

The Fourteenth Session of the Intergovernmental Meeting  
on the Acid Deposition Monitoring Network in East Asia  
26-27 November 2012, Yangon, Myanmar

**FUTURE EXPANSION OF THE SCOPE OF THE EANET**  
**(DRAFT)**

**I. INTRODUCTION**

1. “The Instrument for Strengthening the Acid Deposition Monitoring Network in East Asia (EANET)” was adopted at the Twelfth Session of the Intergovernmental Meeting (IG12) on the EANET held in November 2010, and was signed by twelve participating countries of the EANET during and after the IG12. In accordance with the “Decision 1/IG.12” adopted at the IG12, it has been operational since 1<sup>st</sup> January 2012 although one country still has not signed yet.
2. The Instrument stipulated the possibility of expansion of the scope of the EANET in the Item 2 “Objectives and Scope”, which stated that “the scope of this Instrument may be extended, as decided by the Intergovernmental Meeting (IG)”. In line with this provision, the Terms of Reference (TOR) of the Working Group on Future Development of the EANET (WGFD) in 2011-2012 decided by the IG12 includes the “Discussion on the issues of expansion of the scope of the EANET”, and the Medium Term Plan for the EANET (2011-2015) also includes this issue as one of the agenda to be discussed during the five years.
3. “Expansion of the scope of the EANET” was discussed at the Tenth Session of the Working Group on Future Development of the EANET (WGFD10) held in July 2011 in accordance with the TOR of the WGFD, where it was suggested that the scientific evidence be regarded as an important basis to consider the future priorities.
4. This issue was taken also at the Fourth Meeting of the Task Force on Research Coordination (TFRC4) and the Eleventh Session of the Scientific Advisory Committee (SAC11) held in October 2011. As the result of discussions, the SAC11 agreed to refer the review of the status of air pollution in East Asia to the Task Force on Research Coordination (TFRC) according to the TOR of the TFRC approved at the Tenth Session of the Intergovernmental Meeting (IG10) on the EANET in November 2008.
5. The Thirteenth Session of the Intergovernmental Meeting (IG13) on the EANET held in November-December 2011 in Hanoi, Vietnam took note that the TFRC will review the status of air pollution in East Asia, and recommended the WGFD to discuss the issues on expansion of the scope, including the possible way to make use of the review to be conducted by the TFRC. The TOR of the WGFD (2013-2014) (EANET/WGFD11/8/2) was

discussed at the Eleventh Session of the Working Group on Future Development of the EANET (WGFD11) held in August 2012. Based on the discussion at the WGFD11, it was revised as 3 year's TOR of the WGFD (2013-2015) and also discussed at the Twelfth Session of the Scientific Advisory Committee (SAC12). The TOR will be revised taking into account of the discussion at the Fourteenth Session of the Intergovernmental Meeting (IG14) on the EANET for adoption.

6. The Second Periodic Report on the State of Acid Deposition in East Asia (PR SAD2) was approved by the SAC11, endorsed by the IG13 and issued in March 2012. The PR SAD2 consists of Part I (Regional Assessment), Part II (National Assessments) and Part III (Executive Summary).
7. The PR SAD2 concluded that the EANET's scientific and technical capacity has developed significantly during the past eleven years of the EANET. The number of monitoring sites has increased from 38 in 2000 to 54 in 2012, and the quality of monitoring data has improved up to the level comparable with the monitoring network under the Convention on Long-range Transboundary Air Pollution (CLRTAP) and those in North America.
8. For promotion of the future development of the EANET, "Summary of Key Points" included in Summary for Policy Makers, and "General Recommendations" included in Chapter 8 of the Executive Summary of the PR SAD2, described in Section IV below, provides several points to be discussed at the Sessions of the WGFD and the IG.
9. This document was revised taking account of the discussions during the WGFD11 held in August 2012. Major points of discussion at the WGFD11 included the following:
  - i) One country expressed its appreciation to the proposed expansion of the EANET starting from the review on the status of air pollution in East Asia by the Task Force on Research Coordination and emphasized the importance of ozone, PM<sub>2.5</sub>, and black carbon (BC), taking account of their impacts to human health and linkage to climate change.
  - ii) It was suggested that the Secretariat and the NC should provide further information in order that the participating countries could share the common understanding of the current scope of the EANET.
  - iii) Another country expressed that the EANET has focused on acid deposition and going beyond the present framework would be difficult. It was suggested since 13 participating countries with different situation work together, focus should be on common interest such as capacity building and improving public awareness and public participation. However, monitoring of ozone and PM<sub>2.5</sub>, in a step by step approach, could be discussed.

- iv) One country expressed its support to the effort to strengthening the EANET, and suggested to strengthen the EANET through research components, such as further analysis of the impacts of acid deposition.
10. This document was discussed at the SAC12 in November 2012 in Yangon, Myanmar. Major points of discussion at the SAC12 included the following:
- i) It was pointed out that air pollutants proposed to be included in the Review are relatively limited, mainly acidic substances, ozone and PM. It was also clarified that relevant major species related to the current activities are only targeted in the draft content. If necessary, some additional species could be included in the review.
  - ii) It was clarified that SAC will review the draft Review in 2013 and 2014.
  - iii) An expert from CLRTAP supported the idea on the expansion of the scope from the experience of the EMEP. It was suggested that mass concentration monitoring of PM<sub>2.5</sub> might be less cost and easily started on a regular basis compared with its chemical analysis.
  - iv) Black Carbon (BC) is an important species as one of climate forcers. It was suggested that measurement of BC (or EC) should be started on a research basis for future activities.
  - v) It was pointed out that expansion of the scope is a right direction to understand air pollution in this region. It was also clarified that some information such as health impacts will be collected by the reviewing committee.
  - vi) It was noted that ozone monitoring could be conducted relatively easily in the EANET participating countries, but PM<sub>2.5</sub> mass concentration monitoring should be firstly conducted as a pilot monitoring because there is a difficulty to select comparable monitoring equipments.
  - vii) It was clarified that the discussion on expansion of the scope was included in the Medium Term Plan (MTP) and approved by the last Session of the SAC and the IG to provide a Review on the Status of Air Pollution in East Asia under TFRC. The information obtained from the Review within the next two years could be useful for consideration on expansion of the scope by the IG.
  - viii) It was pointed out that Annex of the document (EANET/SAC 2012/10/2) should be revised according to discussions at the TFRC.
11. This document will be revised taking into account of the discussion at the IG14 in November 2012 in Yangon, Myanmar.

## II. RECOGNITION ON PRESENT SITUATION SURROUNDING THE EANET

12. In order to discuss the future development of the EANET, it is important to recognize present actual situation surrounding the EANET and to have common understanding among the participating countries.
  - i) From scientific viewpoint, acid deposition may have been marginalized these days because the impacts of acid deposition to ecosystems have not become so clear yet, for instance, in East Asia even after the accumulation of eleven years monitoring data in the EANET sites. Acid deposition is not necessarily recognized as an immediate or near future risk.
  - ii) As a consequence of such perception, it is now very difficult to get support from financial authorities in some of the participating countries for only the acid deposition issues including monitoring, research activities and even for capacity buildings due to the little interest of policy makers. This may also apply to the cases of obtaining outside funds.
  - iii) In contrast, some other air pollution problems have been highlighted as either a domestic, regional, or hemispherical problem. For example, ozone and/or PM<sub>2.5</sub> are now emphasized as high priority air pollution species in some countries. Intercontinental transport of ozone and aerosols has been recognized/ identified as priority species from the point of hemispherical air pollution in Task Force on Hemispheric Transport of Air Pollution (TF HTAP) under the CLRTAP.
  - iv) More recently, integrated approach for mitigating air pollution and climate change has attracted much attention internationally, and the United Nations Environmental Programme (UNEP) has published a couple of reports in 2011 on the short-lived climate forcers (SLCF) in supporting co-benefits/co-control approach. Some governments of the EANET participating countries have expressed their interest in joining international initiatives promoting such co-benefits/co-control approach. The government of United States proposed “Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants Initiative (CCAC)”, and some governments of Asian countries have joined the framework together with other countries and organizations such as UNEP, World Bank, etc.
13. The participating countries may wish to share the understanding on the above situation. Discussions should be started for the future development of the EANET although in principle, the expansion of the EANET scope should be based on a step-by-step approach on which the development of the EANET has been based.

### III. THE PRESENT SCOPE OF THE EANET

14. Before the discussion of expansion of the scope of the EANET, it is worthwhile that all the participating countries have common recognition of the present scope of the EANET, i.e. what kind of activities has been approved and what is outside of the present scope.
15. In order to facilitate the discussion on the expansion of the scope considering the situation described above, present scope of the EANET about ozone and  $PM_{10}/PM_{2.5}$ , impact on human health and modeling and emission inventories is briefly reviewed here based on the past formal documents of the EANET.
  - i) Ozone is included as one of the components of the EANET monitoring in the “Guidelines for Acid Deposition Monitoring in East Asia (2000)” approved at the Second Session of the Intergovernmental Meeting (IG2) on the EANET in 2000, and specified as First priority chemical species in the “Strategy Paper for Future Direction of Dry Deposition Monitoring of the EANET (2006-2010)” and “Strategy Paper for Future Direction of Dry Deposition Monitoring of the EANET (2011-2015)” endorsed in 2005 and 2010, respectively at the Sessions of the Scientific Advisory Committee (SAC).
  - ii) PM is also included as the monitoring components of the EANET in the “Guidelines for Acid Deposition Monitoring in East Asia (2000).” The “Strategy Papers” mentioned above specified  $PM_{10}$  as the first priority chemical species, and  $PM_{2.5}$  as the second priority chemical species.
  - iii) The “Technical Manual on Dry Deposition Flux Estimation in East Asia (2010)” endorsed at the IG12 in 2010 included ozone and  $PM_{10}$  as the First priority chemical species, and  $PM_{2.5}$  as the Second priority chemical species. However, dry deposition flux estimate assumes only each chemical component concentration of aerosols and not mass concentration. Therefore,  $PM_{10}/PM_{2.5}$  mass concentration data are excluded from flux estimation and used for the evaluation of the state of air quality.
  - iv) The data of ozone together with other gaseous air pollutants monitored in the EANET can be used for the estimation of dry deposition flux in principle. However, dry deposition flux estimation necessitates site meteorological data according to the specified methodology of the technical manual of the EANET. So far such meteorological data has been submitted only by Japan, so that no dry deposition flux estimates was made for PRSAD2 for all other countries. Nevertheless, those air concentration data attracts much interest of policy makers and scientists for the evaluation of the state of air quality. Particularly, the EANET ozone data has widely used in many scientific papers appeared in international journals.

- v) There is some confusion if the impact on human health of the monitoring species is included in the present scope of the EANET. In the “Design of the Acid Deposition Monitoring Network in East Asia (EANET)” developed at the First Session of the Intergovernmental Meeting (IG1) on the EANET in 1998 included “Impacts on human health” as one of the objectives. It stated that “to provide useful inputs --- aimed at preventing or reducing adverse impacts on human health and the environment due to acid deposition.” However it was dropped from the Objectives of the EANET in the “Joint Announcement (JA) on the Implementation of the Acid Deposition Monitoring Network in East Asia (EANET)” issued at the IG2 in 2000. The “Guideline for the Acid Deposition Monitoring in East Asia (2000)” approved at the IG2 included as one of the objectives of the EANET to provide inputs related to preventing adverse impacts on human health. Finally, “Impacts on human health” is included as research activities in the recent documents, the Strategy on the EANET Development (2006-2010), and “Medium Term Plan (MTP) for the EANET (2011-2015)” adopted at the Eighth Session of the Intergovernmental Meeting (IG8) on the EANET in 2006 and the IG12 in 2010 respectively. “Impacts on human health” is also included in the “Strategy Paper for Future Direction of Dry Deposition Monitoring of EANET (2006-2010) and (2011-2015)” adopted at the Sessions of the SAC in 2005 and 2010, respectively. It is recommended to confirm that human health impacts of monitoring species are included within the present scope of EANET.
- vi) Modeling and emission inventories are included as research activities and public awareness activities in the “Strategy on the EANET Development (2006-2010)” adopted at the IG8 in 2006, and “MTP for the EANET (2011-2015)” adopted at the IG12 in 2010. Accordingly, these activities are included in the scope of the EANET from 2006 as research and public awareness activities.

#### **IV. RECOMMENDATIONS IN THE EXECUTIVE SUMMARY OF THE PRSAD2**

- 16. The Executive Summary of the PRSAD2 presented general recommendations in the “Summary of Key Points” presented in the “Summary for Policy Makers,” Some of them may be relevant to the discussion on the expansion of the scope.
- 17. The “Summary of Key Points” in the “Summary for Policy Makers” states that:
  - i) It is important that participating countries’ governments commit to supporting ongoing monitoring regarding the deposition of acid and other related atmospheric air pollutants, and also to extending the assessment of acid monitoring to include other relevant components such as ozone and particulate matter (PM).
  - ii) There are strong links between acid deposition and climate change. Air pollutants

causing acid deposition (such as ozone and aerosols) contribute to climate change, while climate change affects acid deposition through influences such as precipitation variations. Accordingly, extending the assessment of acid deposition conditions to include other relevant air pollutants and climate change should be coordinated in order to improve the EANET's treatment of emerging issues.

- iii) After more than 10 years of operation, the participating countries now have a basis for considering measures to strengthen the policy relevance of the network's mandate. Accurate monitoring of acid deposition and assessment of the consequences of acid rain on the environment provide opportunities for action. As scientific understanding of the consequences and sources of such deposition becomes more reliable, the EANET should consider ways to address the origins of harmful emissions by reaching out to policy developers and decision makers with scientific knowledge and policy advice.
- iv) In this sense, the scientific community's role in communicating such information is vital, but it must be presented in a way that can be understood by the general public. Reaching out to society at large by promoting public awareness and common understanding of how atmospheric pollution affects human wellbeing and nature is expected to support policy development toward environmental sustainability in the future.

## **V. RECOMMENDED ACTION PLAN WITHIN THE PRESENT SCOPE**

- 18. Considering both of the above-mentioned "Recognition of the Present Scope of the EANET" and "Recommendations in the Executive Summary of the PRSAD2," the following action plans are suggested under the present scope of the EANET.
  - i) Ozone and PM<sub>2.5</sub> monitoring should be added to the monitoring items at EANET sites with high priority. Practical implementation of these monitoring may follow stepwise manner, but the future implementation plan should be described in the National Monitoring Plan of each participating country. Alternatively, pre-existing monitoring sites, which already started ozone and PM<sub>2.5</sub> monitoring could be added as the EANET monitoring so as to facilitate their data submission.
  - ii) Technical support and capacity building for air concentration monitoring including ozone and PM<sub>2.5</sub> should be strengthened including the calibration of UV absorption ozone instrument.
  - iii) Research activities on inter-linkage between acid deposition, air pollution, climate change, and co-benefits/co-control approach should be undertaken by obtaining outside financial support from national or international funding sources. Monitoring

of black carbon may also be considered as research activity for connecting acids deposition, air pollution, and climate change.

- iv) Extended assessment of the state of acid deposition and air pollution should be made with the aid of modeling and emission inventories in order to extract the implication and importance of the EANET monitoring data for environment of participating countries. Assessment of the impact on human health by ozone and PM<sub>2.5</sub> in combination with monitoring, modeling, and emission inventory should be considered for future research activities of the EANET.
- v) Public awareness activities and the establishment of epistemic community should be promoted in order to achieve a common understanding on acid deposition and its inter-linkage with other atmospheric pollution and climate change among different stakeholders.
- vi) Information on new direction of atmospheric management should be disseminated among the EANET participating countries through enhanced collaboration with international organizations outside the region.

## **VI. DISCUSSION ON THE EXPANSION OF THE SCOPE**

- 19. The following items may require the expansion of the EANET scope.
  - i) Given that in addition to the impacts on acid deposition, ozone damages human health and ecosystems and also contributes to climate change as a greenhouse gas, and that PM affects human health and contribute either positively or negatively to climate change, relevance to climate impact of monitoring species may also be considered in the expanded scope.
  - ii) Enhancement of policy relevance of activities including policy advice based on sound scientific assessment is encouraged in accordance with the recently recognized importance of so called “science and policy interface”. In this connection, new expertise associated with mitigation measures may need to be addressed under the EANET, which will require the expansion of the scope as well as institutional reform in some countries.
- 20. Some other administrative issues to be examined in relation to the expansion of the scope may include:
  - i) Whether respective items related to the expansion of the scope would require the revision of the Instrument or only with the IG’s decision from legislative viewpoint;



- ii) Whether the title of the Acid Deposition Monitoring Network in East Asia (EANET) may need to be changed if the EANET scope is expanded since the title does not adequately indicate the activities; and
- iii) Whether and how much the expansion of the scope would require additional funds especially additional financial burden of the participating countries.

## **VII. REVIEW ON THE STATUS OF AIR POLLUTION IN EAST ASIA**

- 21. In order to facilitate our discussion on research activities of the EANET and to seek for new direction of the EANET, it has been decided by the SAC11 with the guidance of the IG13 to review the status of air pollution in East Asia. The review will be done by a “Reviewing Committee on the Status of Air Pollution in East Asia (Reviewing Committee)” under the TFRC based on the discussion at the TFRC4 in 2011, Fifth Meeting of the Task Force on Research Coordination (TFRC5) in 2012 and the SAC11 in October 2011 and the SAC12 in November 2012.
- 22. The status of the establishment of the Reviewing Committee and possible schedule of the review are attached as Annex 1.
- 23. Preliminary draft content of “The Review on Present Status of Air Pollution in East Asia” is attached as Annex 2.

## **VIII. ACTION REQUIRED**

- 24. The IG14 is invited to review the Future Expansion of the Scope of the EANET and may wish to consider, discuss, provide guidance, and make decision as appropriate.

**STATUS OF ESTABLISHMENT OF REVIEWING COMMITTEE AND  
POSSIBLE SCHEDULE OF REVIEW OF AIR POLLUTION IN EAST ASIA**

Based on the discussion at the Fourth Meeting of the Task Force on Research Coordination (TFRC4) and Eleventh Session of the Scientific Advisory Committee (SAC11) held in October 2011 and in accordance with the guidance of the Thirteenth Session of the Intergovernmental Meeting (IG13) on the EANET, review of the status of air pollution in East Asia will be implemented by the “Reviewing Committee on the Status of Air Pollution in East Asia (Reviewing Committee)” under the Task Force on Research Coordination (TFRC). Status of the establishment of the Reviewing Committee and possible schedule of the review are as follows:

1. The status of the establishment of the “Reviewing Committee”:
  - i) The Chairperson of the TFRC, Dr. Gromov, assigned Prof. Cho Seog-Yeon and Prof. Wilfredo M. Carandang as the Co-chairpersons of the Reviewing Committee in May 2012.
  - ii) The Chairperson of the TFRC will assign several members of the committee in 2012.
  - iii) The Network Center (NC) acts as the secretariat of the Reviewing Committee.
  
2. The possible schedule of the review:
  - i) After getting the approval of the SAC12, and with the guidance of the IG14, the first meeting of the Reviewing Committee will be held in January 2013.
  - ii) The second meeting of the committee will be held before the SAC in 2013 for the development of the preliminary draft report of the “Review on the Status of Air Pollution in East Asia”.
  - iii) Preliminary draft of the report of the review will be submitted to the TFRC and the SAC in 2013.

- iv) Final draft of the review report will be submitted to the TFRC for finalization and to the Session of the SAC in 2014 for approval.
- v) The SAC will submit the approved draft to the WGFD and the IG in 2014 as a basis of the discussion on future expansion of scope of the EANET and decision as appropriate.

**PRELIMINARY DRAFT CONTENTS OF “THE REVIEW ON PRESENT  
STATUS OF AIR POLLUTION IN EAST ASIA”**

**Executive Summary**

**1. Introduction**

**2. Emission Inventories**

**2.1 Global scale inventories**

**2.2 Regional scale inventories in Asia**

**3. Status of Air Quality in East Asia**

**3.1 Sulfur, nitrogen and acidification/eutrophication in East Asia**

**3.2 Tropospheric ozone in East Asia**

**3.3 PM in East Asia**

**4. Risk Assessment**

**4.1 Impacts on human health**

**4.2 Effects on agricultural crops**

**4.3 Ecosystem Impact Assessment**

**5. Climate interaction and co-benefit/co-control approaches**

**6. Mitigation Measures**

**7. Conclusions and Recommendation**

**8. References**