

The Twenty-fourth Session of the Scientific Advisory Committee
on the Acid Deposition Monitoring Network in East Asia
29-31 October 2024, Seoul, Republic of Korea

REPORT OF THE SESSION (ADOPTED)

I. Introduction

1. The Scientific Advisory Committee (SAC) on the Acid Deposition Monitoring Network in East Asia (EANET) held its Twenty-fourth Session (SAC24) from 29 to 31 October 2024, in Seoul, Republic of Korea. The Session was organized by the Secretariat and the Network Center (NC) for the EANET and hosted by the Ministry of Environment and the National Institute of Environmental Research (NIER), Republic of Korea.
2. The Session was attended by the members of the SAC and/or their alternates and other nominated persons from the Participating Countries of the EANET, namely: Cambodia, China, Indonesia, Japan, Lao PDR, Malaysia, Mongolia, Myanmar, Philippines, Republic of Korea, Russia, Thailand, Viet Nam, the Secretariat, and the Network Center. The List of Participants is attached in Annex 1.

II. Opening of the Session [Agenda Item 1]

3. Dr. Myung-Soo Yoo, Director General of the Climate and Air Quality Research Division, National Institute of Environmental Research (NIER), Republic of Korea, welcomed participants to the first in-person SAC Meeting post COVID-19, where all 13 Participating Countries could gather. He recognized that the East Asia region enjoys economic prosperity due to rapid industrialization and urbanization. However, this development has led to a significant air quality degradation across the region. This air pollution issue has now become a transboundary issue, and cooperation between neighboring countries is more critical than ever. EANET has successfully carried out international joint monitoring of acid deposition in Asia, establishing itself as a model of international cooperation in improving air quality in the region. He shared that NIER conducting continuous research on acid deposition in 42 monitoring sites across country to assess sulfur and nitrogen deposition levels across Korean Peninsula and analyze their impact on ecosystems. He noted that EANET has expanded its scope to cover beyond acid deposition to include various air pollutants such as particulate matter (PM) and ozone (O₃). Republic of Korea and NASA, along with EANET Participating Countries such as Thailand, the Philippines and Malaysia are jointly conducting AISA-AQ Research Project, aiming to study the air pollutants. He wished the meeting provided a great opportunity to set specific scientific goals for EANET activities and the preparation of EANET MTP (2026-2030). He thanked everyone involved in organizing the event and wished for a successful meeting.

4. Dr. Toshimasa Ohara, Director General of Asia Center for Air Pollution Research (ACAP), delivered the Introductory Remarks. In his speech, Dr. Ohara mentioned that EANET has been advancing its activities not only in the field of acid deposition but also air pollution, which continues to pose environmental and social risks in East Asia. In UNEA 6, pollution has been highlighted as one of the three global crises, alongside climate change, and nature and biodiversity loss. Due to the transboundary nature of air pollutants like PM_{2.5} and tropospheric O₃, it is essential for all countries to have a comprehensive understanding of the status of these pollutants. Nitrogen management was also highlighted during the UNEA in 2019 and 2020, with the rising atmospheric nitrogen deposition. He emphasized that EANET needs to strengthen its effort in East Asia, particularly in forecasting, continuous monitoring, and capacity building. He also highlighted the importance of new monitoring methods, satellite data utilization, and connecting scientific findings to policy, underscoring the role of SAC in supporting IG on scientific matters. He wished that the discussion during the session would identify the recommendation for the next MTP, to be considered by IG26 in November in Kuala Lumpur, Malaysia.
5. Mr. Bert Fabian, Coordinator, Secretariat for the EANET, delivered the Opening Remarks, highlighting EANET's two-decade history of monitoring acid deposition including sulfur dioxide and other environmental data. He highlighted that the expanded scope of EANET has provided a solid foundation for future advancement. With the current MTP concluding next year, he emphasized the importance of developing the 2026-2030 MTP through collaboration between scientists and the national focal points to maximize its impact. He outlined the SAC agenda, which includes extensive data research and active project participation, and encouraged contributions to the WBP to support both core and project activities. He expressed his gratitude for the continued engagement and participation, both in person and online.

III. Election of the Officers [Agenda Item 2]

6. The Secretariat and the NC introduced the previous system of 3-year fixed term bureau members of the SAC. The 3-year fixed term of the SAC bureau members was implemented since the Fifteenth Session of the SAC (SAC15). The Session elected the SAC bureau members composed of one Chairperson, two Vice-chairpersons, and a Rapporteur. The elected Bureau members in 2024 were: Dr. Joonyoung Ahn, Senior Researcher, Air Quality Research Division, Climate and Air Quality Research Department, National Institute of Environmental Research (NIER), Republic of Korea, as the Chairperson; Dr. Sergey A. Gromov, Deputy Director, Institute of Global Climate and Ecology (IGCE), Roshydromet, Russia, and Ms. Ma. Fatima Anneglo R. Molina, Chief Science Research Specialist, Environmental Research and Laboratory Services Division (ERLSD), Environmental Management Bureau (EMB), Department of Environment and Natural Resources, Philippines as the Vice-Chairpersons; and Mr. Chandath Him, Deputy Director, Department of Air Quality

and Noise Management, General Directorate of Environment Protection, Ministry of Environment, Cambodia, as the Rapporteur of the Session.

IV. Adoption of the Agenda [Agenda Item 3]

7. The Session considered and adopted the Draft Provisional Agenda (EANET/SAC24/3/1), Draft Annotated Provisional Agenda (EANET/SAC24/3/2), as well as the Draft Program (EANET/SAC24/3/3) of the Session.

V. Review on the Progress of the EANET since the Twenty-third Session of the Scientific Advisory Committee (SAC23) [Agenda Item 4]

8. The Secretariat and the Network Center presented the Draft Report on the Progress of the EANET Core Activities since the Twenty-third Session of the Scientific Advisory Committee (SAC23) (EANET/SAC24/4/1), the Draft Financial Report of Core Activities of the Secretariat and the Network Center (EANET/SAC24/4/2), the Draft Annual Report of the EANET Projects and EANET Project Fund (EANET/SAC24/4/3), and the Draft EANET Project Completion Reports in 2023 (EANET/SAC24/4/4).
9. The key points of the presentations of the Secretariat included:
 - It was emphasized that the implementation of the activities was guided by the Medium-Term Plan for the EANET (2021-2025) and in accordance with the Work Programme and Budget of the EANET in 2023 and 2024.
 - The Secretariat highlighted activities which were implemented since SAC23, including the organization of EANET meetings (IG25 in 2023, The Informal Meeting on the Initial Preparation of the Draft MTP (2026-2030) in 2024 and The Working Group Meeting in 2024), the EANET Regional Awareness Workshop in 2024, and National Stakeholders' workshops in China and Cambodia, various communication activities (including updating EANET website, email campaigns and newsletters, videos and web stories) as well as consultations with various organizations in developing the Partnership and Resource Mobilization Strategy.
 - The grand-total expenditure of the Secretariat approved by the IG24 in 2023 was US\$ 637,885. The total voluntary financial contribution received by the Secretariat in 2023 was US\$ 421,626. In addition, the total expenditures, and commitments of the Secretariat in 2023 were US\$ 519,161.
10. The key points of the presentation of the Network Center included:
 - The Network Center highlighted key core activities conducted in 2023 since last SAC23 from November to December, which mainly included activity 4, implementation of quality assurance and quality control (QA/QC) activities on acid deposition, and activity 5, routine compilation, verification, evaluation,

storage, and provision of data and maintenance of database, as these two core activities need to be conducted whole year along.

- The Network Center also explained the progress of core activities in 2024 from January to September, which included the whole scope of its activity defined by the Work Program and Budget in 2024 approved by IG25.
 - In addition, with the similar manner of core activities, the Network Center reported to the session about the progress of EANET project activities in 2023 from November to December, as well as the progress in 2024 from January to September.
 - The total voluntary financial contribution received by the NC in 2023 was US\$ 461,670. In addition, the total expenditures and commitments of the NC for core budget activities in 2023 were US\$ 462,307.
 - The Network Center presented the Project Activities completed in 2023 and 2024 and highlighted the completion of research activities, capacity building, training, on various topics including LCS, VOCs, emission inventories, among others.
 - The total implemented Project Budget Expenditure in 2023 for the Network Center was US\$ 215,589.
 - The total monetary contribution of EANET Project Fund in 2023 was US\$ 218,644. The total expenditure of EANET Project Fund in 2023 was US\$ 215,589.
11. The Session was invited to review, from the scientific and technical viewpoints, the Draft Report on the Progress of the EANET Core Activities since the SAC23, the Draft Financial Report of Core Activities of the Secretariat and the Network Center, the Draft Annual Report of the EANET Projects and EANET Project Fund, and the Draft EANET Project Completion Reports in 2023.
12. Major discussions included:
- (i) A country sought clarification regarding the current financial situation of the Secretariat and the Network Center whether it is in a good position or not.
 - (ii) The Secretariat clarified that in the perspective of the budget of the EANET versus the contributions received by the Participating Countries, the financial situation of the EANET was not positive.
 - (iii) A country suggested that while online/hybrid meetings were useful, the duration should be limited to one day, as participants may find it challenging to maintain focus in an online setting. It was also suggested that on-site meetings would be more effective for better communication.
 - (iv) Although the financial situation of the EANET is not positive, a country suggested to request the IG to support the continuation of face-to-face SAC. It was pointed out that the financial contribution from the PCs is important since the environment in the region has been changing greatly.

13. The Session acknowledged the Draft Report on the Progress of the EANET Core Activities since the SAC23, the Draft Financial Report of Core Activities of the Secretariat and the Network Center, the Draft Annual Report of the EANET Projects and EANET Project Fund, and the Draft EANET Project Completion Reports in 2023 and provided comments, suggestions, and recommendations from the scientific and technical viewpoints for consideration and approval at the IG26 of EANET.

VI. Highlights of the Working Group Meeting in 2024 (WG2024) relevant for SAC24 [Agenda Item 5]

14. The Secretariat presented the Highlights of the Working Group Meeting of the EANET in 2024, held virtually from 20 to 21 August 2024, with a focus on discussion points relevant to SAC24 (EANET/SAC24/5).
15. The key points of the presentation included:
 - The Secretariat highlighted the points of the discussions of the WG2024 meeting relevant to the SAC24 Session.
16. The Session was invited to review and discuss the Highlights of the Working Group Meeting in 2024 (WG2024) relevant for SAC24 for consideration at the Session.
17. Major discussions included:
 - (i) No comments were made
18. The Session acknowledged the Working Group Meeting 2024 Highlights (WG2024) relevant for SAC24.

VII. Consideration of the Activities of the Task Forces and Expert Groups under the SAC [Agenda Item 6]

19. The Chairpersons of the Task Forces reported the progress of activities in the respective Task Forces (EANET/SAC24/6/1, EANET/SAC24/6/2, and EANET/SAC24/6/3). The progress reports included discussions on the 1st online meetings of the respective Task Forces, which have been held in September/October 2024. Key scientific topics were identified for the future development of the EANET as inputs for the development of the next Medium-Term Plan (MTP) (2026-2030).
20. The key points of the presentation included:
 - Task Force on Monitoring and Assessment of Atmospheric Environment held its 1st online meeting on October 16, 2024. The meeting confirmed that the “*Strategy Paper*

on *Future Direction of Monitoring for Dry Deposition of EANET*” as adopted at SAC20 should be updated in terms of activities/milestones for the period from 2026 to 2030. The meeting shared the current situation of atmospheric deposition and project. The meeting identified key scientific topics for the future development of the EANET, which includes:

- ✓ Analysis of long-term trends in sulfur and nitrogen deposition and comparison of different sites
 - ✓ Sharing the scientific outcomes of three EANET projects: Development of Hybrid Air Quality Monitoring Network (HAQMN), VOCs related Capacity Building, PM_{2.5} source apportionment in major cities in EANET
- Task Force on Monitoring and Assessment of Environmental Effects (TFEE) held its 1st online meeting on September 30, 2024. The meeting confirmed that the “*Strategy Paper for Future Direction of EANET on Monitoring of Effects on Agricultural Crops, Forest and Inland Water by Acidifying Species and Related Chemical Substances*” as adopted at SAC20 should be updated in terms of activities/milestones for the period from 2026 to 2030 and a new guidance document on the human health issue should be prepared. The meeting identified key scientific topics for the future development of the EANET, which included:
- ✓ Atmospheric nitrogen deposition and its cycle in forest ecosystems
 - ✓ Promotion of capacity building and cooperation mechanisms for research studies
 - ✓ Effects of air pollution on human health
- Task Force on Atmospheric Environment Quality Management held its 1st online meeting on October 11, 2024. The meeting recommended to develop a new strategy paper to enhance the atmospheric environment quality management in East Asia so that complex atmospheric phenomena can be considered comprehensively including air pollution and climate change.
21. The Session was invited to make comments, suggestions, and recommendations from scientific and technical viewpoints.
22. Major discussions included:

On the Task Force on Monitoring and Assessment of Atmospheric Environment (TFAE):

- (i) A country suggested to define the scope of nitrogen management in relation to the UNEA resolution that would be addressed under EANET activities, clarifying what specific nitrogen-related knowledge will be generated, given that nitrogen is a broad topic. It was also recommended to refer to the European Monitoring and Evaluation Program (EMEP) under the Convention on Long-

range Transboundary Air Pollution (CLRTAP) special report, which provides a quantitative assessment of nitrogen fluxes from the atmosphere. It was introduced that the EMEP has discussed increasing effects of anthropogenic nitrogen on biogeochemical cycle but has not detected clear reduction of ammonia emissions, because ammonia is emitted not only from industrial sources but also from agricultural activities. Therefore, it is important to clarify that reactive nitrogen, including ammonia and nitrogen oxides, would be as a target.

- (ii) A country suggested that EANET has the potential to contribute to the nitrogen global issue, because the network has monitored the data on nitrogen deposition.
- (iii) A country suggested that monitoring and measuring air pollutants are the main component of EANET, thus capacity building is essential to ensure accurate monitoring.
- (iv) The Network Center, as the TF Secretariat, clarified that the 1st meeting did not extensively discuss topics for the MTP. The next meeting will focus on the MTP topics to provide additional suggestions to SAC.
- (v) A country suggested that the air quality prediction be discussed in another TF, specifically in TFAEM.
- (vi) The Network Center clarified that TFAE would discuss mainly issues on monitoring the atmospheric environment.
- (vii) Indonesia expressed its interest in contributing to EANET monitoring activities, although it has not yet nominated members for the TFs due to their government's reorganization. However, there are many monitoring sites for air pollution in the country that could contribute to EANET monitoring activities.
- (viii) A country pointed out that the EANET had a lot of projects on PM_{2.5}, VOC, and O₃ that may contain nitrogen compounds. Indonesia also mentioned the need to update their current acid deposition monitoring stations which are all manual. It was proposed to get in touch with the NC regarding any technical support with the monitoring stations.
- (ix) Several countries suggested that EANET focus its work on LCS and VOCs due to the importance of these topics. VOCs are critical substances for controlling atmospheric ozone and are linked to fossil fuel combustion. Regarding LCS, it was suggested to include result interpretation, as there are significant QA/QC controversies, highlighting the need for a reference method.
- (x) The Network Center clarified that the LCS will be discussed under Agenda Item 12.

On the Task Force on Monitoring and Assessment of Environmental Effect (TFEE)

- (xi) The Network Center explained that regional and national monitoring of O₃ in forested areas remains limited in East Asia, in contrast to Europe where

organizations such as EMEP and the International Cooperative Program on Assessment and Monitoring of Air Pollution Effects on Forests (ICP Forests) conduct extensive regional monitoring and modeling. For example, Japan had only three monitoring sites for O₃, which operated only during the summer, and these stations are currently inactive. Additionally, nitrogen deposition, a significant scientific concern, remains inadequately monitored in East Asia.

- (xii) Further, since O₃ is a secondary pollutant, the emission reduction of precursors may not be directly reflected in O₃ concentrations, which may need to be better explained when discussing with policymakers. It was suggested that an appropriate scheme for evaluation be developed for evaluation of O₃ concentrations and that satellite monitoring be helpful.
- (xiii) The Network Center pointed out that biogenic VOC should be considered as an important precursor of O₃.
- (xiv) Several countries suggested that given the limited monitoring budgets of the PCs, EANET could initially undertake targeted, intensive monitoring in specific urban monitoring stations, including health impact assessments. Especially since urban forests can help mitigate urban pollution, studying the relationship between air pollution in urban and forests settings could provide valuable insights into their role in improving air quality.
- (xv) Monitoring in forest areas across countries could be supported by modeling activities to identify high-risk regions for O₃ and PM pollution. Based on these models, monitoring efforts could then be focused on the most affected areas. The role of the modeling community in identifying high-risk areas for O₃ and PM pollution is essential.
- (xvi) A country suggested that nitrogen deposition data might have large uncertainties therefore the regional map of nitrogen deposition be developed with the support of satellite data and model fusion.
- (xvii) A country pointed out the need to expand discussions on human health impacts. It was suggested to promote VOC monitoring in urban areas and enhance capacity building in this substance, given the effects of O₃ and PM on human health.
- (xviii) Regarding the impact of air pollutants such as ozone on plants, it was suggested that plant morphological aspects such as size of the stomata could be considered.

On the Task Force on Atmospheric Environment Quality Management (TFAEM)

- No comments were made

- 23. The Session discussed the Activities of the Task Forces and Expert Groups under the SAC and provided comments, suggestions, and recommendations from the scientific and technical viewpoints.

VIII. Consideration of the Draft Annotated Outline for the Medium-Term Plan (MTP) for the EANET (2026-2030), the Drafting Process, and the Draft Partnership and Resource Mobilization Strategy [Agenda Item 7]

24. The Secretariat presented agenda item 7 “Consideration of the Draft Annotated Outline for the Medium-Term Plan (MTP) for the EANET (2026-2030), the Drafting Process, and the Partnership and Resource Mobilization Strategy” (EANET/SAC24/7).
25. The Participating Countries presented their suggestions on the development of the Medium-Term Plan for the EANET (2026-2030).
26. The key points of the Secretariat presentation included:
 - The Secretariat presented the Draft Annotated Outline for the Medium-Term Plan (MTP) for the EANET (2026-2030), the Drafting Process, and the Partnership and Resource Mobilization Strategy.
27. The key points of the Participating Countries’ presentations included:
 - **Cambodia:** The proposed target substances are SO₂, NO₂, NO_x, CO, O₃, PM_{2.5} and its components, PM₁₀, VOCs and odor. The data and analysis tools include LCS, satellites, air quality models, receptor models and statistical tools are important. Capacity building and joint research projects are important activities included in the MTP.
 - **China:** China's suggestions for the MTP is that it should be within the scope of EANET. Key points include focusing on consensus-driven priority areas, aligning EANET activities with each country’s regulations, and enhancing capacity-building, particularly through updating precipitation sampling instruments. China recommends leveraging EANET’s extensive datasets, along with external big data, to develop advanced acid rain predictive models. Technical suggestions include fostering policy development, strengthening research coordination, modernizing equipment, sharing air quality standards, and using machine learning techniques (like Random Forest, XGBoost, and LSTM) for accurate acid rain prediction.
 - **Indonesia:** Indonesia’s recommendations for the MTP focus on enhancing data quality, capacity building, and public awareness to address air quality and acid deposition issues focusing on key pollutants such as SO₂, NO₂, O₃, CO, NMHC, PM_{2.5}, PM₁₀, and black carbon. Key priorities include strengthening monitoring accuracy through QA/QC standards and utilizing diverse data sources, such as satellite monitoring and low-cost sensors, manual active, and passive samplers. Challenges include limited data for emission inventories and difficulties in identifying pollution sources. Indonesia emphasizes capacity building in inventory modeling, data management, and policy development, alongside fostering public education on air

quality. Additionally, they stress the need for health and ecosystem impact assessments and action plans that integrate emission reduction and climate co-benefits.

- **Japan:** The MTP proposed to include recommendations focused on air quality management, with emphasis on sustainable monitoring and nitrogen management. Key recommendations highlight the need to develop a science-based assessment framework with data analysis and modeling for pollutants such as VOCs and PM components. A sustainable monitoring strategy integrating ground-based, satellite and LCS data is proposed, along with increased capacity building. Monitoring of reactive nitrogen is critical due to its impact on atmospheric deposition and forest ecosystems. In addition, the plan emphasizes the assessment of climate change impacts on air quality and prioritizes secondary pollutants (O₃, PM_{2.5}) VOCs, SLCPs (including CH₄ and black carbon), and reactive nitrogen. This strategy emphasizes a strong scientific basis to support policy-making and environmental assessment.
- **Lao PDR:** The MTP proposed to emphasize the expansion of the air quality monitoring network, particularly in air pollution hotspots areas, to strengthen emission tracking at the provincial level. Key challenges include ensuring the calibration and availability of essential equipment, as well as enhancing technical competence in air pollution modeling and impact assessment. Future priorities focus on capacity building to enable local data analysis to identify pollution trends and health impacts. In addition, the plan highlights the need for public awareness initiatives in collaboration with the Ministry of Health to communicate air quality issues through social media and other channels.
- **Malaysia:** Malaysia's recommendations for the MTP focus on the complexities of long-range pollutant transport due to regional development, population growth, and limited application of green technologies. Emphasizing the role of satellite-based monitoring, Malaysia suggests combining it with ground-based methods for comprehensive modeling of the transport of air pollutants. Key targeted substances include black carbon, due to its health and climate impact, which requires both monitoring and regional assessments through modeling. The inclusion of Polyfluoroalkyl (PFAS) substance monitoring is also advised, given its serious health effects, with suggested sampling from precipitation and the atmosphere for better data on its environmental presence and considering that the EANET monitoring sites are well placed to consider these substances.
- **Mongolia:** Mongolia addressed key scientific and technical challenges in air quality improvement and provided suggestions for the MTP. It emphasized the need to enhance monitoring technologies, increase the number of monitoring stations, and improve instrument maintenance and quality assurance practices. Modeling efforts should focus on identifying pollution sources and conducting emission inventories. Additionally, it highlighted the importance of expanding the monitoring of VOCs and BC, noting their significant impacts on health and climate. It proposed the establishment of air quality supersites and intensive measurement locations, along

with advanced air quality modeling techniques, to better assess and manage air pollution.

- **Myanmar:** Myanmar's suggestions for the MTP emphasize a phased expansion of air quality monitoring through both low-cost and stationary sensors, subject to budget availability. Myanmar proposed monitoring pollutants (NO₂, CO, PM_{2.5}, O₃) using satellite imagery with Google Earth Engine and machine learning for potential air quality forecasting. Myanmar plans to contribute data to develop national air quality standards and to conduct research on the links between air pollution and climate change. Key challenges include outdated and difficult-to-maintain monitoring equipment, high costs for calibration and chemical reagents, limited capacity to identify emission sources, and insufficient resources and infrastructure. Capacity building, public awareness, and sustainable monitoring support are highlighted as key priorities for the next MTP.
- **The Philippines:** The Philippines' recommendations for the MTP emphasize updating national air quality standards to include additional hazardous air pollutants (e.g., H₂S, PAHs, BC, and heavy metals) and expanding the air quality monitoring network, particularly in urban and rural areas. Key challenges include limited AQM equipment, high operational costs, technical skills gaps, and vulnerability to transboundary pollution. Future priorities focus on improving the integration of air quality monitoring into climate resilience planning, increasing data accessibility, and expanding pollution management to address VOCs and ground-level O₃. They propose using low-cost sensors, AI for pollution detection, and satellite data for comprehensive assessments, including monitoring black carbon, greenhouse gases, and microplastics.
- **Republic of Korea:** The Republic of Korea's recommendations for MTP focus on strengthening and expanding air quality monitoring capabilities. Key priorities include the establishment of a three-dimensional observation network and the expansion of PM_{2.5} composition including BC. To support emission estimation, Korea proposes to use of satellite data. Republic of Korea introduced the Pandora Asia network. It is useful to validate satellite. Research on transboundary pollutant movement and hotspot tracking are also identified as critical areas for future focus.
- **Russia:** Russia highlighted critical air quality issues, focusing on BC emissions from incomplete combustion and wildfires, which pose significant health and climate risks. It proposed the inclusion of targeted monitoring of BC and other pollutants in the MTP and emphasized advanced data collection methods using aethalometers to assess air quality. In addition, the need for cooperation among EANET countries to address transboundary pollution and the impact of pollutant transfer on the environmental quality of regions like the area of Lake Baikal was stressed.
- **Thailand:** Thailand focused on key scientific and technical challenges in improving air quality and suggested the development of the MTP. It emphasized the need for comprehensive data analysis, including air quality status, potential health impacts, and economic assessments. Key targeted substances for monitoring include SO₂, NO₂, NH₃, BC, PM_{2.5}, and VOCs. The presentation stressed that mere reporting of

monitoring data is not sufficient; instead, thorough analysis to understand source contributions and prioritize appropriate mitigation measures is essential for effective air quality management.

- **Viet Nam:** The presentation from Viet Nam outlined key scientific and technical challenges in improving atmospheric quality and proposed recommendations for the MTP. It highlighted issues related to monitoring technologies, the number of monitoring stations, and the need for comprehensive air quality assessments, including pollutants like PM_{2.5}, VOCs, and BC. Future priorities included capacity building, expanding monitoring networks, assessing the impacts of air pollution on ecosystems and health, and enhancing international cooperation for data sharing. The presentation also emphasized the adoption of modern technologies and analysis tools, such as AI and isotopic techniques, to improve monitoring and assessment processes, advocating for a strategic shift from solely acid deposition monitoring to broader air pollution control initiatives.
 - **Network Center:** The presentation from NC focused on: 1) The sustainable monitoring including LCS and new technology, satellite monitoring, PM components and source appointment, enhancement of ozone and VOC monitoring, 2) nitrogen cycle and management, 3) climate change in terms of co-benefit and impacts on air pollution, are suggested among many important issues.
28. The Session was invited to review, discuss, make comments and suggestions, and make recommendations to the IG26 on the EANET, as appropriate.
29. Major discussions included:

On the presentations on the MTP Outline:

- (i) A country suggested revisiting the existing monitoring sites and to evaluate if the stations are still appropriate to monitor both acid deposition and air quality. The country suggested to include this assessment in the next MTP.
- (ii) Several countries mentioned the importance of continuing to monitor acid deposition.

On the presentations by the Participating Countries:

- (iii) A country suggested that developing emission inventories for PM_{2.5} and BC as climate forces is challenging. While the IPCC is releasing new emission inventory guidelines, many EANET PCs are not yet ready to develop their own inventories. Once the IPCC approves these guidelines, the PCs will be expected to develop their respective inventories. Therefore, it would be beneficial for EANET to begin preparations, and it is recommended that EANET develop its own guidelines for emission factors.
- (iv) Russia shared that BC monitoring has become increasingly important due to the observed link between forest fires (including in the Lake Baikal region) and rising BC concentrations. The experience from Republic of Korea is very

impressive as they are combining satellite and ground monitoring. It would be very useful for EANET to refer to ROK's leadership on this.

- (v) A country suggested that local emission factors be estimated within EANET, not for a single country but, in example, several PCs in Southeast Asia, as these local emission factors are currently lacking.
 - (vi) A country highlighted that EANET is already monitoring ammonia through the filter pack measurements, which is a rare asset globally. This unique advantage should be fully utilized by EANET.
 - (vii) A country mentioned that EANET resources are limited and that cooperation with other organizations is very important. This cooperation effort could be included in the next MTP.
 - (viii) A country suggested that an additional SAC meeting should be held early next year to formulate a common understanding for the preparation of MTPs, as the annual SAC meeting would not be sufficient to provide effective input to the IG.
30. The Session discussed the Draft Annotated Outline for the Medium-Term Plan (MTP) for the EANET (2026-2030), the Drafting Process, and the Partnership and Resource Mobilization Strategy and provided comments from scientific and technical viewpoints for the next draft for consideration at the IG26.

IX. Consideration of the Process for the Development the Fifth Periodic Report on the State of Acid Deposition in East Asia (PRSad5) [Agenda Item 8]

31. The Network Center presented the Process for the Development the Fifth Periodic Report on the State of Acid Deposition in East Asia (PRSad5) (EANET/SAC24/8/REV1).
32. The key points of the presentation included:
- General outlines and procedures to prepare the Fifth Periodic Report including roles of the Drafting Committee (DC) of the Fifth Periodic Report were introduced that are basically the same as for those of the previous versions.
 - Because of the scope of EANET has been extended, it was proposed that the title focusing on acid deposition could be reconsidered.
 - After the contents of the Regional Assessment of PRSad4 and challenges faced at development of PRSad4 were introduced, draft contents of the Fifth Periodic Report were proposed.
 - The Draft plan for the establishment of the DC of the Fifth Periodic Report including a draft schedule of the DC and Lead Authors Meetings and draft implementation plan of the Fifth Periodic Report were introduced.
 - The SAC24 was requested to discuss the establishment of the DC of the Fifth Periodic Report and endorse it. It was explained that after the endorsement of the IG26 of the

Report of the Session of the SAC 24, including the establishment of the DC, the NC will communicate with the NFPs to nominate one expert from the SAC members as a member of the DC. The NC will arrange the first meeting of the DC in April 2025.

33. The Session was invited to discuss the process for the development the Fifth Periodic Report on the State of Acid Deposition in East Asia (PRSAD5) and provide necessary comments and guidance as appropriate.

34. Major discussion included:

On the discussion on the title of PRSAD5:

- (i) Most countries expressed support for revising the title of PRSAD5 to better reflect the expanded scope of the EANET.
- (ii) Several countries recommended the title option 1, “The State of Acid Deposition and Air Pollution in East Asia”.
- (iii) Several countries favored title option 3, “The State of Air Pollution and Deposition in East Asia” as the abbreviation will remain the same with the previous periodic reports, while a country suggested option 5, “The State of Atmospheric Environment in East Asia.”
- (iv) A country proposed developing a new title: “The State of Atmospheric Deposition and Air Pollution in East Asia.”

On Chapter 3:

- (v) A country suggested deleting "acidic substances" from Chapter 3’s title: “Wet and Dry Deposition of Acidic Substances in East Asia” as monitoring data indicate a reduction in these substances.
- (vi) Several countries agreed to revise the title to "Wet and Dry Deposition in East Asia."
- (vii) A country suggested that modifying this title would depend on the title of the Periodic Report. If the periodic report title is revised, the suggested title could be: “Wet and Dry Deposition of Atmospheric Environment-Related Substances in East Asia.”

On Chapter 6:

- (viii) The Network Center proposed to include in Chapter 6 new sections on the impacts on human health in the whole of East Asia; influences of climate change to acid deposition, air quality, and ecosystem; and on the nitrogen cycle and management.
- (ix) A country suggested using "nitrogen assessment" instead of "nitrogen cycle and management" to provide a broader description that combines both management and project aspects.

- (x) The Network Center clarified that detailed contents would be discussed in the DC meeting. It was pointed out that EANET's potential of contributing to the future nitrogen management could be better described to clarify the content of this section.
- (xi) A country suggested to revise the title of Chapter 6: "Relevant Studies on Atmospheric Environment Assessment in the EANET Region" to "Studies and Activities Related to Atmospheric Environmental Management in East Asia".
- (xii) A country suggested to maintain the current title of Chapter 6.
- (xiii) A country commented that both proposed titles are acceptable.
- (xiv) A country suggested not to include the impacts on human health; they also suggested that the influence of climate change be limited to the effects on atmospheric environment such as co-benefits, while excluding the influence of climate change on ecosystems. They finally suggested that the terms "potential impact" be used instead of "impact" on human health due to the limited information in the region.
- (xv) A country suggested that the impact of climate change is very broad and therefore could focus on the atmosphere.
- (xvi) A country suggested that a policy brief could be developed along with PRSAD5 to ensure the report reaches policy makers.
- (xvii) The Network Center clarified that the PRSAD5 will include an executive summary that will capture all the important information in a concise manner.
- (xviii) Based on the experience on Chapter 6 of the PRSAD4, the Network Center pointed out that the drafting policies would be very important and decided in the DC meeting.
- (xix) A country emphasized that the PRSAD will be prepared by SAC and DC members, as scientific experts. The selection of its scientific contents and editing will remain independent from the IG.
- (xx) The PRSAD will consist of three parts, Regional Assessment (Part I), National Assessment (Part II), and Executive Summary (Part III). It was pointed out that the format of Part II was not well standardized in PRSAD4, as it was different for several countries.
- (xxi) The Network Center clarified that the template of the National Assessment was provided to the countries but there was flexibility on using the format. It was also clarified that Part II would be the responsibility of the National Centers of the respective countries.

On the discussion on the peer-reviewed scientific paper as a reference:

- (xxii) Several countries supported using peer-reviewed publications as references, given the scientific nature of the report.

- (xxiii) Several countries pointed out that the number of peer-reviewed publications in some countries is still limited, therefore high-quality domestic reports should be included as references.
 - (xxiv) Several countries recommended including official government reports and local academic reports to complement peer-reviewed sources.
 - (xxv) A country reminded that limiting sources to peer-reviewed publications would exclude EANET data.
35. The Session endorsed the process for the development of the Fifth Periodic Report on the State of Acid Deposition in East Asia (PR SAD5).

X. Adoption of the EANET Data Report 2023 [Agenda Item 9]

36. The Network Center presented the Draft EANET Data Report 2023 (EANET/SAC24/9).
37. The key points of the presentations included:

Wet deposition:

- Data from 60 sites were expected to be submitted for the Data Report 2023, while data from some sites are yet to be submitted. As for pH, part of China, Japan, Philippines, and Malaysia had low pH sites. As for acidic substances, many of the sites demonstrated decreasing trends, while some sites demonstrated rapidly increasing trends. Spatial distribution of total nitrogen deposition ($\text{NO}_3^- + \text{NH}_4^+$) was shown as well as pH and each major ion.

Dry deposition:

- The NC expects to receive results from 54 sites using auto monitors, filter-pack (FP), and/or passive samplers, and so far has received the results from 48 sites, and no results with passive samplers.
- Additionally, in the Philippines, Metro Manila site was renamed to Manila Observatory and three sites, North Caloocan, Sta. Rosa, and Lower Session Road, were newly registered as EANET sites. For the North Caloocan and Sta. Rosa sites, the Philippines submitted 2022 monitoring data, so their monthly averages were included in Appendix 3 of the Data Report 2023.
- Phnom Penh site has started NO, NO_x, and NO₂ monitoring since 2019. Their monthly average values from 2019 to 2022 were provided in Appendix 3 of Data Report 2023.

Soil and Vegetation:

- Soil and vegetation monitoring data were submitted from China, Japan, Malaysia and the Philippines in 2023. No significant changes have been observed in soil and vegetation conditions.

Inland aquatic environment:

- The inland aquatic environment monitoring data in 2023 were submitted from 15 sites from 8 countries. A decreasing trend in sulfate ion concentrations has been observed at some sites.

Catchment-scale:

- Monitoring was conducted in two catchments: Japan and the Philippines. A decreasing trend in nitrate-ion concentrations has been observed at the Japanese site, suggesting that is in the process of recovering from nitrogen saturation. An increasing trend in pH value has been observed at the Philippine site.

38. The Session reviewed the monitoring data of the Participating Countries in 2023 for consideration and adoption at the Session.

39. Major discussions included:

Wet and dry deposition:

- (i) A country suggested that in order to better compare the changes in 5 years, use the percentage of difference to make a clear comparison, instead of using the higher or lower values.
- (ii) A country suggested that the median be used to show changes in pH instead of average.
- (iii) Republic of Korea informed that Imsil would be moved from the current location to a point at 15 km east due to changes in local conditions.
- (iv) A country suggested that changes in air concentrations should be shown in the regional map like those in wet deposition. Statistical assessments, such as Mann-Kendall test, were suggested to evaluate the trends of the data more than 20 years.
- (v) The Network Center informed that Mann-Kendall test was used to assess the trends in PRSAD4 and significant decreasing trends of SO₂ were detected in many sites. The similar assessments will be conducted in PRSAD5.
- (vi) A country suggested that temporal variations should be shown in each country and decimal places and units would be standardized.
- (vii) A country suggested that the title of graphs on annual trends of air concentrations be changed to “temporal variation” since the graph does not really capture the trend.
- (viii) A country suggested to map the trend assessment in the entire region to allow to visualize which sites have increasing and decreasing trends.

- (ix) A country suggested to delete the passive sampler results if no data is received at it shows zero. They also mentioned the visualization of the graphs with dots are not easy to ready and could be improved.
- (x) It was suggested to replace the title in table 4.21 that is currently titled “annual trend” by a more appropriate title to reflect the content such as “Annual variation”.

Soil and vegetation, inland aquatic environment, and catchment-scale:

- (xi) No comments were made.
- (xii) A country suggested that EANET Data Report be cited as a digital object identifier (DOI) to promote visibility of the data and allow to measure the number of citations and downloads. They asked the Network Center to seek more information regarding the DOI registration process.

40. The Session, in principle, **adopted the Data Report 2023** with modifications.

XI. Adoption of the Report on the Inter-laboratory Comparison Projects 2023
[Agenda Item 10]

41. The Network Center presented the Draft Report on the Inter-laboratory Comparison (ILC) Projects 2023 (EANET/SAC24/10/REV1), which included the results of the wet deposition, dry deposition (filter pack method), soil and vegetation, and inland aquatic environment ILC Projects carried out in 2023.

42. The key points of the presentations included:

Wet deposition:

- 30 participating laboratories submitted their analytical results of the artificial rainwater samples to the NC. 94.5% and 90.4% of submitted data met the Data Quality Objective (DQO) of EANET for high and low concentration samples, respectively. The percentage of data by each participating laboratory within the DQO from 1998 to 2023 was shown. After disclosing the setting values of artificial samples, the NC will request a re-analysis of flagged parameters to confirm the validity of the analytical procedure in the laboratory.

Dry deposition:

- The NC distributed 20 sets of ILC dry samples and received results from 18 laboratories. Compared with the ILC2022 results, many of the results were within $\pm 15\%$ of the prepared values. The results may look better because the number of participating laboratories has decreased, but the results of the large quantity samples were good, so it seems that the analysis has been improved.

Soil:

- Eight laboratories from four countries participated in the 25th ILC project on soil. Both random and systematic errors contributed to measurement variability. The ratio of outliers decreased significantly compared to last year. Since there are no setting values for soil, increasing the number of participating laboratories is essential for effectively conducting the ILC comparison project.

Inland aquatic environment:

- 17 laboratories participated in the 24th ILC project on inland aquatic environment, and 17 laboratories submitted their analytical data. The NC pointed out that the flagged data percentage of alkalinity and K^+ were lower than the last attempt.

43. The Session was invited to review, make comments, and provide guidance for consideration and adoption at the Session.
44. Major discussions included:
 - (i) A country requested further information on the differences in data generated by the ion chromatography and spectrophotometry methodologies in the analysis of NH_4^+ .
 - (ii) The Network Center explained that detailed information of the methodology can be found in the report including which methodology is applied for each monitoring site.
45. The Session **adopted the Report on the Inter-laboratory Comparison Projects 2023.**

XII. Overview of the Updated National Monitoring Plans of the Participating Countries [Agenda Item 11]

46. The Network Center presented an overview of the National Monitoring Plans of the Participating Countries (EANET/SAC24/11) based on the latest information submitted by the Participating Countries.
47. The key points of the presentation included:
 - The National Monitoring Plan (NMP) is a fundamental document for EANET monitoring activities and every year. the Participating Countries are requested to review and submit the NMP after necessary revisions.
 - The NMP 2024 were reported at the STM25 and re-submitted after the second revision process for finalization.
 - The finalized NMPs in 2024 of each Participating Country were reported focusing on the number of monitoring sites for each category, the site classification, methodology, current problems of monitoring, and changes from the NMP 2023.

In addition, status of monitoring of PM_{2.5} and O₃ in each Participating Country was focused.

48. The Session was invited to discuss the National Monitoring Plans of the Participating Countries and provide necessary comments and guidance as appropriate.
49. Major discussions included:
 - (i) Viet Nam requested a revision of the dry deposition map on slide 29, as several sites in the country, including Hanoi, Ho Chi Minh City, Yen Bai, Hoa Binh, and Can Tho, on the use of filter packs instead of passive samplers.
 - (ii) Republic of Korea informed that they are implementing different monitoring methods for gaseous pollutants from the EANET method. It was informed that the test monitoring using the EANET method has been conducted recently and the EANET method would be applied in 2026 at the 3 EANET sites.
 - (iii) A country pointed out that the consistency of the legend would need to be revised as the colors used in the map do not match the legend.
 - (iv) Thailand informed experiencing difficulties to maintain dry deposition (air concentration) monitoring sites due to limited financial resources. This has led to the reduction of the number of monitoring stations for gaseous pollutants. Thailand asked the NC to assist in research about the service area of a station. If a station changes location in the same province, Thailand could maintain the site and continue sharing the data.
 - (v) Myanmar requested the NC to remove the station Mandalay that is mentioned on the presentation, as Myanmar has only one station.
 - (vi) Japan informed that monitoring of SO₂ and NO_x by automatic monitor was discontinued in Japan.
 - (vii) The Chairperson asked the Session about the reasons sites were discontinued in some PCs and enquired about a possible strategy for PCs to maintain EANET monitoring stations to support the continuity of the availability of the EANET data.
 - (viii) A country explained that the use of the filter pack method requires manual collection which also requires manpower. It was recommended to encourage the use of automatic equipment to maintain the sustainability of the monitoring stations.
 - (ix) Another country explained that the remote and rural sites are also difficult to maintain because of the frequency of the measurements needed for the monitoring.
 - (x) The NC emphasized that rural/remote sites remain very important as part of the regional network, especially for long-term monitoring.
 - (xi) Thailand suggested to the NC to send a formal letter to the National Focal Point of the PC to inform about the expansion of the scope of the EANET, since the EANET is now not only monitoring acid deposition but air pollution. Through these letters, governments could consider to share, for example PM_{2.5} and O₃ data, with EANET to fulfill the objective of air quality monitoring.

- (xii) The Network Center supported this idea and agreed that more sites are needed to better represent the air quality situation in the EANET PCs.
- (xiii) A country requested the NC to share the criteria needed for a PC to select a new monitoring station, for acid deposition and air pollution, to be part of the EANET stations

50. The Session acknowledged the updates on the overview of the National Monitoring Plans of the Participating Countries.

XIII. Updates on the Research Activities of the EANET [Agenda Item 12]

51. The Network Center and the Secretariat presented updates in the Research Activities of the EANET, including the Progress of the Studies on the Effects of Acid Deposition on Ecosystems (EANET/SAC24/12/1), Studies on Source Apportionment of PM_{2.5} and Technical Demonstration of Low-Cost Sensors in EANET Countries (EANET/SAC24/12/2), Stocktaking and Methodological Assessment of Emissions Inventory (EI) and Source Apportionments (SA) Studies in Southeast Asia (EANET/SAC24/12/3/1 and EANET/SAC24/12/3/2). The Network Center also presented the Draft Guidelines on Establishing HAQMN and the Manual for Low-Cost Air Sensors Systems Operations (EANET/SAC24/12/4/1 and EANET/SAC24/12/4/2).

52. The key points of the presentations included:

Progress of the Studies on the Effects of Acid Deposition on Ecosystems

- The progress of Project 2023-01/2024-01 was reported with its major scientific outputs.
- At the Kajikawa catchment site, the dynamics of sulfur derived from atmospheric deposition during heavy rainfall events was revealed, which is useful for considering the recovery process from acidification.
- The importance of nitrogen deposition and its cycle was emphasized.

Source Apportionment of PM_{2.5} and Technical Demonstration of Low-Cost Sensors in EANET Countries

- Regional and seasonal characteristics of PM_{2.5} sources and organic component compositions at Niigata in Japan, Ho Chi Minh City in Vietnam, Bangkok in Thailand are reported.
- There are much differences organic component compositions in PM_{2.5} composition across cities, which implies to identify main pollution sources, such as secondary organic aerosol, biomass and plastic combustion sources.
- Hybrid Air Quality Monitoring Network (HAQMN) concept was demonstrated at Yangon in Myanmar and Hoa Binh in Vietnam. Diurnal and seasonal PM_{2.5} variations were observed in Yangon, with local emission sources identified as

influencing PM2.5 levels. An online workshop scheduled in November 2024 aims to discuss LCS implementation strategies for air quality improvement.

Stocktaking and Methodological Assessment of Emissions Inventory (EI) and Source Apportionment (SA) Studies in Southeast Asia

- The primary objective of the study was to enhance the understanding of air pollution in Southeast Asia and to create the EI and SA database of relevant studies.
- The review covered publications from 2000 to June 2024, and a total of 127 EI studies were reviewed, including six global/regional databases, 28 national GHG EI studies, 41 national air pollutant EI studies, and 53 sub-national studies whereas a total of 61 SA studies were reviewed across Southeast Asia.
- The review of EI studies observed that there are inconsistencies in the methods used to compile air pollutant inventories across Southeast Asia.
- The review of SA studies highlighted significant discrepancies in the number of studies conducted among countries.

Draft Guidelines on Establishing HAQMN and the Manual for Low-Cost Air Sensors Systems Operations

- The presentation emphasized the importance of LCS in East Asia, where conventional air monitoring is often insufficient. Key points included monitoring standards, data validation, maintenance protocols, and QA/QC practices to ensure reliability.

53. The Session was invited to make comments, suggestions, and recommendations from scientific and technical viewpoints.

54. Major discussions included:

On the Stocktaking and Methodological Assessment of Emissions Inventory (EI) and Source Apportionments (SA) Studies in Southeast Asia

- (i) A country suggested, when estimating emissions, using national collective activity data paired with emission factors to simplify the process at a national scale. However, this approach leads to high uncertainties. For more reliable estimates, a bottom-up approach is recommended, especially for smaller scales such city. Consistency across pollutants, whether using a national or bottom-up approach, is crucial. A standardized tool based on member country activity data can be very effective.
- (ii) The Secretariat clarified that the project is not developing the tools, just a stocktaking report. As an example, UNFCCC reported greenhouse gases. If the emission inventory is at the city level, guidelines would be good for EANET to have in the future.

On the Draft Guidelines on Establishing HAQMN and the Manual for Low-Cost Air Sensors Systems Operations

- (i) The use of receptor models, such as Positive Matrix Factorization (PMF), was discussed to identify pollution sources, including plastic and biomass burning, particularly in countries like Thailand. The challenges include data interpretation and the need for country-specific insights.
 - (ii) It was suggested that screening of abnormal data of LCS and further wind analysis with HYSPLIT for PMF be considered.
 - (iii) It was suggested to observe similar pollution profiles across sites and high nighttime PM_{2.5} levels at the site in Yangon, especially in the dry season, to better identify pollutant sources.
 - (iv) The challenges in high-pollution conditions and better sensor calibration were highlighted. The importance of LCS performance testing and certification was also stressed.
 - (v) It was informed that Viet Nam has not yet accepted LCS data in its official national reports though LCS data is recognized as useful for public alerts and awareness.
 - (vi) The manual highlighted specific challenges, such as power and data transfer limitations, which are addressed differently in the EANET manual than in USEPA and WMO guidelines.
 - (vii) It was suggested that performance evaluation procedures, such as bias, be included in the guidelines.
 - (viii) It was emphasized that comprehensive testing of HAQMN should be completed before distribution the manual to other countries.
 - (ix) The short lifetime and high maintenance cost of LCS in highly polluted areas, stressing frequent calibration needs were pointed out. These points would be integrated into the manual, particularly regarding large data deviations.
 - (x) The funding challenges and the importance of external support to ensure HAQMN implementation were emphasized.
 - (xi) Several countries emphasized the need for guidelines that align with local regulations and additional funding to expand these monitoring networks across East Asia.
 - (xii) The Session suggested for the draft guidelines to remain under review before future adoption, allowing time for Participating Countries to provide feedback before finalization.
55. The Session reviewed the Progress of the Studies on the Effects of Acid Deposition on Ecosystems, the Studies on Source Apportionment of PM_{2.5} and Technical Demonstration of Low-Cost Sensors in EANET Countries, and the Stocktaking and Methodological Assessment of Emissions Inventory and Source Apportionments Studies in Southeast Asia and provided comments, suggestions, and recommendations from the scientific and technical viewpoints for the next drafts of the reports.

56. The Session suggested to revise the Guidelines on Establishing HAQMN and the Manual for Low- Cost Air Sensors Systems Operations and to continue the discussion and consider the adoption of the Guidelines and Manual in the next SAC Meeting.

XIV. Consideration of the Draft Work Programme and Budget of the EANET in 2025 and Proposed Project Plans from scientific and technical viewpoints [Agenda Item 13]

(1) Core Activities of the EANET in 2025

57. The Secretariat and the Network Center presented the Draft Work Programme and Budget of the EANET for the Core Activities of the EANET in 2025 (EANET/SAC24/13/1).

58. The key points of the presentation included:

- It was highlighted that the Core Activities of the EANET in 2024 reflect the expanded scope of the EANET and the related Project Fund activities.
- The estimated voluntary financial contributions in 2025 for the Secretariat are US\$ 607,200, and US\$ 548,799 for the Network Center.
- The estimated Available Cash Balance from the EANET Fund in UNEP is - (negative) US\$ 367,520.
- In 2025, the Core Budget of the Secretariat is US\$ 550,875 and the Network Center's Core Budget is US\$ 705,162.
- The total estimated revenue of the Network Center in 2025 is US\$ 655,327.
- The NC will continue to provide technical support to the PCs in line with the WPB.

59. The Session was invited to make comments, suggestions, and recommendations from scientific and technical viewpoints for consideration and approval at the IG26 of EANET.

60. Major discussions included:

- (i) No comments were made.

(2) Proposed Project Plans in 2025

61. The Secretariat and the NC presented the Draft Work Programme and Budget of the EANET for the Proposed Project Plans of the EANET in 2025 (EANET/SAC24/13/2/REV1).

62. The key points of the presentation included:

- Eleven Project Plans were submitted for consideration and discussion to the EANET National Focal Points at the Working Group Meeting (WG2024) on 20-21 August 2024, and one additional Project Plan submitted after the meeting. Of the twelve Project Plans, 3 are ongoing from last year, and nine are new projects. These twelve Project Plans are to be reviewed by the SAC24 from the scientific perspective.
 - The Proposed Projects include: (2025-01) Feasibility study on social implementation of new monitoring technology in EANET; (2025-02) Relationship between precipitation and particulate matter components in EANET to elaborate monitoring and data analysis methodology; (2025-03) The webinar workshop for capacity building on emission inventory for agricultural sources; (2025-04) Strengthening Monitoring and Discussion on Nitrogen Cycle and Management within the EANET; (2025-05) The collaboration of Technical and Training (TNT) and capacity building program for personnel of the Participating Countries on monitoring; (2025-06) Development of methodology and guidelines for national emission inventory and capacity building program for Southeast Asia; (2025-07) Seminar on utilizing Satellite Monitoring including access to Dust and Sand Storm; (2025-08) Regional and national capacity building program on air quality monitoring and ecological impact assessment in EANET (online and in-person); (2025-09) Sharing information on early warning for local and regional air pollution for the Mekong sub-region; (2025-10) Studies on the effects of atmospheric deposition on ecosystems, from a catchment scale to a regional scale as a methodological study; (2025-11) Promoting VOCs related Capacity Building in the EANET; and (2025-12) Fellowship for building leadership in Atmospheric Environment and Air Quality Management in East Asia.
63. The Session was invited to make comments, suggestions, and recommendations from scientific and technical viewpoints for consideration and approval at the IG26 of EANET
64. Major discussions included:
- (i) A country supported EPP#3, EPP#4, and EPP#7. Additionally, they supported EPP#9 for its potential application of LCS and consideration as the three continuous projects.
 - (ii) A country suggested that EPP#7 should focus on knowledge sharing about monitoring technology rather than satellite data, as many Participating Countries still rely on ground monitoring. Provinces and cities primarily use ground monitoring, and satellite data may be premature and affected by meteorological conditions, making ground data more reliable.
 - (iii) A country suggested that, given the financial limitations, project activities should be prioritized if they benefit all Participating Countries, with lower priority given to projects serving only one PC. For capacity-building projects, it was

- recommended involving more than 1-2 participants in each country. Additionally, it is important that trainees train others when returning to their country.
- (iv) The Network Center clarified that training participants are selected through a screening process. Additionally, participants are encouraged to train others in their home countries, with a follow-up survey conducted to assess how they have disseminated the knowledge gained from attending EANET training sessions.
 - (v) A country reminded that the limitation of budget and human resources at the Network Center makes cost-effectiveness essential, as well as assessing project quality. However, prioritizing projects is challenging, particularly in determining how EANET projects contribute to the MTP. Clear guidance on which projects align with specific MTP goals would help address this situation.
 - (vi) A country suggested to map how Projects contribute to the MTP along a set of assessment criteria as part of the guide to select Project Activities.
 - (vii) The Secretariat clarified that there is the EANET Project Fund and Project Guidelines that describes the criteria for the Project Activities to be eligible for funding. Among these criteria, a project must benefit at least 50% of PCs.
 - (viii) The NC explained that all Projects Plans presented today meet the criteria.
 - (ix) The Network Center clarified that 9 Projects are new projects, and the 3 Projects are continued projects approved in previous IGs.
 - (x) The Network Center also clarified that the projects' outcome from last year are captured in the Project Completion Report (PCR), however, due to time constraint, it cannot be presented.
 - (xi) Malaysia highly appreciated the implementation of the capacity building activities of EANET and explained that a participant successfully participated to the TNT Capacity Building project in 2023, leading to improved skills on how to use the monitoring equipment not only for the trainee but also for the team.
 - (xii) A country expressed its support to EPP#7, EPP#3 and EPP#5.
 - (xiii) A country suggested that Project Activities focusing on improving new technologies and on capacity building may be a priority for developing countries.

65. The Session acknowledged the Draft Work Programme and Budget of the EANET for the Core Activities of the EANET in 2025 and the Draft Work Programme and Budget of the EANET for the Proposed Project Plans of the EANET in 2025 and made comments and recommendations from scientific and technical viewpoints for consideration and approval at the IG26 of EANET.

XV. Other matters [Agenda Item 14]

66. The Chairperson invited the Secretariat and the Network Center, as well as the participants, to share announcements or updates, as part of agenda item 14: "Other matters".

67. The Secretariat introduced Prof. Kiyoung Lee of Seoul National University (SNU), Republic of Korea to presented on the Clean Air for Sustainable ASEAN (CASA) project,
68. Prof. Lee delivered the presentation and mentioned that he is leading the project and the project is funded by the ASEAN-Korea Cooperation Fund. The project aims to provide comprehensive support for ASEAN Member States to mitigate air pollution and its negative impact on health through political, scientific, and technical measures. With a budget of \$11 million, the project will be implemented from 2023 to -2026. The project includes the establishment of air quality monitoring stations, health impact assessments, and public awareness activities. includes establishing air quality monitoring stations, conducting health impact assessments, and raising public awareness. It also includes policy advocacy, capacity-building workshops through UNESCAP, and regional policy development to promote cross-sectoral coordination. Key milestones include the recent kick-off workshop in Seoul, with upcoming workshops, consultations and technical meetings planned across ASEAN.
69. Major discussions included:
- (i) The Secretariat enquired about cooperation possibilities between the CASA project and EANET on monitoring stations, data sharing, and on the information to be shared on the data sharing platform, including EANET data.
 - (ii) Prof. Lee explained that the data on the platform will be open to the public. Each ASEAN Member State (AMS) will have access to this Air Quality Monitoring Station (AQMS) data and decide if they want to release the data.
 - (iii) It was suggested to access the monitoring data in the future for EANET PCs.
 - (iv) Thailand explained that one of the CASA stations is located at the Mahidol University in Bangkok. The monitoring site was there before the CASA project started. However more parameters were added through the CASA project. The goal is for a “super site” to be developed, to include Source Apportionment and Health data to be generated. Thailand recommended that EANET follow this strategy as well and use collaboration with other projects for certain sites to become “super sites”. Data access may be a challenge but for intensive studies, it can be easier to access the data through these scientific collaborations.
 - (v) Prof. Lee expressed enthusiasm about cooperating with EANET in the future.
 - (vi) A question was raised about including Emission Inventory (EI) in the CASA project, however it was clarified that EI would not be included so far.
 - (vii) The Network Center suggested to collaborate with CASA Project on PM2.5 component measurement and source apportionment.
 - (viii) Prof. Lee explained that the advisory meeting of CASA meets once a year to provide scientific advice. It is composed of university professors and AMS scientists.
 - (ix) Prof. Lee informed that CASA has a specific action plan to promote the project to policymakers, by collaborating closely with the AMS and UNESCAP to promote to high-level representatives.

- (x) A question was raised about the collaboration with the ASEAN Haze Agreement and Prof. Lee clarified that collaboration was not in place yet although it may be developed in the future.
- (xi) Prof. Lee also answered a question on the epidemiological studies and explained that a country-based approach and more advanced data were needed to conduct these studies.
- (xii) Prof. Lee clarified that the CASA project will last until 2026 but there are many components that can continue. On the sustainability of the project, he highlighted that the monitoring stations were donated to the AMS but these might need continuous support, given limited resources in some countries, to maintain the operation of the stations. Prof. Lee hoped the project would continue beyond 2026.

XVI. Consideration and Adoption of the Report of the Session [Agenda item 15]

- 70. The Secretariat presented the draft Recommendations from SAC24 to IG26 and the Report of the Session found in Annex 2. The Chairperson invited participants to review the draft Recommendations from SAC24 to IG26 and the draft Report of the Session.
- 71. The Report of the Session (EANET/SAC24/15) was considered and **adopted**.

XVII. Closing of the Session [Agenda Item 16]

- 72. The Session expressed its appreciation to the efforts made by the Chairperson, Vice-Chairpersons, and the Rapporteur in making the SAC24 Session fruitful and successful.
- 73. The Session was officially closed by the Chairperson, thanking all the participants for their valuable contributions.

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The Twenty-fourth Session of the Scientific Advisory Committee
on the Acid Deposition Monitoring Network in East Asia
29-31 October 2024, Seoul, Republic of Korea

Annex 2

Recommendations from SAC24 to IG26

The Twenty-fourth Session of the Scientific Advisory Committee (SAC24) on the Acid Deposition Monitoring Network in East Asia, from the scientific and technical viewpoints, recommends to the Twenty-sixth Session of the Intergovernmental Meeting (IG26) on the EANET the following:

- I. **On the Activities of the Task Forces and Expert Groups under the Scientific Advisory Committee (SAC),** the SAC24 recommends to IG26 to:
 - a. Acknowledge that TFAE identified important subjects to be considered with relevance to existing activities, which included:
 - Analysis of long-term trends in sulfur and nitrogen deposition and comparison of different sites
 - Sharing the scientific outcomes of three EANET projects: Development of Hybrid Air Quality Monitoring Network (HAQMN), VOCs related Capacity Building, and PM2.5 source apportionment in major cities in EANET.
 - b. Acknowledge that TFEE identified key scientific topics for the future development of the EANET, which included:
 - Atmospheric nitrogen deposition and its cycle in forest ecosystems
 - Promotion of capacity building and cooperation mechanisms for research studies
 - Effects of air pollution on human health
 - c. Acknowledge that TFAEM is planning to develop a new strategy paper to enhance the atmospheric environment quality management in East Asia so that complex atmospheric phenomena can be considered comprehensively including air pollution and climate change.

- II. **On the Draft Annotated Outline for the Medium-Term Plan (MTP) for the EANET (2026-2030), the Drafting Process, and the Partnership and Resource Mobilization Strategy,** the SAC24 recommends to IG26 to:
 - a. Approve the Drafting process of the MTP (2026-2030) and task the Secretariat and the Network Center to organize one additional SAC and one additional Working Group meeting in the first half of 2025.
 - b. Approve the annotated Outline of the Draft MTP for the EANET (2026-2030).
 - c. Approve the important concepts to be included in the MTP (2026-2030) as follows:
 - Sustainable atmospheric monitoring including application of LCS, satellite monitoring, components of PM2.5 analysis, etc.

- Nitrogen cycle monitoring and assessment; and
- Consideration of the comprehensive effects for atmospheric environment by climate change

III. On the Process for the Development of the Fifth Periodic Report on the State of Acid Deposition in East Asia (PR SAD5), the SAC24 recommends to IG26 to:

- a. Endorse the establishment of the Drafting Committee (DC) of the Fifth Periodic Report, with nomination of the members by NFPs to be conducted after the IG26.
- b. Endorse the draft schedule of the DC and Lead Authors meetings and draft implementation plan and task the Network Center to organize the first DC meeting in April 2025.
- c. Endorse the proposed change of the title of the Fifth Periodic Report to be decided by SAC.

IV. The SAC24 adopts the Data Report 2023 and the Report of the Inter-laboratory Comparison Projects 2023, with modifications and recommends the IG26 to endorse these Reports.

V. The SAC24 recommends to further review the Draft Guidelines on establishing HAQMN, and the Manual for Low-Cost Air Sensor Systems Operation

VI. On the 2025 Draft Work Programme and Budget of the EANET and Proposed Project Plans, the SAC24 recommends to IG26 to:

- a. Consider and approve the Draft Work Programme and Budget of the EANET Core Activities in 2025.
- b. Consider and approve the 12 projects proposed in the Draft Work Programme and Budget of the EANET Proposed Project Plans in 2025, considering the allocation of sufficient funds.