### Project proposal

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| **C:\Users\Administrator\Desktop\New_MKCF LOGO.png** |
| **Project Classification (check all that applies)** |
| □ Culture and Tourism□ Human Resources Development□ Agriculture and Rural Development□ Infrastructure□ Information and Communication Technology (ICT)□ Environment□ Non-traditional Security Challenges |
| **Project Title** |
| - Promotion of Innovative Rainwater For Drinking (RFD) system as a sustainable water supply in rural Health Care Facilities (HCFs) and/or Schools |
| **Brief Description of the Project** |
| - The local health care facilities (HCFs) and/or schools at Mekong Countries are suffering from the shortage of safe and sustainable drinking water and becoming more vulnerable to climate change. By building and operating an RFD system at the most vulnerable parts in the rural area, it is possible to build a site-specific sustainable RFD system. Based on the result, the project will advise the Governments of the Mekong Countries a technical and regulatory guideline to integrate Water, Sanitation, and Hygiene (WASH) program with clime change resilience. |
| **Country / Region** |
| - Cambodia, Laos, Myanmar, Thailand and Vietnam (CLMTV) |
| **Estimated Budget** |
| 500,000 USD |
| **Proponent** |
| Name | Mooyoung Han |
| Address | (08826) 316-208, Seoul National University1 Gwanak-ro, Gwanak-gu, Seoul, Republic of Korea |
| **Date of Submission** | 25/08/2021 |

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| **C:\Users\Administrator\Desktop\New_MKCF LOGO.png** | Mekong-ROK Cooperation Fund (MKCF)Project Proposal |
| **Brief Project Information** |
| 1.1. Project Title | Promotion of Innovative Rainwater For Drinking (RFD) system as a sustainable water supply in rural Health Care Facilities (HCFs) and/or Schools |
| 1.2. Country (ies) / Region | Cambodia, Laos, Myanmar, Thailand and Vietnam (CLMTV) |
| 1.3. Date of Submission | 25/08/2021 |
| 1.4. Proponent Contact Details |
| Contact person, positionOrganizationEmail addressTelephone numberMailing address | - Mooyoung Han, Professor- Seoul National University- myhan@snu.ac.kr- +82 10 4354 0946- (08826) 316-208, Seoul National University 1 Gwanak-ro, Gwanak-gu, Seoul, Republic of Korea |
| 1.5. Project Area (check all that applies) |
| □ Culture and Tourism□ Human Resources Development□ Agriculture and Rural Development□ Infrastructure□ Information and Communication Technology (ICT)□ Environment □ Non-traditional Security Challenges |
| **Project Milestone** |
| Estimated implementation start dateEstimated implementation end dateProject lifespan | 01/11/202131/10/20232 years 0 months |
| **Description of Financial Elements** |
| *Estimated cost* | 500,000 USD |
| **Background / Justification** |
| Due to the rapid growth of population, climate change and environmental pollution, clean water resources have become scarce, seriously affecting people’s wellbeing, especially in the rural areas. Advanced technologies and solutions from developed countries like the Republic of Korea is essential for the countries of the Mekong Basin to improve the living condition of their people and tackle the environment problems. |
| **Problems (to be addressed)** |
| 1. Mekong Countries are suffering from potable water shortage due to Arsenic contamination in the groundwater, droughts during the dry seasons and saltwater intrusion caused by the rising sea water levels. This situation will get worsened due to the adverse effects of climate change. The traditional solutions such as implementing centralized water supply systems are inherently costly and time demanding, thus implementation of decentralized systems is more time appropriate.2. Although rainwater harvesting has been used traditionally, it had not been properly utilized due to technical challenges such as poor harvested rainwater quality and shortage of water during the dry season.3. A global program is now on going to improve the WASH (Water, Sanitation and Hygiene) services in Health Care Facilities (HCFs) since June 2019. A good rainwater for drinking (RFD) system can achieve the challenges of WASH. Needs to be replicated and scaled up throughout the countries.4. Recently, a successful RFD pilot project was implemented at a rural hospital in Vietnam, as a joint collaboration of SNU, WHO and VIHEMA. This project demonstrated that Community Based RFD systems can be a sustainable potable water supply that can provide a remedy to water crises in developing countries. Thus, scaling up and replicating such projects may lead to the development of healthy and resilient cities.5. HCFs and/or schools in the rural area will be selected as the first focus community, because they are dispersed throughout the country, and clean drinking water is always needed to improve the health of the members of those communities. By doing so, we can reduce the high health risk to vulnerable groups against diseases such as Covid 19.6. Under the prevailing Covid pandemic period, which is considered as an emergency, clean drinking water supply which meets National Drinking Water Standard is urgently needed. Due to the restriction of travel and meeting, the online and untact communication should be implemented. |
| **Project Objective** |
| *Is it relevant to (1) national (2) regional priorities and (3) consistency to the MKCF Priorities?***The short-term objectives are:**• to design, build and operate a sustainable model of Community Based RFD system at one rural HCF and/or school at the 5 Mekong countries each. The capacity is to provide 1 L/day of drinking water continuously to more than 500 people.• to organize a local management committee who will be responsible for the operation after handover with a sense of ownership.• to train the local people for the dissemination of this innovative drinking water supply system.**The long-term objectives are:**• to suggest a financial model to build such systems at all the hospitals and schools by mobilizing ESG or CSR funds as a private-public partnership.• to suggest a law or regulation to build Community Based RFD systems throughout the country.• to share the Korean knowledge and culture of rainwater management as a strategy for climate change, which the King Sejong the Great invented (the world first Rain Gauge since AD 1441). |
| **Project Description / Implementation Arrangement** |
| *Describe the main activities (Refer to (3) Indicative Work Plan)**Provide information on how the activities are linked to objectives that the project intends to achieve*In this project, one pilot RFD system will be constructed at a rural hospital and/or school at 5 Mekong Countries, each having the capacity of 20 m3 which can provide safe and sustainable drinking water (500 Liter every day). The training program offered to the local people and public officials will be organized to maintain this system. Design and Operation guidelines will be proposed for possible regulatory process at the later stage. The main activities are:• **Site selection and survey:** Local government will select one rural hospital and/or school with the selection criteria of location, water demand, technical capacity and willingness of the local government.• **Design of an RFD system:** Development of self-controllable model for rainwater harvesting system using local labor, skills, and materials for rainwater catchment, storage and drinking water techniques.• **Construction of a 20 m3 RFD system:** which can produce 500 L /day of water which meets the National Drinking Water Quality Standard.• **Handover to a local management committee:** who will be responsible for the operation of the system. Operation of 1 year with technical assistance and data monitoring.• **Training:** for the operators and managers and high-level public officers.• **Guideline development:** Make a draft of design guideline of RFD system for possible consideration for regulation. |
| **Value Added for the MKCF Involvement/Impact Potential** |
| *Please specify why the MKCF involvement is critical for the project and the potential of the project to contribute to the achievement of the Fund’s objectives*• By designing and operating RFD model suitable for the characteristics of the Mekong countries, we can solve drinking water problems in rural HCFs and/or schools where water is not supplied. • We can achieve autonomous maintenance of the RFD system by educating system users and public officers. To facilitate this task, a local RFD Management Committee will be created to take charge of the system operation. Moreover, policies and regulations of the RFD system shall be developed accordingly by local authorities or central government.• We can actively respond to extreme climate changes, thereby expanding and popularizing RFD system as the solution of WASH based on the technical and social innovations. All of these could be done with the collaboration of each Government of Mekong Countries as well as international organizations, and particularly with the share of knowledge, experience and culture of Republic of Korea. These are precisely the objectives and guidelines of the MKCF: connecting and cooperating Mekong and Korea.  |
| **Exit Strategy** |
| *Explain how the project sustainability will be ensured in the long run, after the project is implemented with support from the MKCF*Rainwater harvesting for drinking has been traditionally accepted in the Mekong Region. Some technical barriers were solved through 15 years of experience by the SNU team. Technical innovations are included for sustainability in this proposal, which are to use the concept of multiple barrier and to adopt the nature-based solution. Especially, the recent case study of a RFD pilot system at a rural hospital at Vietnam which was jointly developed by SNU, WHO and VIHEMA are published in scientific journals and proved itself to be a model for dissemination to other regions and countries. (<https://www.who.int/vietnam/news/detail/31-08-2019-who-snu-and-vihema-collaborate-to-improve-wash-in-ly-nhan-district-hospital-ha-nam-province>) Although some country specific technical and social challenges may be encountered, they can be easily overcome. |
| **Outcomes, Outputs, Activities and Inputs at Project level** |
| **Expected Result** | **Indicator** | **Means of Verification** | **Target** | **Remarks** |
| Mid-term | Final |
| **Project outcomes (The outcomes applied for 5 countries)** |
| 1. RFD system for HCFs and/or schools at 5 Mekong Country producing 500L/day clean drinking water which meets National Drinking Water Standard | - 05 RFD system at each Mekong country  | - No of RFD system. - Daily water consumption data. - Water Quality test data.  |  |  |
| **Project outputs (that contribute to outcomes)**  |
| 1. RFD system in Vietnam | -Field application: 1 case; capacity: 20 ton; Beneficiary: 500 people.-Water quality and quantity monitoring.- Education and training development program | - Design and operation data.- Number of people who will benefit and the survey of satisfaction of users, government officers.- The number of persons to be trained.- Technical Reports. |  |  |
| 2. RFD system in Cambodia | Same as above | Same as above |  |  |
| 3. RFD system in Laos | Same as above | Same as above |  |  |
| 4. RFD system in Myanmar | Same as above | Same as above |  |  |
| 5. RFD system in Thailand | Same as above | Same as above |  |  |
| **Activities** | **Description (This activities are for Vietnam case, the same for other 4 countries)** |
| 1.1. Selection of site and site survey | Local government will select one rural hospital and/or school with the selection criteria of location, water demand, technical capacity and willingness of the local government. |
| 1.2. Design, construction and installation of RFD systems; handover ceremony  | Development of self-controllable model for rainwater harvesting system using local labor, skills, and materials for rainwater catchment, storage and drinking water techniques. The capacity of each RFD pilot system is 20 m3 which can produce 500 L /day of water which meets the National Drinking Water Quality Standard.Organize handover ceremony to local management committee: who will be responsible for the operation of the system. |
| 1.3. Training on O&M; documentation | Develop one set of design, operation and maintenance guideline for each country based on local cultural and conditions. Regulation and law will be made in later stage.Report results and documenting stories. |
| 1.4. Testing and monitoring water quality | Performance of RFD system: daily record of water quality and quantity will be monitored by local employees and then shared to all the related parties, which will ensure to provide more than 500 L of drinking water that meets national drinking water standards. |
| 1.5. Trainings on WASH- FIT, and communication program in HCFs and/or schools  | Develop trainings on WASH-FIT in HCFs and/or schools for the operators and managers and high-level public officers to support the implementation of WASH-FIT guidelines;Develop communication program for promoting WASH and RFD system in HCFs and/or schools. |

### [Proposal package] Indicative Work Plan

|  |  |
| --- | --- |
|  | Month |
| Task | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| *Output 1.* | One rainwater for drinking system(RFDS) in Vietnam |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Activity 1.1.* | Selection of site and site survey - Budget: 5,000 USD |
| x | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Activity 1.2.* | Design, construction and installation of RFD systems; handover ceremony - Budget: 25,000 USD |
|  |  | X | X |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Activity 1.3.* | Training on O&M; documentation - Budget: 10,000 USD |
|  |  |  |  | X | X |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Activity 1.4.* | Testing and monitoring water quality- Budget: 5,000 USD |
|  |  |  |  | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| *Activity 1.5.* | Trainings on WASH- FIT, field trips and communication program in HCFs and/or schools - Budget: 15,000 USD |
|  |  |  |  | x | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Output 2.* | One rainwater for drinking system(RFDS) in Cambodia |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Activity 2.1.* | Selection of site and site survey - Budget: 5,000 USD |
|  |  | x | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Activity 2.2.* | Design, construction and installation of RFD systems; handover ceremony - Budget: 25,000 USD |
|  |  |  |  | x | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Activity 2.3.* | Training on O&M; documentation - Budget: 10,000 USD |
|  |  |  |  |  |  | x | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Activity 2.4.* | Testing and monitoring water quality- Budget: 5,000 USD |
|  |  |  |  |  |  | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| *Activity 2.5.* | Trainings on WASH- FIT, field trips and communication program in HCFs and/or schools - Budget: 15,000 USD |
|  |  |  |  |  |  | x | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Output 3.* | One rainwater for drinking system(RFDS) in laos |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Activity 3.1.* | Selection of site and site survey - Budget: 5,000 USD |
|  |  |  |  | x | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Activity 3.2.* | Design, construction and installation of RFD systems; handover ceremony - Budget: 25,000 USD |
|  |  |  |  |  |  | x | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Activity 3.3.* | Training on O&M; documentation - Budget: 10,000 USD |
|  |  |  |  |  |  |  |  | x | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Activity 3.4.* | Testing and monitoring water quality- Budget: 5,000 USD |
|  |  |  |  |  |  |  |  | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| *Activity 3.5.* | Trainings on WASH- FIT, field trips and communication program in HCFs and/or schools - Budget: 15,000 USD |
|  |  |  |  |  |  |  |  | x | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Output 4.* | One rainwater for drinking system(RFDS) in myanmar |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Activity 4.1.* | Selection of site and site survey - Budget: 5,000 USD |
|  |  |  |  |  |  |  |  |  |  |  |  | x | x |  |  |  |  |  |  |  |  |  |  |
| *Activity 4.2.* | Design, construction and installation of RFD systems; handover ceremony - Budget: 25,000 USD |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | x | x |  |  |  |  |  |  |  |  |
| *Activity 4.3.* | Training on O&M; documentation - Budget: 10,000 USD |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | x | x |  |  |  |  |  |  |
| *Activity 4.4.* | Testing and monitoring water quality- Budget: 5,000 USD |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | x | x | x | x | x | x | x | x |
| *Activity 4.5.* | Trainings on WASH- FIT, field trips and communication program in HCFs and/or schools - Budget: 15,000 USD |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | x | x |  |  |  |  |  |  |
| *Output 5.* | One rainwater for drinking system(RFDS) in thailand |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Activity 5.1.* | Selection of site and site survey - Budget: 5,000 USD |
|  |  |  |  |  |  |  |  |  |  |  |  | x | x |  |  |  |  |  |  |  |  |  |  |
| *Activity 5.2.* | Design, construction and installation of RFD systems; handover ceremony - Budget: 25,000 USD |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | x | x |  |  |  |  |  |  |  |  |
| *Activity 5.3.* | Training on O&M; documentation - Budget: 10,000 USD |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | x | x |  |  |  |  |  |  |
| *Activity 5.4.* | Testing and monitoring water quality- Budget: 5,000 USD |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | x | x | x | x | x | x | x | x |
| *Activity 5.5.* | Trainings on WASH- FIT, field trips and communication program in HCFs and/or schools - Budget: 15,000 USD |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | x | x |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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### [Proposal package] TOR

**TERMS OF REFERENCE OF KEY PROJECT CONTRACTED PERSONNEL**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Name** | **Organization** | **Position** | **e-mail / phone** | **Remarks** |
| **1** | Dr./Mr./Ms.Dr. Mooyoung Han | Seoul National University | Professor | myhan@snu.ac.kr+82 10 4354 0946 | TOR No. 1 |
| **2** | Ms.Hyunjoo Park | Seoul National University | researcher | narjjis@hanmail.net | TOR No. 2 |
| **3** |  |  |  |  |  |
| **4** |  |  |  |  |  |

\* Note: Please add more rows when needed.

**TERMS OF REFERENCE**

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| --- |
| TOR No. 1 |
| **Position** | Professor |
| **Job Level** | Senior Project Manager |
| **Duty Station** | Seoul, Korea |
| **Responsibilities** | Overall management of the project and technical advisor |
| **Requirements** | Ph.D degree and certificate of experience in the field of Rainwater Harvesting |
| **Date** | 25/08/21 |

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| TOR No. 2 |
| **Position** | Research Associate Professor |
| **Job Level** | Project Manager |
| **Duty Station** | Seoul , Korea |
| **Responsibilities** | Managing financial and part and documentation |
| **Requirements** | Ph.D degree and certificate of experience in the field of Rainwater Harvesting |
| **Date** | 25/08/21 |
|  |  |