneficiaries and a strong awareness/ education actions planned
The low commitment and insufficiency of the private partners (banks and Suppliers)	Medium	Partners were involved in designing the financing approach and will be continually involved in the process of the project monitoring and evaluation
Poor quality of service delivery and inadequate contribution of beneficiaries (poor installation of tanks)	Medium	the project foreseen the field technical staff who will be involved quality control and certifying service delivery before any payment
Beneficiaries are unable to pay back the loan	Medium	Selecting people with the capacity to pay (categories 1 and 2 of ubudehe are excluded); In the MoU and the loan contract between the beneficiary and the bank, it will be provided that supplier takes back the tank and refunds the money. For the loan&subsidy, the subsidy also will be refunded to RNRA
Poor maintenance of institutional and collective systems	Medium	Raise the ownership of the local authorities from the selection of sites; Contracts with beneficiaries for maintenance will be also used; The maintenance guidelines will be prepared
Technical defects (tanks leaking, cracks)	Low	Defect reliability period of 12 months will be applied for construction works; A supervising will be hired for the



		permanent follow up of the quality of construction works
Possible environmental risks	Low	EIA will be conducted to ensure that the risks are taken into account during the detailed designing study

**Q 2.16** **Risk Management:** What specific risks, if any, does your project pose to the environment, people or institutions affected by the project and how will these be managed and mitigated?

RWH is known worldwide as a practice which is environmental friendly. This was recognised by different Environment advocating Organisations (UNEP, REMA, GWP, etc.). However potential minimum negative impacts deserve a serious attention because they may constitute constraints for its promotion.

The harvested water has a risk to be polluted by a number of pollutants such as dust, tree leaves, bird droppings, etc., that accumulate on the rooftop requiring a regular program of maintenance of the roof surface and gutters. The quality of rainwater harvested from rooftop does not meet the WHO guidelines for drinking water quality, particularly for bacteriological quality. If consumed without any treatment, it can cause water borne diseases: diarrhea and typhoid fever. In addition to the appropriate design of RWH system that enable the first flush deviation, it is also recommended to treat (filtering, boiling or chlorination) the harvested water and to conserve it in a hygienic container for drinking purposes. To address this issue, the project planned a number of activities: training workshop will be organized on water quality maintenance, some home based water treatments kits will be distributed for awareness and demonstration purpose, water in tanks will be regularly monitored and communicate results of water sample testing accompanied with advice and recommendations on their utilization. The operational manuals to be developed, also will consider this aspect.

### SECTION 3: PROJECT BUDGET AND VALUE FOR MONEY

**Q 3.1** **What** is the total cost of the project (RWF; provide total cost for each year of the project disaggregated by capital and recurrent expenditure)?

Year	1	2	3	Total	%
Capital	1,318,203,350	3,108,905,600	953,327,400	5,380,436,350	96
Recurrent	68,894,096	70,148,096	70,148,096	209,190,288	4
Total	1,387,097,446	3,179,053,696	1,023,475,496	5,589,626,638	100

**Q 3.2** **What** is the total amount requested from FONERWA (RWF; provide financing needs for each year of the project)?

Year	1	2	3	Total
Budget	727,357,446	1,231,753,696	296,735,496	2,255,846,638

**Q 3.3** **List** all other sources of funding. Note whether the status of other funding sources (*i.e. Whether the money has been approved or is awaiting authorisation*)

Beneficiaries will contribute 3,333,780,000 Rwf or 60% of the total budget. This amount will cover 100% the cost for RWH facilities to be purchased through "loan only"; 70% of the cost of the facilities through "loan&subsidy" and 50% for the low cost systems.



<b>Q 3.4</b>	<b><u>Additionality:</u></b> Explain why the project cannot be fully financed by other sources than FONERWA?
<p>As mentioned earlier, this project is intended to support an existing loan scheme. Without the funds from FONERWA, this scheme will benefit only a limited category of beneficiaries; others will not afford the loans due to their level of income.</p>	
<b>Q 3.5</b>	<b><u>What</u></b> non-financial support is needed to implement the project? What is the best way for FONERWA to deliver this support?
<p>Technical support in the area of monitoring and evaluation and the preparation of the project completion report</p>	
<b>Q 3.6</b>	<p><b><u>Value for Money (Economy):</u></b></p> <ul style="list-style-type: none"> <li>i) Briefly describe how the required inputs have been identified and how the GoR procurement procedures will be used to ensure they are obtained cost effectively</li> <li>ii) Provide identified unit cost measures or selected project outputs? (Please see VfM guidelines on how to determine these. Further guidance from the FONERWA Secretariat is available)</li> </ul>
<p>Basically the project inputs are based on feasibility studies and eventually on previous experience of the pilot phase implementation.</p> <p>The costs related to transports, conference accommodation, media designing were compared to the existing or past contracts prices; costs for household RWH systems were taken from the ongoing MoUs between the Districts and the Private patterns on the loan scheme; while the costs for RWH systems for institutions were based on the feasibility studies and construction contracts executed previously. For the salary and allowance, rates of the government of Rwanda for projects and the best practices from other projects were referred to.</p> <p>The public procurement Law No 12/2007 of 27/03/2007 will guide on procedures and regulations for acquisition of services, goods and works during the implementation of this project. The Transparency, Competition, Economy, Efficiency, Fairness, Accountability those are the fundamental principles governing the GoR procurement policy. Although the Procurement Law allows to use different procurement methods (Open Competitive bidding, Restricted tendering, Request for quotations, Shopping, Single sources, Force account, Community participation, etc), the open competitive bidding will be prioritized for all cases where it is possible.</p> <p>As explained earlier the project is intended to achieve two main complementary purposes, on one hand to mitigate floods and on another hand to provide additional water for various uses. For the first aspects it will be difficult to find accurate measurable indicator due to limited studies and data in this area. However this subject will be developed at least using indirect measures and qualitative estimation.</p> <p>As for the second aspect of proving improved quality of water it will be much easier to demonstrate the cost benefit of the project with accurate data. Since the project has a very high profitability only this aspects will be considered in calculation.</p>	

According to IWRM principles, water is an “economic good” but also water is a “social good”. The concepts of “Economy” and “Social” are naturally divergent. The social aspects justify the efforts of Governments to provide people with quality water at the lowest cost. Macro-economically, it should be noted that the Government of Rwanda subsidizes the Energy, Water and Sanitation Authority (EWSA) water to 40% (MININFRA, 2010) and exempts all taxes on conventional water supply, while for rainwater harvesting, the cost of a water tank includes value added taxes and other taxes. Therefore developing more rainwater means less subsidies and more taxes to contribute to the Government Budget. In this section the two aspects (social-economic) will be confronted to come up with the real market value of water.

Statistics of the EICV3 show that only 5.8% of households in Rwanda use piped water into their dwelling or yards, while 25.7% use water from public standpipes. On another hand 74.2% households are recognized to have access to improved source of water including rainwater. This access is defined as being within 500m of a source of water in rural area and 200m in urban area. The target for EDPRSII is to cover 100% by 2018. EWSA recently have been encouraging people to install water tanks to serve as a backup system to cope with problems of inadequate reliability especially during the dry season.

From above it can be understood that we cannot consider the EWSA prices which are applied for only 5.8% as mentioned above (varying from 240 Frw to 740 Frw on 1m<sup>3</sup>), to value the cost of a rainwater storage facility. Rather the cost for collecting water from the 200 and 500m (even more) will be considered. In fact the minimum price for 1 jerry-can of 20 liters of water from a public standpipe is 10 Frw. Depending on the location this price varies from 10 Rwf to 200 Rwf both in rural and urban areas. For the purpose of this project cost benefit analysis we will consider the price of 50 Frw/Jerry-can which means 2500 Frw per 1 m<sup>3</sup>.

Considering a continuous consumption of water from a tank and the rainfall pattern of Rwanda (traditionally two raining seasons), studies show that a well designed and installed water tank can provide throughout a year, water in volume equivalent to 10 times the storage capacity. Therefore, since the project is expected to achieve in total 68,490 m<sup>3</sup> of installed facilities, it is expected to provide 684,900 m<sup>3</sup> every year.

Calculation of the unit cost:

- a. Total storage capacity of installed facilities: 65250 m<sup>3</sup>
- b. Total Project Cost (including output4) : 5,589,626,638 Rwf
- c. Unit cost: (b/a): 85,665 Rwf/m<sup>3</sup>

<b>Q 3.7</b>	<p><b><u>Value for Money (Efficiency):</u></b></p> <ul style="list-style-type: none"> <li>i) Briefly explain how the provision and operation of project inputs produce the expected outputs</li> <li>ii) What is the Net Present Value (NPV) and benefit cost ratio for this project (Please see VfM guidelines on how to determine these measures. Further guidance from the FONERWA Secretariat is available)?</li> </ul>
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Basing on a logical framework approach activities and inputs were planned to achieve the project outputs. This process was supported by the past experience and lessons of the pilot and testing phase. In order to make sure inputs are identified in an exhaustive and realistic manner, the detailed budget (units, unit costs and quantity) has been prepared and discussed at different levels.

The net present value calculation:

No	Year	<u>Initial investment:</u>		<u>Benefits:</u>		
		Volume of new installed facilities (m <sup>3</sup> /year)	Investment Cost (USD/year)	Volume of supplied water (m <sup>3</sup> )	Cost of 1m <sup>3</sup> supplied water	Benefit cost (USD/Year)
		Discount rate:	10.00%			
1	2014	12765	1,682,329	127,650	3.8	485,070
2	2015	43870	5,781,729	566,350	3.8	2,152,130
3	2016	8615	1,135,391	652,500	3.8	2,479,500
4	2017		-	652,500	3.8	2,479,500
5	2018		-	652,500	3.8	2,479,500
6	2019		-	652,500	3.8	2,479,500
7	2020		-	628,500	3.8	2,388,300
8	2021		-	628,500	3.8	2,388,300
9	2022		-	628,500	3.8	2,388,300
10	2023		-	628,500	3.8	2,388,300
11	2024		-	628,500	3.8	2,388,300
12	2025		-	628,500	3.8	2,388,300
13	2026		-	628,500	3.8	2,388,300
14	2027		-	628,500	3.8	2,388,300
15	2028		-	628,500	3.8	2,388,300
	PV		\$7,160,714			\$16,479,128
	NPV		9,318,414			
	BCR		2.3			

Note on the cost benefit analysis:

- The initial investment cost was calculated on annual basis using the total project cost including FONERWA total cost plus the beneficiary's contribution both in loan and cash. The total cost and volume to be installed include estimated number of beneficiaries of the "loan only" (meaning without any project support apart from the awareness, advocacy and facilitations);
- For the benefits, only the water supply aspect was considered. Other aspect should be considered such as the positive impact on soil erosion and flood, economic activities that will be generated (e.g. livestock), additional jobs that will be created, social benefits, ... but because the purpose of this cost-benefit analysis is not business oriented, it was enough to demonstrate a positive NPV;
- In the benefit calculation the amount of supplied water and its cost are detailed in the previous section Q3.6;
- Normally the minimum life span of 30, 20, 10 years would be expected for respectively the ferro-cement and masonry tanks, the plastic tanks and the low cost tank. However in order to convince on the evidence of the project viability and profitability, we shorted the life span to 15, 15, 5 years for the considered categories of facilities.

**Q 3.8**

**Value for Money (Effectiveness):**

How does your project demonstrate effectiveness:

- How will it show the outputs meet the project objectives?
- Which indicators will you measure to demonstrate effectiveness?

The link between the project goal and the outcome is clear and strong. Indeed reducing run-off in order to mitigate erosion and floods and improving livelihood through multiple use of stored rainwater are strongly addressing the climate change resilience.

The outcome indicators therefore, will be used as effectiveness measures. Also the tie between the outcome, outputs and activities is logical and mathematically demonstrable: (i) The volume of rainwater harvesting facilities installed (outcome indicator 1) is an addition of the volume of facilities installed through the loan and subsidy system (output1),

public and collective systems to be constructed (output 2) and the volume of low cost systems to be installed (output 3). (ii) The number of household with access to rainwater (outcome indicator 2) is also associated to the volume of installed facilities; and (iii) the number of new green jobs created (outcome indicator 3) refers to the quantified number of people who will get jobs for carrying out a specific activity under this project and in particular the number of local technicians who will be trained and involved in construction activities (output 3). Since the project is oriented to achieving physical and tangible results, the indicators (presented in the section Q2.3) are clear and easy to track.

**ATTACH ANNEXES HERE TO THE PD APPLICATION** – *these can be accepted as separate files but clearly organise and identify the annexes so they are easy to refer to.*

## Annex 1: Work Plan

Outcome	Output	Activity	Q11	Q12	Q13	Q14	Q21	Q22	Q23	Q24	Q31	Q32	Q33	Q34	Budget
		Surface runoff reduced and livelihood improved through multiple use of rainwater													2,255,846,638
		<b>1. Effective loan/subsidy system on rainwater harvesting facilities established and sustainably supported in the targeted Districts</b>													<b>1,032,990,850</b>
		1.1. Conducting an informative and consultative workshop													142,525,000
		1.2. Selecting private Partner by establishing (or updating) of agreements													366,000
		1.3. Raising awareness by implementing a communication and media plan													47,598,600
		1.4. Supervising and controlling installation quality of the systems													5,400,000
		1.5. Supporting for households purchase of water tanks by the													956,520,000
		1.6. Organising joint evaluations of the scheme with all stakeholders													536,000
		1.7. Training, demonstrating and disseminating water treatment													21,145,000
		<b>2. Public and collective rainwater harvesting systems demonstrated and ready for up scaling</b>													<b>579,468,500</b>
		2.1. Conducting a workshop to raise awareness and selection of													215,000
		2.2. Conducting detailed designing studies													53,731,500
		2.3. Constructing rainwater harvesting systems													525,522,000
		<b>3. Low cost and artisan rainwater harvesting technologies promoted and adopted by families in rural area of the target Districts</b>													<b>342,584,000</b>
		3.1. Organizing study tours													7,656,000
		3.2. Organizing on-field trainings on low cost rainwater harvesting													148,628,000
		3.3. Providing construction materials for constructing low cost													186,300,000
		<b>4. Project grant efficiently managed and coordinated</b>													<b>300,803,288</b>
		4.1 Managing and coordinating the project daily activities													192,390,288
		4.2. Procuring for equipments and consumables													16,800,000
		4.3. Undertaking transverse actions													91,613,000
		Project launching workshop													3,954,000
		Baseline studies													26,145,000
		Organizing the Steering committee meetings													1,146,000
		Project performance evaluation													52,080,000
		Meetings for communicating results													4,068,000
		Rainwater quality monitoring													4,220,000

## Annex 2: Volume of systems to be installed

Quarter		Number of units of installed systems by quarter												
		1	2	3	4	5	6	7	8	9	10	11	12	
Output 1	Loan only	Number of tanks (5m3)	30	30	30	40	40	40	40	40	40	30	30	30
		Number of tanks (3.5m3)	50	50	40	60	60	60	60	60	60	50	40	40
		Number of tanks (2.5 m3)	70	70	60	80	80	80	80	80	80	70	60	60
		Number of tanks (2 m3)	80	80	80	100	100	100	100	100	100	80	80	80
	Loan + Subs	Number of tanks (5m3)	0	0	80	200	250	300	350	220	200	80	80	0
		Number of tanks (3.5m3)	0	0	100	250	300	400	500	260	250	100	100	0
		Number of tanks (2.5 m3)	0	0	120	260	400	500	600	300	260	120	120	0
		Number of tanks (2 m3)	0	0	180	300	500	600	700	360	300	180	180	0
output 2	Number of volumes	0	0	0	1300	1300	0	0	0	0	0	0	0	
output 3	Number of tanks (6m3)	0	0	600	100	1500	500	1300	0	0	0	0	0	

Quarter		Volume (m3) of installed systems per quarter												
		1	2	3	4	5	6	7	8	9	10	11	12	
Output 1	Loan only	Total vol for 5m3 tanks	150	150	150	200	200	200	200	200	200	150	150	150
		Total vol for 3.5m3 tanks	175	175	140	210	210	210	210	210	210	175	140	140
		Total vol for 2.5 m3 tanks	175	175	150	200	200	200	200	200	200	175	150	150
		Total vol for 2 m3 tanks	160	160	160	200	200	200	200	200	200	160	160	160
	Loan + Subs	Total vol for 5m3 tanks	0	0	400	1000	1250	1500	1750	1100	1000	400	400	0
		Total vol for 3.5m3 tanks	0	0	350	875	1050	1400	1750	910	875	350	350	0
		Total vol for 2.5 m3 tanks	0	0	300	650	1000	1250	1500	750	650	300	300	0
		Total vol for 2 m3 tanks	0	0	360	600	1000	1200	1400	720	600	360	360	0
output 2	Number of volumes	0	0	0	1300	1300	0	0	0	0	0	0	0	
output 3	Total vol for 6m3 tanks	0	0	3600	600	9000	3000	7800	0	0	0	0	0	
	TOTAL	660	660	5610	5835	15410	9160	15010	4290	3935	2070	2010	600	

Volume of installed systems per year			
Year	1	2	3 Total
Total volume (m3)	12765	43870	8615 65250