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REVIEW OF PROGRAMME PLANNING AND IMPLEMENTATION

(Item 5 (a) of the provisional agenda)

Transboundary Air Pollution

Note by the Secretariat

CONTENTS

I. BACKGROUND	2
II. OTHER MECHANISMS AND PROCESSES	3
III. ISSUES FOR CONSIDERATION.....	7

Annex I. Recommendation of the Second Meeting of the NEACAP SPC and TCs and draft Work Plan 2021-2025

Annex II. Report of the Second Meeting of the NEACAP SPC and TCs

I. BACKGROUND

1. Given the pressing problem of air pollution, its adverse effects on human health and the environment in North-East Asia, countries in the subregion have taken various measures to abate air pollution and achieved substantial progress over the last two decades. In the recent years, member countries have intensified their national actions targeting fine particulate matters (PM) and formulated comprehensive action plans, such as the Air Pollution Prevention and Control Action Plan (2013-2017) and Three-year Action Plan for Winning the Blue-Sky War (2018-2020) of China; Comprehensive Measures on PM_{2.5} (2013) of Japan; National Programme for Reducing Air and Environmental Pollution (2017-2025) of Mongolia; the Comprehensive Plan for the Management of the Particulate Matter (2020-2024) of the Republic of Korea (ROK), and the Clean Air Initiative as part of the national project “Ecology” of the Russian Federation.

2. Such policy measures have led to visible improvements of air quality in major cities and city clusters. China with the first Action Plan brought down the annual average of PM_{2.5} concentration by 42 percent in 74 pilot cities, 43 percent in Beijing¹, and 25 percent in 28 cities in the Beijing-Tianjin-Hebei and surrounding areas, which was identified as one of the major air pollution transportation channels to curb domestic air pollutions². Mongolia decreased the level of PM_{2.5} in Ulaanbaatar by 56 percent during 2016-2019, particularly, by cleaner fuel substitutions.³ While the level of PM_{2.5} was relatively low compared with the two countries, Japan and the ROK have also made significant progress. In Japan, the rate of achieving the annual PM_{2.5} standard (15µg/m³) increased from 37.8 percent in 2014 to 93.5 percent in 2018.⁴ The ROK during 2015-2018 also reduced the level of PM_{2.5} by 11 percent.⁵ The Russian Federation aims to achieve the overall reduction of emissions from transport, heat and power generation plants and industrial enterprises by 20 percent during 2018-2024.

3. With the increasing domestic actions and interests in international cooperation, NEASPEC member States launched the North-East Asia Clean Air Partnership (NEACAP) at the 22nd Senior Officials Meeting (SOM-22) in 2018 by endorsing the NEACAP Terms of Reference (TOR).

4. In accordance with the TOR, the Science and Policy Committee (SPC) and Technical Centers (TCs) of NEACAP were established and convened the first meeting (SPC-1) in July 2019 to discuss the operation of NEACAP including its priority programme areas. The

¹ Ministry of Ecology and Environment of China, 2019. China Air Quality Improvement Report (2013-2018)

² UN Environment, 2019, A Review of 20 Years' Air Pollution Control in Beijing

³ Ministry of Foreign Affairs of Mongolia, 2020. Communication with the NEASPEC Secretariat

⁴ Ministry of Environment, Japan, 2020, Air Pollution Situation Concerning PM and Photochemical Oxidants in 2018

⁵ Ministry of Environment, ROK, 2019. Comprehensive Plan for the Management of the Particulate Matter (2020-2024)

meeting presented its conclusion report (*NEASPEC/SOM(23)/1, Annex I*)⁶ together with draft Rules of Procedure, respectively, for NEACAP SPC, TCs and Working Groups to the SOM-23 in October 2019. The SOM-23 adopted the Rules of Procedure for the SPC, and requested the SPC to initiate extensive discussions on the priority areas and develop possible workplans to be provisionally agreed upon by member States in advance of the next SOM.

5. The second meeting of SPC and TCs (SPC-2) was held virtually on 2-3 June 2020. The meeting discussed the priority areas of NEACAP and their overall goals and activities. After intensive discussions and further consultations during June-August, the SPC-2 agreed on its recommendations to SOM-24 and the NEACAP Work Plan 2021-2025, attached as annexes. The draft Work Plan categorizes activities into two groups: Category I activities that can be started without specific intensive preparatory work and provide immediate benefits for member States, and Category II activities that build scientific approaches for policy making but require scientific and collaborative preparation. The Work Plan recommends Category I activity, Policy and Technology Cooperation, to be the priority for 2021-2025 while methodological research and capacity building for Category II activities could be further discussed.

6. The Work Plan provides a list of indicative activities of the Policy and Technology Cooperation, which includes (a) proposing potential technical and policy measures, (b) organizing policy dialogue, (c) conducting policy analysis on air pollution management, (d) supporting voluntary collaboration on the Best Available Techniques, and (e) supporting technology forum on emerging technologies and deployment. Thus, the implementation of the Work Plan requires further consultations among member States on the specific area and process of each activity.

II. OTHER MECHANISMS AND PROCESSES

7. During SPC meeting and SOMs, representatives from member States highlighted the significance of avoiding duplication with relevant mechanisms, and thus requested the Secretariat to find ways to create synergies. This section reviews the ongoing process of four mechanisms which have significant implications for NEACAP's work.

8. **Acid Deposition Monitoring Network in East Asia (EANET):** The 21st Session of the EANET Intergovernmental Meeting (IG21) held in November 2019 in Beijing, China, considered its next Medium Term Plan (MTP) for 2021-2025 and established working groups to deliberate the objectives and possible expansion of EANET to address air

⁶ The documents are available at: <http://www.neaspec.org/article/neaspec-23rd-senior-officials-meeting-som>

pollution, and to develop two versions of its draft MTP by referring to the current scope and possible future scope.⁷

9. The Working Group on Drafting the MTP (2021-2025) was held in June 2020 to discuss the first draft MTP (2021-2025) by referring to the current scope of EANET and possible future scope. The first draft MTP on the current scope consists of six objectives and their activities focusing on *acid deposition*, and the draft on the possible future scope expands relevant objectives and activities to *air quality* in addition to acid deposition.⁸ In this connection, proposed activities in the latter go beyond the area of acid deposition by including the plan on monitoring of air quality, real time air quality (such as PM_{2.5}) monitoring network, technical support for the air quality management, and development and submission of emission inventories of air pollutants.

10. Based on the discussion of the WG meeting, the second draft of the MTP will be prepared and submitted to the second session of WG to be held in late October 2020, which is expected to work on the final draft for the consideration by the IG22 to be held on 25-26 November 2020.

11. The Working Group on Reviewing the Scope of the Instrument for the EANET met in July 2020 to discuss the objectives and scope of expansion to address air pollution, and the implied changes on the legal and financial arrangements under EANET. The meeting clarified the scope could be expanded as long as decided by the Intergovernmental Meeting of EANET; and suggested categorizing activities to identify those beyond the current scope with their necessity and benefits. The meeting summarized that the Participating Countries did not have any objection to the expansion scope of the Instrument and, therefore, requested the Secretariat and the NC to work on necessary preparation to support this. The meeting also suggested merging the two versions of the first draft MTP (2021-2025) of current and possible future scope with addition of transition actions.⁹

12. **Tripartite Policy Dialogue on Air Pollution (TPDAP):** Under the Tripartite Environment Ministers Meeting among China, Japan and the ROK (TEMM), the TPDAP has been held since 2014 for exchanging information on policies, monitoring, prevention and control technologies, research, capacity building and international cooperation. As shown in Table 1, the annual policy dialogue has covered PM_{2.5}, VOCs, O₃ and other pollutants from road and non-road sources, and emission monitoring and control. The dialogue has been conducted by two working groups, namely Working Group I: Scientific

⁷ EANET/IG 21/10, https://www.eanet.asia/wp-content/uploads/2019/11/IG21_Report-of-the-Session.pdf

⁸ EANET/WG 1, https://www.eanet.asia/wp-content/uploads/2020/07/WG1_Drafting-MTP-for-EANET-2021-2025_Report-of-the-Session.pdf

⁹ EANET/WG 2, https://www.eanet.asia/wp-content/uploads/2020/07/WG2_Reviewing-Scope-of-Instrument-for-EANET_Report-of-the-Session.pdf

Research on Prevention and Control, and Working Group II: Technology/ Policy an Air Quality Monitoring and Prediction.

Table 1. Topics of Policy Dialogues under TPDAP

	WGI (Scientific Research on Prevention and Control)	WGII (Technology/Policy on Air Quality Monitoring and Prediction)
The 3rd TPDAP, 2016	Adopted the two WGs' work plans	
The 4th TPDAP, 2017	<ul style="list-style-type: none"> • Economic methods to control VOCs (incentives and penalties) • Experiences of VOCs control in petrochemical industry 	<ul style="list-style-type: none"> • Measuring process for air pollutants (O3, PM2.5) and QA/QC system • Development of air quality forecast models
The 5th TPDAP, 2018	<ul style="list-style-type: none"> • Effective experience of control VOCs pollution in printing and coating industries • Research and application of VOCs emission inventories 	<ul style="list-style-type: none"> • Data management and publication of PM2.5 and O3 monitoring results • Emission inventory development methods for mobile sources other than vehicles (non-road sources, etc.)
The 6th TPDAP, 2019	<ul style="list-style-type: none"> • Effective experiences of controlling emissions from vehicles including emission standards, fuels standards, etc. • Development of vehicle emissions inventories 	<ul style="list-style-type: none"> • Monitoring results of PM2.5 species and modeling from certain air pollution episodes • Issues towards developing a real-time monitoring data sharing among three countries
The 7th TPDAP, 2020	<ul style="list-style-type: none"> • Emission controls of non-road sources including vessels, construction equipment, etc., fuel quality standards, etc. 	<ul style="list-style-type: none"> • Remote sensing of air pollutants (development and placement of equipment, satellite observations), results from comparing with monitoring data

13. The TPDAP Air Quality Policy Report, which was published in 2019, summarized major air quality policies, measures and outcomes of the three countries, and underscored the importance of making efforts in close coordination towards air quality improvement despite differences in the policy directions and goals among the three countries.

14. **Joint Research Project for Long-Range Transboundary Air Pollutants in Northeast Asia (LTP):** LTP has carried out joint research activities through 5 stages since 2000, and conducted the source-receptor relationship modeling and monitoring of PM_{2.5} concentration in China, Japan and the ROK during the 4th stages (2013-2017). The research results of the 4th stage were synthesized and published in 2019, which include the quantitative information regarding the level of PM_{2.5} concentration contributed from neighboring countries in 2017. The summary report indicated the decreasing trend of

annual average concentrations of SO₂, NO₂, PM_{2.5} and PM₁₀ in LTP monitoring sites, and suggested further research on species-targeted monitoring and emission reduction to contribute to air quality improvement.

15. While the LTP is currently in the 5th stage (2018-2022), it is expected to go through a significant change in the current institutional arrangement in relation with governments as well as TEMM, and the scope of its programmes on transboundary air pollution.

16. **Pan-Asia Partnership for Geospatial Air Pollution Information (PAPGAPI):** ESCAP and the ROK have recently commenced the process for building the Partnership to facilitate sharing and jointly utilizing data from the Geostationary Environment Monitoring Spectrometer (GEMS), launched in February 2020 by the ROK as world's first geostationary satellite instrument dedicated to air quality monitoring. GEMS monitors O₃, aerosol and their precursors (NO₂, SO₂, Formaldehyde, etc.) over North-East Asia, South-East Asia and South Asia from geostationary orbit every hour during daytime, and will form the Geostationary Earth Orbit (GEO) satellite constellation for air quality monitoring together with NASA's Tropospheric Emissions Monitoring of Pollution (TEMPO) and European Space Agency's Sentinel-4 to be launched in coming years.

17. ESCAP's partnership with the ROK is to follow up with the ESCAP resolution on "Strengthening regional cooperation to tackle air pollution challenges in Asia and the Pacific" (ESCAP/RES/75/4), which was adopted in May 2019 in connection with the launching of NEACAP,¹⁰ and the Asia-Pacific Plan of Action on Space Applications for Sustainable Development (2018-2030).¹¹

18. Scientific community¹² in NEASPEC member States has actively utilized satellite-derived monitoring data of air quality from instruments on low Earth orbit (LEO) satellites, such as the Moderate Resolution Imaging Spectroradiometer (MODIS) onboard Terra and Aqua satellites, Ozone Monitoring Instrument (OMI) onboard Aura satellite, the Tropospheric Monitoring Instrument (TROPOMI) onboard Copernicus Sentinel-5 Precursor satellite, and the Environmental Trace Gases Monitoring Instrument (EMI) onboard the GaoFen-5 satellite. As LEO satellites revisit the same location of the Earth every 1 or 2 days and cover the entire Earth's surface measuring only under clear-sky and ice/snow-free conditions, they have spatial and temporal limitations in providing accurate air quality monitoring data.

¹⁰ https://www.unescap.org/commission/75/document/E75_Res4E.pdf

¹¹ <https://www.unescap.org/resources/asia-pacific-plan-action-space-applications-sustainable-development-2018-2030>

¹² Examples include Daisuke Goto, et.al. 2019, Aerosol model evaluation using two geostationary satellites over East Asia in May 2016, *Atmospheric Research* 217, 93-113; Chengxin Zhang, et.al, 2020, First observation of tropospheric nitrogen dioxide from the Environmental Trace Gases Monitoring Instrument onboard the GaoFen-5 satellite, *Science & Applications* 9; Jhoon Kim, et.al, 2019, New Era of Air Quality Monitoring from Space, *Bulletin of American Meteorological Society* (2020) 101 (1)

19. Scientific community has also utilized geostationary meteorological satellites such as Geostationary Ocean Color Imager (GOCI) onboard the Communication, Ocean, and Meteorological Satellite (COMS), Advanced Meteorological Imager (AMI) onboard GEO-KOMPSAT (GK)-2A, and Advanced Himawari Imager (AHI) onboard Himawari-8. However, these instruments measure only aerosol, not gaseous air pollutants. Thus, GEMS through PAPGAPI could significantly support scientific and policy research in NEASPEC member States on spatial and temporal distributions of air pollution.

III. ISSUES FOR CONSIDERATION

20. The Meeting may wish to decide on the NEACAP Work Plan 2021-2025 with consideration of the SPC-2 recommendation and seek suggestions of member States on the implementation of the plan accordingly.

21. The Meeting may wish to request member States to provide further guidance and support on the work of their respective Technical Center by proposing areas and modality of TC's contributions to the workplan and providing needed resources for the contributions.

22. The Meeting may wish to invite member States to express interest in hosting the next NEACAP SPC meeting and other meetings concerning activities in the Work Plan.

23. The Meeting may wish to request member States to support collaboration between NEACAP and relevant mechanisms and announce their intended contributions to the work of NEACAP.

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