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## Economic Commission for Europe

### Executive Body for the Convention on Long-range Transboundary Air Pollution

#### Working Group on Strategies and Review

Geneva, 4–6 September 2023

Item 2 of the provisional agenda

#### Progress in the implementation of the 2022–2023 workplan

### Report of the Task Force on Techno-economic Issues

The current document is the co-chairs' report on the activities carried out by the Task Force, between the WGSR meeting in April 2022 and July 2023, in line with its revised mandate and the work plan 2022-2023 for the implementation of the Convention (ECE/EB.AIR/2021/2), including the outcome of the annual meetings of the Task Force, in 2022 and 2023.

#### 1. Activity in support to the Gothenburg Review Group (GPG)

TFTEI has contributed to the Report on the Review of the Gothenburg Protocol (paras 49-50, ECE/EB.AIR/WG.5/2022/3), as result of the review carried out on the Technical Annexes to the Amended Gothenburg Protocol (AGP) and with section III of the document "Technical information for the review of the Gothenburg Protocol" presented by the GPG group at the EB 42<sup>nd</sup> session, in December 2022. The section III illustrates the analysis, so called "Technological pathways towards ratification of the Amended Gothenburg Protocol: case studies of four countries in South-Eastern Europe and the in the region "Eastern Europe, the Caucasus and Central Asia". Georgia, Serbia, Moldova and Kazakhstan were the four countries analysed (see related section 2 in this report).

#### 2. Activity in support of some EECCA, South-East Europe and Balkan Countries

The work mentioned in par1 has been developed by TFTEI with the intent of identifying a technological pathway, with progressive introduction of Best Available Techniques in the industrial/productive system of those countries, to achieve the condition suitable for the ratification of the AGP. The analysis, carried out in strict collaboration with experts of the four countries, has concerned also the legislative system and its progressive implementation, the ambient air quality monitoring network, the identification of the most critical sectors (and pollutants), finally suggesting the most appropriate technological solutions. The work has been presented at the 42<sup>nd</sup> session of the Executive Body, in December 2023, within the thematic session on "Barriers towards ratification and implementation of the Gothenburg Protocol, as amended in 2012" ( see <https://unece.org/sites/default/files/2022-12/Agenda%20item%203%20TFTEI%20-%20Case%20Study%20on%20EECCAs.pdf>) with the direct participation of experts from the EECCA, SEE and Balkans Countries.

The Parties' representatives at the EB meeting showed interest in this kind of analysis and, upon invitation by the TFTEI co-chairs, to other countries to collaborate with TFTEI to develop similar analyses in their own countries, the Republic of Armenia and the Republic Montenegro have welcomed the invitation and TFTEI has carried out the analysis also for those two countries. The full informal report on the analysis and its results, for the six countries, will be made available to the WGSR, at its 61<sup>st</sup> session (4-6, Sept 2023, Geneva). The contacts with the experts of the EECCA, SEE and Balkans regions remain a focal techno-scientific activity for TFTEI. Such activity takes more

relevance in the current transitional period in which the re-organization/definition of the EECCA Coordinating Group is awaited by the EB.

### ***Collaboration with other bodies of the Convention***

TFTEI has a long-time tradition of cooperation with the Task Force on Integrated Assessment Modelling (TFIAM), and with the experts of the International Institute for Applied Systems Analysis (IIASA), in particular sharing update information on characteristics and performances of the abatement technologies. In the case of the TFIAM study on “Cost of Inaction”, officially presented at the EB 42<sup>nd</sup> session, TFTEI provided the analysis of retrofit on the Apatity Pant in the Russian Federation, as input to the application of the Cost Benefit Analysis (CBA) methodology, aimed at comparing cost of inaction and benefits, on environment and human health, expected from the retrofit of the plant.

In the course of 2022, in the frame of the cooperation among the task forces referring to WGSR, TFTEI established collaboration with the Task Force on Reactive Nitrogen (TFRN), through an ad hoc analysis on the interactions between measures for ammonia and for methane, in agriculture. The analysis was carried out by experts of the Italian National Council for Agriculture and Economics (CREA) and delivered to TFRN as input to develop the related Guidance Document, as in the item 2.2.1. of the work plan 2022-2023. The first version of the Guidance Document will be presented by TFRN and discussed at the 61<sup>st</sup> session of WGSR (4-6, Sept 2023, Geneva).

The Italian co-chair of TFTEI attended, remotely, the first meeting of the new Task Force for International Cooperation on Air Pollution (TFICAP) on October 12, 2022. The terms and subjects of the envisaged cooperation between the two task forces were discussed. Due to the main tasks in the mandate of TFTEI and its special relationship with the EECCA countries, a great potential exists, in terms of subjects of interest for the purposes of TFICAP, which can be further developed in the next years.

### ***3. Review of Technical Annexes and development of Guidance Documents***

Along with the review of the Technical Annexes to the Gothenburg, IV, V, VI, X and XI, already made available, as informal document, at the 60<sup>th</sup> Session of WGSR in April 2022, TFTEI continued the work of review with the Annex VIII on Mobile Sources, in line with its revised mandate, in particular with the task of regular update of the technical information concerning the technologies for the abatement/reduction of the pollutants. The informal document will be made available to the WGSR, at its 61<sup>st</sup> session (4-6, Sept 2023, Geneva).

According to the item 2.2.5., of the current work plan, the TFTEI experts have also developed two Guidance Documents, on technologies in use in the Shipping sector and the on the technologies concerning the control/reduction of methane emissions from the oil/gas industry sector, the landfills and the bio-gas plants. These two Guidance Documents will be presented and discussed, as official documents, at the 61<sup>st</sup> session of the WGSR (4-6, Sept 2023, Geneva). The EB, at its 42<sup>nd</sup> session, in December 2022, decided that the two Guidance Documents will be UN-ECE publications, after their final adoption by the Executive Body.

TFTEI also developed a study on “Analysis of the impact of decarbonisation on emissions of air pollutants, in selected industrial sectors”. The work is intended to explore synergies and trade-off between the actions triggered by the reduction of the GHG and the side effects on the pollutants concerned in the Gothenburg Protocol. The related informal document will be made available at the 61<sup>st</sup> session of the WGSR (4-6, Sept 2023, Geneva).

### ***4. Activities of the Task Force in the work plan 2024-25***

During the meeting of the Extended WGSR Bureau, held in April 2023, the TFTEI co-chairs proposed to include in the work plan 2024-25, the revision of the existing Guidance Documents on Stationary Sources and on Mobile Source. In fact, the TFTEI co-chairs believe that the Parties would benefit of revised and updated information on the most advanced available technologies, in all the sectors, independently from the discussion and decisions on the future role of the Annexes to the Gothenburg Protocol. The official proposal will be forwarded to the WGSR 61<sup>st</sup> session. Waiting for the EB decisions on the work plan 2024-25, the Task Force will continue its usual work of collection and validation of update information on the best available abatement/mitigation technologies. The revision of the Guidance Documents implies a huge work of updating the texts with validated information and discussions with the experts of the various sectors, therefore, assuming the inclusion of this activity in the next two-year plan, but the EB decision in December 2023, the revised texts should be discussed at the meeting WGSR 2025.

Depending upon the new collaborations possibly established with countries in the EECCA, SEE and Balkans area, TFTEI will continue the analysis of the so called “Technological Pathway toward the ratification of the Amended Gothenburg Protocol”.

Moreover, TFTEI has been invited by the UNECE Secretariat to participate in the sub-regional workshop on BATs for EECCA countries, expected to take place in the first half of 2024.

#### **5. - 8th Annual Meeting of the Task Force – Rome 6-7. October 2022**

The 8<sup>th</sup> annual meeting of the Task Force TFTEI, took place in Rome on 6 and 7 of October, 2022, chaired by Tiziano Pignatelli (Italy) and Jean-Guy Bartaire (France), hosted by the Italian National Council for Economics and Labour (CNEL). As usual, the meeting consisted in two sessions, the informal on October 6 afternoon and the official one, on October 7, with the participation, in person, of the UNECE Secretariat. Twenty-five experts from Italy, France, Czech Republic, Germany, Sweden, Croatia, Finland, Belgium and from the EECCA and SEE area, Republic of Serbia, Georgia and Kazakhstan attended, in person, the official session and, in total or in part, fifty-one experts attended remotely, from Canada, Moldova, Denmark, UK, US, Ukraine, Poland, Switzerland, Austria, Belarus, Spain and Russian Federation. The simultaneous English-Russian interpretation was available during the official session (only), kindly offered by Germany. The participation in person, of the two experts from Kazakhstan and Republic of Serbia, was financially supported by the European Solvent Industry Group (ESIG) and the participation of the expert from Georgia was financially supported by Germany. The logistic arrangements were provided by France and Italy.

The informal session was focused on the presentation and discussion of the work carried out by the TFTEI/Citepa experts on “Technological Pathway” analysis applied to the four countries Kazakhstan, Moldova, Georgia and Republic of Serbia. The discussion and the comments from the experts of those countries highlighted the status of progress, the criticalities and the perspectives in the process of achieving the condition suitable for the future possible ratification of the Gothenburg Protocol. An open discussion also took place between the EECCA/SEE experts and some members of the Gothenburg Protocol Review Group (GPG) on the possible changes to be introduced in the Gothenburg Protocol, in case the EB will decide to proceed with the revision process. Several options were investigated and the EECCA views/preferences explored (staged approach, approach by sector, ratification vs implementation etc.), so providing some new hints to the work of the GPG Group.

The official session took place on October 7. Alina Novikova (UNECE Secretariat) informed the group about the latest news from the Convention and introduced the themes under discussion in the upcoming 42<sup>nd</sup> session of the Executive Body, (Geneva, 12-16 December 2022), among them the “Thematic session on barriers towards ratification and implementation of the Gothenburg Protocol, as amended”. Carolin Sans Noriega (UNECE Secretariat) illustrated the UNECE e-learning platform, recently developed.

The President of the Italian National Council on Economics and Labour (CNEL), Prof. TREU, addressed a welcome message to the participants in the meeting. He highlighted the importance of an efficient communication between the policy makers and the science community, also at national level.

The TFTEI Co-Chairs summarised the priority issues in the work plan 2022-23, recalling among them: Contribution to the review of the AGP in the documents developed by the GPG group, in particular, the Chapter VI (Emission limit values, technical annexes and related guidance documents of the Protocol, with priority given to black carbon and ammonia measures, and Chapter VII (Specific sector approaches, such as residential solid fuel, agriculture, shipping, in the Gothenburg Protocol Review Report.

Summary of the outcome of the Study “Technological Pathways toward ratification of the Amended Gothenburg Protocol – Case studies for four EECCA and SEE countries, included in Section III of the Annex II - Technical information for the review of the Gothenburg Protocol, developed by the GPG Group.

The development of the Guidance Document as mentioned in par 4 of the current report.

The TFTEI Co-Chairs provided some indications on the possible TFTEI tasks in the next work plan 2024-25, pending the decision of the EB on the review/revision process of the AGP.

The TFTEI Co-Chairs discussed with Stefan Åström, co-chair of the Task Force on Integrated Assessment Modelling (TFIAM), Alexander ROMANOV, chair of the Coordinating Group for EECCA countries, Anna Engleryd, co-chair of

the new Task Force on International Cooperation on Air Pollution (TFICAP) the subjects of the envisaged cooperation with TFTEI.

Nadine Allemand and Natalia Sirina Leboine, of the Citepa techno-scientific board of TFTEI, illustrated the main results of the work carried out on the 4 EECCA/SEE countries.

The authors of the Guidance Documents, mentioned in par 4, Simon Glöser, Grégoire Bongrand, and the CREA experts, Ilaria Falconi, Sara Carè, illustrated the draft versions of the Guidance Documents, as referred in par 4, respectively on the subjects: methane, shipping and interactions between emissions of methane and ammonia in the agricultural sector.

All the presentations delivered during both the informal and official sessions, are available on the TFTEI web site: <https://tftei.citepa.org/en/meetings/tftei-meetings>

#### *6. - 9<sup>th</sup> Annual Meeting of the Task Force – Warsaw 12-13 June 2023*

The 9th annual meeting of the Task Force TFTEI, took place in Warsaw on 12 and 13 of June, 2023, hosted by the Polish Ministry of Climate and Environment. The meeting, chaired by Tiziano Pignatelli (Italy) and Jean-Guy Bartaire (France), consisted, as usual, in two sessions, the informal on June 12 afternoon and the official, on June 13, with the participation, of the UNECE Secretariat. Fourteen experts from Italy, France, Germany, Poland and from the EECCA and SEE area, Republic of Montenegro and Armenia attended, in person, the official session and, in total or in part, thirty-six experts attended remotely, from Austria, Belgium, Canada, Croatia, Denmark, Finland, France, Germany, Italy, Moldova, Portugal, Spain and Sweden, UK, US. The simultaneous English-Russian interpretation was available during the official session (only), kindly offered by Poland. The participation in person, of the two experts from Montenegro and Armenia, was financially supported by the European Solvent Industry Group (ESIG). The logistic arrangements were provided by Poland.

Mr. Szymon Tumielewicz, vice Director of the Department of Air Protection and Urban Policy-Ministry of Climate and Environment welcomed the participants in the meeting.

Alina Novikova (UNECE Secretariat) informed the group on the latest news from the Air Convention. Particularly of interest for the task force TFTEI, the upcoming 61st session of the Working Group on Strategies and Review, during which the progress in the implementation of the 2022-2023 work plan will concern the discussion and approval of the draft guidance documents (shipping, methane from non-agricultural sources and on co-mitigation of ammonia and methane), in which TFTEI is directly involved or in collaboration with other bodies of the Convention and the draft 2024-2025 work plan and its policy-related aspects and elements which will determine the tasks for TFTEI.

Carolin Sans Noriega (UN-ECE Secretariat) illustrated to the group the e-learning platform (<https://www.unclearn.org/>) and in particular, the course on the Long-Range Transboundary Air Pollution Convention. Till now more than 5000 registrations have been received.

Co-chairs TFTEI presented to the task force members the upcoming works of TFTEI, as proposed in the draft work plan 2024-25, in the terms described in par 5, which will be discussed for adoption by the EB, at its 43<sup>rd</sup> session in December 2023.

The Co-chairs, Tommy Dalgaard of TFRN, Simone Schucht of TFIAM, Anna Engleryd of TFICAP described in their presentations, delivered remotely, the envisaged terms and subjects of cooperation with TFTEI,

Andrzej Jagusiewicz (President of the European Federation of Clean Air and Environmental Protection Associations President, EFCA) presented the history of the Expert Group on Techno-economic Issues (later on upgraded to Task Force on Techno-economic Issues), established by decision of the EB in 2001. Poland was among the first countries, along Sweden, to host an annual meeting of EGTEI (2011). Mr. Jagusiewicz contributed to the process which led to the decision of creating the group.

Nadine Allemand and Natalia Sirina-Leboine (CITEPA - TFTEI Techno-scientific board) described the work carried out, jointly with the experts of Armenia and Montenegro, on the so called Technological Pathway toward the ratification of the Amended Gothenburg Protocol (AGP), application and results of the methodology to those countries. The informal document on this work will be made available to the WGSR, at its 61<sup>st</sup> session.

Till Spranger (Chair of WGSR and WG\_POD) intervened remotely to explain the status of the work on the “Policy options to address the conclusions of the review of the 2012 amended Gothenburg Protocol” developed by the Working Group on Policy Option Development. Such document will be presented at the WSGR 61 and will be the basis for the

discussion among the members of the EB, at its 43<sup>rd</sup> session, to take a decision on the follow up steps for what concerns the evolution of the Gothenburg Protocol.

A number of interesting technical presentations were included in the agenda of the official session. Simon Gloeser (University of Freiberg, DE) and member of the TFTEI Techno-scientific board), “Low carbon technologies and their impacts on pollutant emissions” analysing the effects on air pollution caused by the on-going process of de-carbonization taking place in many industrial sectors.

Mrs. Katarzyna Stadnik - Head of the Air Protection Team at the Marshal's Office of the Malopolska Voivodeship (Poland) illustrated several measures, already implemented or in course of, in the region of Krakow and Malopolska, in matter of improving the air quality.

Julia Domagała, AGH University of Science and Technology - Tomasz Mirowski, Assistant Professor, Polish Academy of Sciences described the use of modern solid biomass in the residential sector in Poland. The current status and the evolution in the consumption of biomass and related technologies were illustrated.

Prof. R. Kubica of the Silesian University of Technology, presented the “Abatement of particulate matter emission from small combustion installations fuelled with biogenic, solid fuels”.

After a detailed description of the most advanced technologies available in the sector he highlighted that the implementation of BAT, like in the EcoDESIGN appliances would result in reduction of PM > 95%, PAHs > 90% and BaP > 99%, as compared to the conventional appliances.

Fouad Said (Technical and innovation Director, Fives Pillard) illustrated a work concerning the “Energy Transition and Hydrogen combustion”. After analysing the status of the technology in the sector, he concluded that, from a technical point of view, the Green H<sub>2</sub> is still not competitive, as compared to the existing industrial hydrogen production. The use of H<sub>2</sub> for burners needs some adjustments and precautions. The development of ultra-low NO<sub>x</sub> burners is needed for H<sub>2</sub> firing and the NO<sub>x</sub> regulation for H<sub>2</sub> firing still needs to be adapted.

The TFTEI co-chairs summarized the upcoming work and perspectives for the task force and closed the meeting thanking all the participants, in person and online, the organizers, the interpreters and the sponsor. The date and venue of the next annual meeting of the task force (2024) will be communicated as soon as possible. Presentations available on: <https://tftei.citepa.org/en/meetings/tftei-meetings>.

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