## ANNEX 4: TEMPLATE-C for PROJECT CONCEPT NOTE

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| **Title of Project** | Proposal Number: 2023-03<br>Title: Methodology Study for Development of LCS Hybrid Air Quality Monitoring Network (HAQMN) |
| **Duration of Project** | Jan 2023 – Dec 2024 |
| **Project Lead (PL)** | Network Center for EANET, Asia Center for Air Pollution Research |
| **Partner organizations (POs)** | (For onsite support)<br>• Center for Environmental Research, Vietnam Institute of Meteorology, Hydrology and Climate Change, Ministry of Natural Resources and Environment (MoNRE-VN IMHEN) |
| **Implementation Agencies (IAs)** | • Network Center for EANET, Asia Center for Air Pollution Research |
| **Beneficiaries of PCs** | Direct Beneficiaries:<br>• Experts in air quality monitoring departments/institutes of PCs who are interested in enhancing their capacity and coverage of air quality monitoring<br>• Service providers for air quality monitoring in PC Technical officers in charge of emission inventory<br>Indirect Beneficiaries:<br>• Experts and practitioners in air quality monitoring in PCs and non-PCs<br>• Experts and practitioners in CAA, IGES, and participating countries of Integrated Programme for Better Air Quality in Asia (IBAQ) |
| **Relevant Type of Activities** | • Research on a concept and technical study of the HAQMN system<br>• Research and Evaluation of LCSs system<br>• Training and Capacity development on usages of air quality monitoring systems and QA/QC Experts and practitioners in air quality monitoring in PCs and non-PCs |
| **Relevant Scope of EANET** | • Research Activities of the Monitoring Technologies for Atmospheric Environmental Substances including PM2.5/PM, SOx, O3, NOx<br>• Education and Training on QA/QC and LCSs |
| **Representative of the Project Lead /Contact Address** | Dr. Keiichi Sato<br>Head of Atmospheric Research Department, NC/ACAP<br>1182 Sowa, Nishi-ku, Niigata-shi 950-2144, JAPAN<br>ksato@acap.asia |
| **Keywords of the project**<br>**Summary of the project** | **Keywords:**<br>Low-cost sensor, Hybrid Air Quality Monitoring Network, Capacity building,<br>**Summary:**<br>The main activities of the project are to research the accuracy of air quality monitoring using several types of low-cost sensors compared to a reference level monitors on a trial basis under various air quality and climate conditions in EANET participating countries, and to develop practical technical documents that would support the introduction and operation of the hybrid air quality monitoring network (HAQMN) in EANET participating |

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| **Background and Rationale** | • Air quality administration usually uses conventional reference monitors (RefS). However, certain countries cannot fully use them in their air quality monitoring network due to the limitation of resources.<br>• Less expensive, and smaller monitoring devices, so-called Low-cost sensors (LCSs), have been developed and become popular in use for non-regulatory measures.<br>➢ The reliable LCSs would be useful in environmental administration sectors,<br>➢ Obtaining a more detailed spatial distribution of the air pollutants.<br>➢ Disseminating reliable LCSs and utilization to prevent social confusion by low-quality data of LCSs.<br>• Utilizing LCSs instead of RefS due to the limited resources<br>• 'Hybrid Air Quality Monitoring Network,' (HAQMN) which uses both LCS and RefS in a monitoring network, has great potential to enhance the air quality monitoring network within a country or over the region, in a cost-effective manner, specifically in areas where air quality monitoring capacity is limited due to their resource constraints.<br>• LCSs have been tested in a mostly moderate climate. It is important to examine the applicability of HAQMN in Southeast Asia, and to accumulate technical knowledge for the acquisition of reliable monitoring data.<br>• This project conducts a technical study of a small-scale implementation of HAQMN in the selected counties in EANET PCs, and accumulates such technical knowledge and know-how for sharing them among EANET PCs and potential partners. |
| **Objectives** | • **Developing knowledge products of HAQMN and LCS**<br>➢ To demonstrate the effectiveness of the HAQMN concept in areas where resource to develop an air quality monitoring network is limited.<br>➢ Operating a small-sized HAQMN to collect technical and to evaluate the reliabilities of LCSs.<br>➢ Developing technical knowledge products such as technical manuals for LCS will be developed for the policymakers, experts, and practitioners in the air quality monitoring field.<br>• **Building capacity**<br>➢ Two capacity building programs will be implemented for the policymakers, experts, and practitioners in the air quality monitoring field. |
| **Activities to achieve Objectives** | **(1) Developing knowledge products**<br>• Installing LCSs in selected countries and examining a small-scale HAQMN, to demonstrate the suitable system of the operation and |

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| | QA/QC.<br>• Assessing performance of LCS in reference to RefS.<br>• Developing technical manuals, training materials, and other knowledge products for HAQMN and LCS operations.<br>**(2) Onsite Training and HAQMN seminar for capacity building**<br>• Holding onsite training and HAQMN seminar for capacity building to expand the concept of HAQMN, inviting the policymakers and practitioners in EANET PCs and related organizations.<br>**(3) Disseminating the project results**<br>• Compiling and disseminating the results with EANET PCs and interested stakeholders and partners through online seminars and workshops |
| **Links and relevance to existing policy process of the target areas and regional activities** | • Some countries are interested in using LCSs in air quality monitoring in the needs assessment of FY2021.<br>• Studying on LCSs is a part of the activities of WP&B2022.<br>• The utilization of LCS is also in line with the global trend. Some advanced countries and organizations such as WMO and US EPA are promoting LCSs. |
| **Expected Outputs** | • The reliable air quality obtained by LCSs in selected countries.<br>• Practical knowledge products on HAQMN and LCS.<br>• Training programs and materials of HAQMN and LCS.<br>• Introduction of effective HAQMN toward the relevant organizations in the project countries and their personnel, as well as the participants in the seminars and workshops.<br>• Raised awareness of the EANET technical study as well as EANET's potential technical roles in promoting/improving HAQMN and LCS, among EANET PC, regional and international stakeholders.<br>• Opportunities for collaboration with the project partners on other or relevant EANET activities. |
| **Expected Outcome** | • The policymakers and practitioners gain a better understanding of sources of air pollution and design countermeasures through the wider introduction of HAQMN or LCS. It helps to improve the air quality in the project areas, or wider areas in each project country.<br>• Improved availability and quality of data on air pollution would enable policymakers to design countermeasures including large-scale investments for abatement of the sources of pollution, which may also attract co-financing from bilateral and/or multilateral financing institutions and private sector investments.<br>• EANET countries could enjoy opportunities to improve their air quality monitoring network by the introduction of HAQMN or LCS.<br>• Accelerating surveys and applications of LCS and HAQMN on a regional or global scale toward further improvement of air quality monitoring.<br>• Technical expertise and core competencies of EANET would be well understood by the stakeholders, and the functions and resources for |

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| | EANET operations would be further developed by enhanced opportunities with the potential partners. |