



Event Report

EPPA Regional Workshop on the Ambient Air Quality Directive

13 – 14 October 2020

Live video conference



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1 Introduction

The regional workshop

The regional workshop on the implementation of the Ambient Air Quality Directive took place on October 13-14, 2020, via live video conference. The workshop was organized in cooperation with TAIEX, and under the EPPA project work programme, namely activity 4.1 “Air Quality Directive capacity building”.

The participants of the workshop came from the relevant authorities of the EPPA beneficiaries involved in air quality management. They represented the Ministries with the environment portfolio, in addition to other relevant air management institutions (environmental agencies, hydrometeorological institutes) of all beneficiaries: Albania, Bosnia and Herzegovina, Kosovo*, Montenegro, North Macedonia, Serbia, and Turkey. Details are available in the list of participants.

Civil society was represented by NGOs from the beneficiaries, namely: the Environmental Centre for Development Education and Networking (Albania), LIR Evolution (Bosnia and Herzegovina), the Institute for Development Policy (Kosovo*), Green Home (Montenegro), the Centre for Climate Change – Gevgelija (North Macedonia), and the Centre for Ecology and Sustainable Development (Serbia).

Representatives from the EU Delegations (or Office) of Albania, Bosnia and Herzegovina, Kosovo*, North Macedonia and Turkey were present.

The speakers represented EU Member States’ and others’ experience: the Norwegian Institute for Air research, the University of Strasbourg (France), the Zentralanstalt für Meteorologie und Geodynamik (Austrian meteorological service, ZAMG), the Finnish Meteorological Institute, the Environment Agency Austria (Umweltbundesamt). One speaker was a former employee of the National Institute for Public Health and the Environment (Netherlands). Moreover, EU institutions were represented by speakers from the European Commission Joint Research Centre (JRC), and DG ENV. The workshop also brought in the experience of the World Health Organization (WHO). Details are available in the agenda.

The presentations can be downloaded in both the TAIEX website¹ and in the EPPA project website².

2 Objectives of the training and expected results

The aim of the workshop was to strengthen national capacities of the Environment Partnership Programme for Accession (EPPA) beneficiaries to effectively address the large number of implementation challenges regarding the Ambient Air Quality Directive. The workshop built on the current state of implementation in the beneficiaries. Special emphasis was put on topics such as communication, citizen science on air quality and health impact assessment.

3 Highlights from the workshop

3.1 Introduction to the workshop

Mr. Christian Nagl opened the workshop by explaining its objectives and the rationale behind the agenda. He mentioned that this is the last capacity building workshop on the AAQD. He encouraged the beneficiaries to put forward their needs to assess the opportunities for more support via other mechanism, such as TAIEX, IPA (Instrument for Pre-accession Assistance), or under other EPPA project components. In addition, he called for continued regional cooperation to move forward with implementation.

Mr. Mihail Dimovski welcomed the participants and stressed the importance of continuing work under EPPA, even under new circumstances. Alignment with the air acquis is one of the most difficult tasks under Chapter 27 negotiations, and it has critical links with other sectoral policies, such as transport, and energy. The current state of alignment is varied, and its implementation is not yet fully effective. For instance, monitoring and quality control progress are at different levels. Reporting also needs to improve. Mr. Mihail Dimovski listed some of the most relevant sources of air pollution in the region that will need to be tackled. He therefore expects the present workshop will assist the beneficiaries to improve its

¹ <https://webgate.ec.europa.eu/TMSWebRestrict/resources/js/app/#/library/detail/80126>

² <https://eppanetwork.eu/taie-x-eppa-workshop-on-ambient-air-quality-directive/>



preparedness to fully implement the AAQD. The beneficiaries' commitment to achieve full alignment is essential to move forward.

Mr. Mihail Dimovski informed the beneficiaries about the possibility to have *ad hoc* assistance in air management issues under EPPA's activity 4.5. Such assistance can be delivered upon request from the beneficiaries.

3.2 Current status of the implementation of the AAQD - Progress achieved since September 2019 AAQD workshop, positive examples, lessons learned, future activities

The EPPA beneficiaries presented their recent developments in the transposition and implementation of the Ambient Air Quality Directive.

3.2.1 Albania

Ms. Rovena Agalliu presented the progress achieved since September 2019, positive examples, lessons learned, and future activities. She listed the strategic framework on air protection in Albania (DCM No. 594, dated 10.09.2014 "On the approval of the National Strategy on Ambient Air Quality", DCM No. 412, dated 19.06.2019, National Ambient Air Quality Plan). She also explained the institutional framework for air quality management, which include the Ministry of Tourism and Environment, National Environmental Agency, line ministries, and local government units.

Directive 2008/50/EC and Directive 2004/107/EC are both transposed into Albanian legislation, at an advanced stage (96.3%), through the following legal acts: Law No. 162, dated 04.12.2014 "On protection of ambient air quality", and DCM No. 352/2016 "On ambient air quality assessment and requirements for certain related pollutants".

For air monitoring, Albania has 7 automated stations, with another one in the process of being installed. The monitoring network is not complete because big cities have only one station which is not representative for the whole city, and many other cities are without any monitoring station. In order to have a better picture of the situation of the air quality in the country, the monitoring stations need to be expanded. National Environmental Agency (NEA), also fully in accordance to the formats and requirements of Decision 2011/850/EC, has performed the reporting of AQ data to the European Environment Agency (EEA) for: Dataflow D-Information on the assessment methods (Articles 8 and 9) and dataflow E1a - Information on primary validated assessment data – measurements. The measured parameters (PM₁₀, PM_{2.5}, NO_x, CO, SO₂, O₃ and BTEX), are according to the EU directives and Albanian legislation.

Albania is facing several challenges. Directive 2008/50/EC & Directive 2004/107/EC are implemented in Albania, but further efforts are needed to achieve their full implementation. Air quality is regularly monitored in Albania and data reported to EIONET and available to the public. Further efforts are needed to establish real-time data reporting and improve air quality monitoring. The National Plan on Air Quality Management (NAAQMP) was adopted in 2019, however main challenges are in implementation of the measures included in the NAAQMP. These issues, together with the limited capacity and funds for implementation are considered as most challenging for the Albanian administration. The law on ambient air quality needs to be properly enforced and the current air quality monitoring network and practices to be aligned with EU standards.

Recently, there were further alignment outcomes. The national legislation in place is further aligned with the relevant EU acquis through the adoption of the: DCM No 162 of 19.02.2020 "On the rules on preparation, approval, reassessment and implementation of the national programmes on reducing the emissions in the air", and the new Law 52/2020 "On some amendments on the Law 10448, date 14.07.2011 "Environmental permits", DCM No. 429, of 26.6.2019 "On the quality of certain liquid fuels used for thermal, civil, industrial and maritime transport", DCM No. 412 of 19.6.2019 "National Plan on Air Quality Management (NPAQM)", Law No 44/2019 of 18.07.2019 "On some amendments to the Law No 7895 of 27.11.1995 "The Penal Code of Albania" (transposing the environmental crimes directive).

Albania recognizes the importance of capacity building and it has, therefore, continued to participate in relevant events under EPPA, TAIEX, and LTRAP Convention.



In terms of positive examples, Albania is preparing its answers to the Bilateral Screening Questions and is currently preparing an Action Plan for Air quality sub chapter. In the frame of IPA III, Ministry of Tourism and Environment (MTE) has been involved on preparation of the Sectorial - Strategic Response on Environment and Climate Change document, followed by a number of draft action fishes prepared or/under preparation.

Going forward, the responsible structures at central level need to increase the administrative and technical expertise dealing with air quality. The main institutions (MTE, NEA, Ministry of Infrastructure and Energy (MIE)) need additional staff and trainings. Further efforts and specific technical support project are needed to ensure implementation of NEC Directive in Albania and challenges linked with it. A concrete model is needed how to establish a National Clean Air Commission, an instrument to ensure the coordinated implementation of national legislation and policies related to improving air quality, bringing together at regular intervals different stakeholders: MTE; NEA; Local Government Units (LGUs), industry/businesses, civil society, scientific community, etc. Technical support project on fulfilling CLRTAP/EEA reporting obligations.

In terms of future plans, Albania will seek to strengthen the capacities and organizational structure for implementing Directive 2008/50/EC and 2004/107/EC. As the latest amendments of the Directive 2008/50/EC and 2004/107, are not transposed, future amendments of the current legislation, need to be made in the near future. Preparation of national air pollution control programmes (NAPCP), emission inventories and projections, monitoring of air pollution impacts, as required by NEC and CLRTAP, must have also proper attention and financing in Albania. Preparation/adoption of the requested secondary legislation based on the Law 162/2016, such as: reporting on air quality assessment, reporting on the implementation of law “On ambient air quality protection”, methods by which the public may participate in the consultation, etc.

3.2.2 Bosnia and Herzegovina

Mr. Enis Omercic started with the applicable legal framework. The highest-level competence on air quality legislation in Bosnia and Herzegovina is with the entity governments. Brcko District has its own competence on air quality management and legislation. Most of the competence on air quality management has lower administrative units – municipalities and, in the Federation of BiH, the cantons. Mr. Enis Omercic then introduced the key legislation in both entities. The general provisions, subject matter and definitions from the AAQD are mostly aligned in local regulations, but in Bosnia and Herzegovina the state has no responsibility on this issue, so it is expected from entity governments to designate two reference laboratories (article 3) for these issues - most probably the Hydrometeorological Institutes which already are designated for some of mentioned activities.

Regarding article 4, Zones and agglomerations, they are not yet determined in accordance to the Directive. Republic of Srpska had determined agglomerations few years ago, but not aligned with definitions from Directive. In 2020, a proposal of zones and agglomerations in BiH, aligned with the Directive, is in final phase of preparation. Some of the zones and agglomeration already meets the needs of AQ monitoring, but some will need more investments in AQ station networks.

In terms of progress achieved there are activities to establish and designate two reference laboratories in the entities. Quality assurance / Quality control manual for performing air quality monitoring is in final phase of preparation. The zones and agglomeration document, which will be sent to entity governments for adoption, is in preparation.

3.2.3 Kosovo*

Mr. Shkumbin Shala presented the legal and institutional basis in Kosovo*, including the Law on Air Protection from Pollution, no. 03 / L-160, the Air Quality Strategy 2013-2020m and the Air Quality Action Plan.

The Kosovo* Agency for Environmental Protection (KEPA), respectively the Kosovo Hydrometeorological Institute (KHMI), monitors air quality throughout Kosovo*, through the National Network for Air Quality Monitoring. The National Air Quality Monitoring Network consists of 12 fixed automatic stations and one mobile automatic station. The distribution of stations and the selection of monitoring sites was done in



accordance with the criteria of Directive 2008/50 / EU on clean air in Europe, and respecting these criteria the stations were distributed in 9 municipalities. There are ongoing projects to increase and rehabilitate monitoring stations, implement new monitoring software, increase monitoring scope and introduce modelling.

Information to the public is provided via several mechanisms, such as the websites of MEA, KEPA, KHMI, Reports, Web EEA, a mobile application, supported by the European Commission, press releases, meetings and email and tel. The main pollutants come from industry, households and transport.

Kosovo* needs to adopt a new Law on Air Protection from Pollution and to implement existing air legislation. The main challenges are support for the implementation of legislation, the Air Quality Strategy and Action Plan, and the cost, quality and evaluation of monitoring data.

Mr. Shkumbin Shala concluded with several possible measures to improve air quality in cities, such as:

- Enforcement of local legislation and compliance with standards for air emissions
- Implement the Air Quality Strategy and Action Plan
- Maximize the use of combustible fossils with large emissions into the air such as coal
- Better management of existing waste landfills and elimination of illegal and industrial landfills
- Reducing the number of cars by promoting the use of public transport
- Improving public transport and removing old vehicles
- Improving the quality of fuels
- Promotion of vehicle technologies
- Promoting the use of bicycles
- Increase of green areas in urban areas and maintenance of existing ones
- Better road network management

3.2.4 Montenegro

Ms. Olivera Kujundzic informed the meeting of recent developments in Montenegro. There have been revisions to the air quality zones. The north zone air quality needs to be improved. The central part of Montenegro is not as polluted as the north, but additional measures are needed. The coastal zone is consistently under the limits. Air quality problems are seasonal, with concentration of PM in wintertime. The monitoring network was also recomposed to reflect the new zoning: 3 stations in the north, 5 in the central zone and 2 in the coastal zone. In the central zone, where Podgorica is located, traffic is a major contributor to air pollution.

In the last year, Montenegro revised its National Strategy on Air Quality Management. The new strategy will cover the period 2021-2030. The associated action plan will first only cover 2021-2022 because of the Covid pandemic effects: the implementation of some measures is subject to the availability of funds. The strategy is based on a new methodology in Montenegro that seeks to rationalize and streamline strategic document development by integrating air quality plans and pollution control.

Montenegro is also in the process of acquiring the necessary tools to start air quality modelling with the support of IPA. That will enable the administration to have reliable predictions in the case of negative air quality.

3.2.5 North Macedonia

Ms. Aneta Stefanovska presented North Macedonia's transposition of Directive 2008/50/EC, Directive 2004/107/EC, and Directive 2015/1480/EC. The state monitoring system for ambient air quality has 17 fixed monitoring stations and 1 mobile monitoring station, measuring: SO₂, NO, NO₂, NO_x, CO, O₃, PM₁₀, and PM_{2.5}. There are plans to install a new monitoring station, and to install PM_{2.5} instruments on new locations in the country. Furthermore, indicative measurements of HM and PAH will be conducted on 1 location in Bitola, and preparatory activities for accreditation of calibration laboratory has started.

In terms of air quality assessment, based on the long-term data of air quality suspended particle concentrations (PM₁₀ and PM_{2.5}), they very often exceed the established limits for the protection of human health but there is a trend of decreasing of the concentrations especially in 2019. Covid restrictions have significantly increased air quality.



Future plans include air quality governmental programs for 2019 and 2020, such as replacement of existing non-ecological heating systems in households, kindergartens, primary and secondary schools and administrative buildings; arranging a green area in schools and health care institutions; and purchase of air purifiers. In addition, the energy efficiency program for 2020 will offer subsidies for all citizens for the purchase of PVC windows, pellet stoves, solar collectors. Local plan has been prepared for the municipality of Strumica and the new one for the municipality of Bitola is under preparation within CBC-IPA project with Greece. Measures like subsidies for procurement of pellet stoves, chimney cleaning services, bicycles, e-scooters, more modern heating appliances, inverters for air conditioners have been implemented by different municipalities.

North Macedonia also has an upcoming IPA project “Support for implementation of air quality directives” with a 2 year duration and a 1.5 ME budget. The project goal is to improve the ambient air quality by preparing relevant documents and legislation in accordance with EU legislation and strengthening the administrative capacity for their implementation.

Ms. Aneta Stefanovska concluded with a snapshot of the situation in North Macedonia:

- PM₁₀ is the most critical substance for air quality in the country
- The monitoring network is extensive and lot of instruments are replaced, however there is a need of yearly sufficient financial resources for maintenance of monitoring stations and accreditation of the calibration laboratory
- The county is using all kinds of EU and bilateral support to improve the air quality management
- The allocation of budget and implementation of measures by many local self-government units is in place and improved
- The public and political awareness for air quality is on higher level
- There is still lack of budget and capacities for air quality management on central and local level especially for implementation of the CAFE directive especially in preparation of Air quality plans and monitoring of implantation of measures
- The activities undertaken in the last period are a positive step, but it takes time, additional activities, and resources to achieve the goal of reducing air pollution

3.2.6 Serbia

Ms. Dusica Radojicic presented the state of transposition of air quality management directives. The CAFE Directive and 4th Daughter Directive have been largely transposed through the Law on the Air Protection, the Regulation on monitoring conditions and air quality requirements, the Rulebook on content of air quality plans, and the Rulebook on short-term action plans. The next step is to transpose Commission Directive 2015/1480/EU of 28 August 2015. The Directive Specific Implementation Plan (DSIP) for 2008/50/EC Directive and 2004/107/EC Directive, which will be developed through the IPA 2014 project, will also include detailed policy and legal gap assessments. This will provide guidelines to complete the transposition of those directives into national legislation. Approximation status report related to legal acts from the Ambient Air Quality will be also prepared within IPA 2014.

AQ Plans are to be prepared and adopted by the autonomous province and local self-government units in zones and agglomerations with III category of Air Quality (where the tolerant values are exceeded), when the air pollution exceeds the effects of the undertaken measures, when environmental capacity is endangered or there is constant air pollution in certain area (Article 31 of LAP). The process of preparation of AQ plans takes 2-3 years. Difficulties occur with securing funding in the Local Self-Government (LSG) budgets for preparation of AQ plan and finalizing the process of selection of the company/ institution.

The Air Protection Strategy will be developed as Air Protection Program with Action Plan within IPA project Additional development of EU Environment approximation for Air, Chemicals and Horizontal acquis and will define air quality goals and measures to achieve them, will provide basis for further development and adoption of lower-level documents and continuation of directive implementation.

With the aim of adequate enforcement of the air quality protection and improvement of air quality, on 1st November 2019, the Ministry sent a letter to the local self-government units with obligations that they need to implement in accordance with the Law on Air protection, and that are related to the adoption of



air quality plans and short-term action plans. According to the LSG answers 6 AQ plans are adopted and 1 short term action plan is adopted, 7 AQ plans are in preparation, 8 short term action plans are in preparation, 29 LSGs informed Ministry that there is no need for measures, 36 LSGs informed Ministry that they will provide AQ measurements first.

On 17 January 2020, the Government of the Republic of Serbia established the Working group for systematic resolving of air protection issues. On January 24th 2020, the Minister of Environmental Protection established the Commission for supervision the work of local self-government units regarding implementation of provisions of the Law on Air Protection to help local self-government units to implement the provisions of the Law on Air Protection, especially regarding drafting and implementation of AQ plans. So far, four meetings have been organized with local self-governments units on which territory the air quality in the 2018 was in the third category.

Having in mind that winter is coming, on 25th September 2020, the Ministry sent a new letter to the local self-government units and invite all units of LSGs to, in agreement with the city heating plants, help the citizens to connect to the central heating system under more favourable conditions; to support citizens with local measures to use cleaner energy types. The Ministry also remind LSGs to the obligations submitted to them in the letter from 1st November 2019, and invited LSGs to start with activities on rising public awareness through air pollution education. Air pollution public awareness rose, but media usually is using sources of data like AirVisual, WAQI and the public started to use low cost sensors without no experience.

SEPA, autonomous province and local self-government units are responsible for providing information to the public and to the appropriate organizations. SEPA also informs about exceedances of alert thresholds. The Annual Report on the state of air quality in the Republic of Serbia is prepared and published by the SEPA (2010-2019)³.

Future activities and challenges for Serbia are:

- Continuing with Development of the Strategic documents and alignments with EU legislations;
- Determination of assessment regime;
- Reassessment of AQ Monitoring System;
- Establishment of National Reference Laboratory and Equivalency testing;
- Improvement of use of modeling techniques in AQ planning and AQ assessment;
- Strengthening of administrative capacities;
- Monitoring of AQ plans implementation;
- How to choose representative locations for alert thresholds

3.2.7 Turkey

Ms. İrde Gürtepe presented the current situation in Turkey. Limit values are almost aligned to EU standards. There are Local Clean Air Action Plans (64 cities out of 81). Cycling is encouraged and low Emission Zones are on the way. Online monitoring of air quality is done via 355 stations. Turkey has 8 Regional Clean Air Centers and has been reporting of National Air Emission Inventory since 2011.

The National Air Quality Monitoring Network is present in 81 provinces with 355 active station. The measurement results are online at www.havaizleme.gov.tr. All of these stations are equipped to measure SO₂ and PM₁₀, some of them can measure CO, NO_x, O₃, PM_{2,5} and meteorological parameters.

The Clean Air Centers were established to support the Ministry in monitoring air quality and identifying pollutant sources.

Turkey makes use of an air emission portal (GIS based), that covers all pollutant sources. National and regional strategic air quality maps can be prepared by the Portal. Covid-19 effect on air quality has been worked as scenario study. The portal also allows for source identification and to perform modelling studies. Furthermore, the Air Emissions Management (AEM) Portal outputs are integrated into 3D software. In the future, the level air quality data will be calculated via the new 3D software. Traffic data, land use, 3D buildings and wind effect with fluids mechanics will be taken into account.

³ <http://www.amskv.sepa.gov.rs/>



3.3 Recent developments in the EU: fitness check AAQD and the Green Deal

Ms. Vanda Jakir gave an update on the EU's clean air policy. Air pollution has impact over public health. 1 in 8 deaths are linked to environmental pollution in Europe (13 %). There are regional variances: pollution is associated with 27 % of deaths in Romania, 10 % in Denmark and Sweden, and beyond the EU, 27 % in Bosnia and Herzegovina.

The EU clean air legislative framework includes setting objectives for good air quality (Ambient Air Quality (AAQ) Directives), and reducing emissions of pollutants (National Emission reduction Commitments Directive, and source-specific emission standards, such as IED Directive, MCP Directive, Eco-design Directive, Energy efficiency, Euro and fuel standards).

The EC performed a fitness check of the AAQ Directives based in the criteria of Relevance, Effectiveness, Efficiency, Coherence, and EU Value Added. The fitness check was based on:

- Literature review with more than 600 sources of evidence;
- Analysis of reported data as reported over the period 2008 to 2018;
- An open public consultation generated 489 responses;
- Replies to a targeted questionnaire from 43 stakeholders;
- Two stakeholder workshops (June 2018; January 2019);
- Seven case studies (in BG, DE, ES, IE, IT, SE, SK);
- Bespoke modelling and computations (analysis of costs and benefits);
- Desk review of EU and national legislation, as relevant

The AAQ Directives are broadly fit for purpose (with scope for improvements). In particular:

- The monitoring network benefits from continuous investment to ensure it is well maintained; additional guidance would be useful to address ambiguities.
- EU air quality standards have been instrumental in reducing concentrations and exceedance levels albeit subject to, at times considerable, delays.
- Reliable and comparable information is available, but with further scope to make use of e-Reporting possibilities, including an acceleration of reporting.
- The clear requirement to take remedial action when and where exceedances are observed has been decisive in triggering improvement in air quality.

However, air pollution remains a challenge for public health. The EU urban population is exposed to air pollution above EU standards and WHO guidelines. Therefore, air quality remains a major health and environmental concern, even though air quality standards have been instrumental, and partially effective, to reduce pollution. It is important to note that the current EU standards are less ambitious than scientific advice. Limit values have been more effective than other types of air standards.

Legal enforcement action by European Commission, and civil society, works (the effectiveness of the latter being linked to the functioning of access to justice at national level and the dynamism of NGOs). There is room to further harmonise monitoring, modelling, and air quality plans (not all reported data is equally useful, e-reporting allows for further efficiency).

The Green Deal includes a zero-pollution action plan for air, water and soil (expected in 2021). The plan will strengthen implementation and enforcement, introduce targeted improvements, integrate governance, including monitoring and outlook and drive economic and societal change. Further action is expected as a result of the fitness check, especially in monitoring, modelling, plans and air quality standards.

For more information on emissions, consult the NEC Implementation Report published on 26 June 2020⁴, which provides the state of play of implementation on all aspects of the NEC Directive, incl. emissions inventories and ecosystems impacts monitoring, and an analysis of the National Air Pollution Control Programmes.

⁴ Report from the Commission to the European Parliament and Council on the progress made on the implementation of Directive (EU) 2016/2284 on the reduction of national emissions of certain atmospheric pollutants (COM(2020) 266 final)



3.4 FAIRMODE: Application of source apportionment to policy support

Mr. Alain Clappier presented the source apportionment methods for the AAQD prepared under FAIRMODE⁵. Source apportionment is a technique used to relate emissions from various pollution sources to air pollution concentrations at a given location and for a given time period. The technique is implemented through increment by computing differences between several observation sites and by receptor and tagging contributions which allows to trace pollutant masses. The technique builds on observations to build models. One of its uses is to simulate the effect of reduction scenarios offering a powerful tool to policy makers. Mr. Alain Clappier then went into detail explaining the application of the source apportionment methods.

3.5 JRC activities on air quality and source apportionment in South-East Europe

Mr. Claudio Belis presented the JRC activities on air quality and source apportionment in South-East Europe. The JRC is conducting multiple projects and activities in SE Europe, as well as offering resources. They include:

- Danube Air Nexus 2013-2015 (3 WB countries)
- Support to macro-regional strategies implementation 2016-2018 (4 WB countries)
- Air and Climate in the Western Balkans 2019-2020 (in progress)
- Scientific studies and ex-ante analyses (6 scientific publications and 11 reports)
- Networking of experts and authorities (6 symposia and workshops)
- Capacity building (5 training courses)
- EDGAR global emission database
- FASST, SHERPA Modelling tools
- ERLAP Air quality monitoring reference laboratory

Mr. Claudio Belis presented PM_{2.5} measurements in the Danube and WB, as well as their source allocation in 33 cities. In SE Europe, a considerable share of PM_{2.5} derives from long-range transport of pollutants (44%). The most important PM_{2.5} activity sources are Energy production (22%), Agriculture (19%) and Residential combustion (16%). The contribution of Energy production is higher in the Western Balkans (with a high share of coal fuelled plants) than in the rest of the Danube region. The impact of Road transport on PM_{2.5} is lower in SE Europe (7%) than in the rest of EU27 (15%). Biomass burning is an important contributor within the Res. Comb. sector and its impact is underestimated in most areas.

Mr. Claudio Belis also presented the status of air pollutants and greenhouse gases in the WB, including PM₁₀, SO₂, NO₂, NO_x, CO₂. He concluded that the transposition of the Ambient Air Quality Directive (AQD) is at a satisfactory level in almost all WB region countries. WB countries are at different stages in the implementation of the AQD and the alignment of the climate change legislation is much slower. Particulate matter (PM₁₀ and PM_{2.5}), SO₂, O₃ and NO₂ are the air pollutants whose levels are most frequently above the legislation limits in the WB. There is an increasing impact of power and transport sectors on CO₂ emissions. The successful implementation of the EU air quality legislation in the WB would also help EU countries to reach their limit values for some air pollutants.

3.6 Air quality modelling and source apportionment

Ms. Katja Loven continued the day's focus with a presentation on air quality modelling and source apportionment. She started by presenting the Finnish Meteorological Institute services in air quality, and then the tools used by the Institute.

Ms. Katja Loven presented the dispersion model, a model to evaluate air quality. It provides a local view of air quality with concentrations, deposition, and odour occurrence. It allows for a combined load of different emission sources or for the effects of a single source. It can also sense the effects of various factors like meteorology, the dispersion environment and emission reduction operations. Its results support source apportionment.

⁵ <https://fairmode.jrc.ec.europa.eu/>



The dispersion model can be applied at a local scale for numerous purposes, among which are air quality assessment and planning, land use plans, traffic plans, Environmental Impact Assessments (EIAs), examination of accident impacts, etc. However, the model is flexible that it can be applied at different scales like national and even continental. The FMI uses it in particular for:

- Urban area multiple source Dispersion Modelling system (UDM-FMI)
- Vehicular pollution line-source dispersion models (CAR-FMI)
- Dispersion models for hazardous materials, heavy gas model (ESCAPE)
- Dispersion model for odorous compounds (ODO-FMI)
- Street canyon model OSPM (Operational Street Pollution Model)
- Population exposure EXPAND (EXposure model for Particulate matter And Nitrogen oxideS)

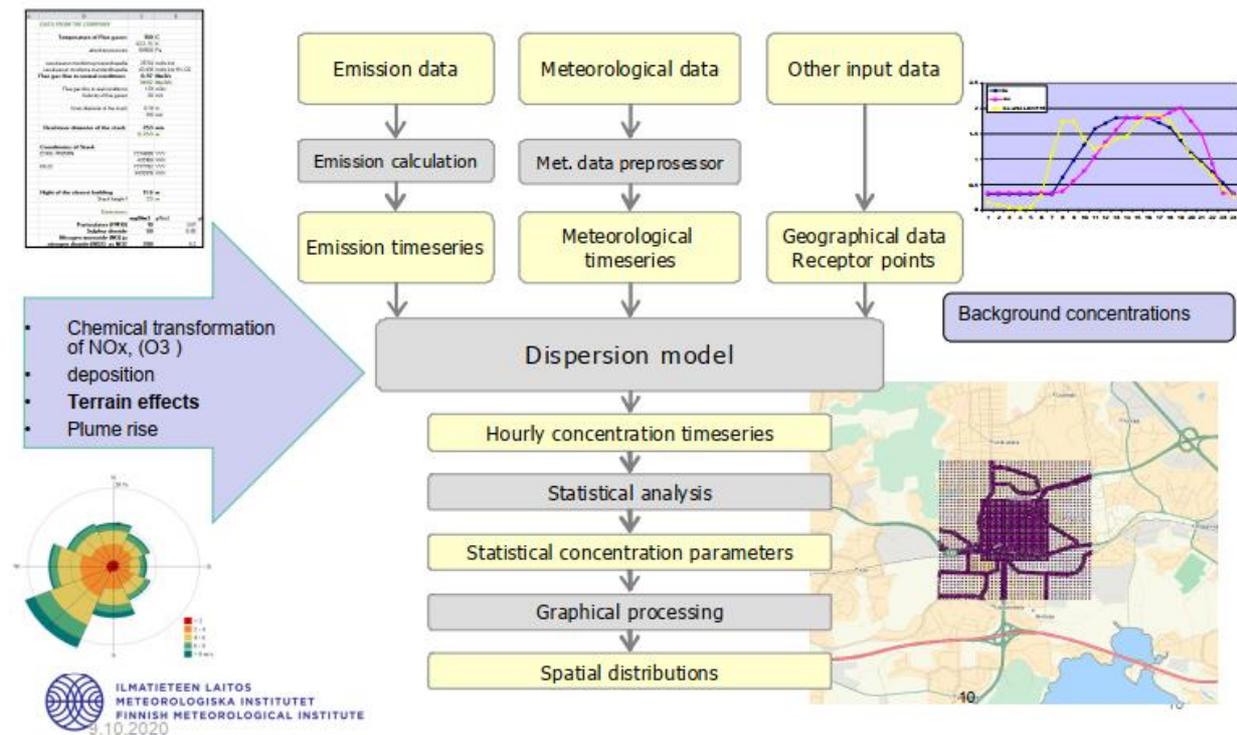


Figure 1 - Local scale dispersion modeling system

Ms. Katja Loven gave a concrete example of the model’s use in air emissions in Helsinki Metropolitan area in 2014 and in Kuopio for emissions of road transport, private house heating, energy production and industry in 2017 and 2035 (scenario), nitrogen oxide and particulate emissions.

She highlighted the policy uses of the dispersion model:

- Local scale dispersion modeling gives a general information about the air quality in the area and the hot spots
- It can be used to estimate the impact of different emission source sectors to air quality (support source apportionment)
- It can be used to assess the monitoring needs and to build up and optimise AQ monitoring network
- Model validation important by comparing the modeling results to measured ones
- Important tool to support city and traffic planning and to study the impact of clean air action plans

Ms. Katja Loven presented the example of a Source Apportionment (SA) Study in South-East Asia 2019-2020. She used the example to stress a few important points about SA:



- SA process and Positive Matrix Factorization (PMF) modeling requires enough sampling data (minimum 80 samples covering one year), the more samples, easier interpretation of the modeling results
- Important to find the right trace elements for the emissions
- SA process takes long time; 1.5-years (preferably one-year sampling, sample analysis, modeling and reporting)
- Expensive process as it requires a lot of data/analysis; also need specific capabilities of chemical laboratories carrying out the analysis
- Interpretation of the PMF results → Factors/Sources requires some knowledge of local main emission sources
- Final result will be presented as a pie chart of the PM_{2,5} sources impacting to the measured PM_{2,5} concentrations

3.7 Air quality modelling applications to support air quality assessment

Mr. Marcus Hirtl presented air quality modelling applications to support air quality assessment. He started with an overview of the data and tools available for environmental assessment studies. They include the meteorological situation (ground stations, Numerical Weather Prediction (NWP) models, etc.), the air quality situation (air quality stations, emissions data and inventories), and model applications (local and large-scale dispersion modelling and source term estimation).

EIAs are an evaluation of expected consequences of a proposed project (e.g. highway, industrial facility, power plant, power line network or other infrastructure) on air quality and climate. The assessments can rely on different modelling techniques to give information on:

- estimated air pollution emissions caused by construction activities – simulation of maximum air pollution values due to transport, construction machinery, wind erosion from piles of sand, earth etc.
- Estimation of air pollution emissions caused in the operational phase of the project – model forecast of increase or decrease of air pollution values compared to a future situation without the project
- Estimation of greenhouse gas emissions due to the project
- Evaluation of expected impact on the local microclimate due to the project (change of land use, heat sources, change of wind flow due to buildings etc.)

He provided six examples of the use models to provide such assessments, for instance for the Sahara dust episode February 2020. He concluded that the choice of the right model depends on the case, and that the analysis and integration of observations into modelling simulations improves results. Moreover, modelling can also be used to support emission inventories and source term estimation.

3.8 Citizen involvement in air quality monitoring: from raising awareness to science contribution

Ms. Núria Castell presented Norwegian experiences with citizen involvement in air quality monitoring. Traditional air monitoring relies on large, expensive stations, complex equipment with high maintenance requirements. Because of these reasons they tend to be scarce, but the data provided is very accurate. A possible alternative is to use low cost sensor platforms, that are small and portable, easy to operate, have low cost and permit the establishment of dense networks. Their main disadvantage is data uncertainty.

Norway is experimenting with low cost sensor networks, as another input to their sensor data infrastructure, that also includes models, satellite data, urban data and air quality stations. The information collected is being used to provide smart cities services, smart transport services and smart environmental information services. Despite the limitations, the low-cost sensor data can be used to create high-resolution air quality maps. In this sense, coupling low cost sensors to citizen science initiatives provides a valuable, added stream of data. An example is to have schools monitor air quality as part of science projects for the students.



In addition, such monitoring initiatives can support participatory urban planning to improve urban life, including with the reduction of air pollution.

3.9 Health impact from air pollution at a European, national and urban scale

Mr. Frank de Leeuw discussed the health impact from air pollution at a European, national and urban scale. In particular, he talked about the Clean Air Programme for Europe (CAFE). The programme sought to:

- achieve compliance with existing air quality standards by 2020;
- set national emission reduction targets;
- offer legislative proposals to implement stricter standards for emissions;
- set objectives for reducing the health and environmental impacts of air pollution by 2030: to reduce the health impacts (premature mortality attributable to particulate matter and ozone) by 52% relative to the 2005 situation.

In terms of progress, and assuming a linear decrease in health impacts between 2005 and 2030, a reduction of 21% should have been achieved in 2015. Data shows that in fact there have been positive accomplishments. A significant part of Europe achieved a reduction of PM_{2.5}, with a concomitant reduction of the population's exposure decreasing significantly. As a result, the attributable deaths to air pollution have decreased from 2005 to 2015 from above 600k to 500k premature deaths because of NO₂, O₃ and PM_{2.5}. Some uncertainties remain due to the data used for concentration, population and health data.

Mr. Frank de Leeuw looked at the specific case of the Netherlands, where the contributions for the burden of disease come mostly from transport, agriculture and households. He focused in the case of Utrecht, for which the health impact of local policy measures was measured. It was found that local measures over NO₂ cause more benefits than over PM_{2.5}. A full electric fleet of vehicles gives more health benefits than banning old diesel vehicles in low emission zones, however, the greater the LEZ the more efficient it becomes. Since transport has such a high share in the health impacts, promoting soft mobility measures like cycling can have important impacts.

He concluded with the point that policies that preserve health can have positive impacts on a country's economy. Air pollution measures, for instance, can save almost 10k €, per life year.

3.10 Recent developments at WHO regarding guidelines levels

Mr. Roman Perez Velasco gave an overview of the update of the WHO global air quality guidelines (AQGs). The first guidelines were published in 1987, followed by revisions in 2000 and 2006. A new update is expected soon. The accumulated scientific evidence shows that air quality should be a global health priority. Every year, around 7 million deaths are due to exposure from both outdoor and household air pollution.

The most recent update seeks to:

- Develop air quality guideline levels, including an indication of the shape of the Concentration Response Function (CRF), for PM₁₀, PM_{2.5}, NO₂, O₃, SO₂ and CO, for relevant averaging times and in relation to critical health outcomes
- Develop good practice statements on black carbon, ultrafine particles, and desert and sand storms
- Propose interim targets

The development of WHO guidelines aims to formulate robust public health recommendations, informed by a comprehensive assessment of the evidence, with the ultimate goal of supporting informed decision-making at a global level. Since 2007, standards and methods adopted are intended to ensure that guidelines are free from biases and meet public health needs. The WHO Handbook for Guideline Development (2014) provides step-by-step guidance on how to plan, develop and publish a guideline. The development process of AQGs relies on methodological adaptation, systematic review of evidence, grading evidence and developing recommendations based on that. For instance, the systematic review process required extensive work to adapt methodological tools and review large amounts of evidence.



The AQGs aim to provide three types of recommendations and guidance:

- Air quality guideline level: exposure level of an air pollutant above which the Guideline Development Group is confident that there is an increase in adverse health effects.
- Interim target: air pollution concentration associated with a specific decrease of mortality risk, offered as incremental steps in progressive reduction of air pollution, and intended for use in areas where air pollution is high.
- Good practice statement: statement provided in lieu of a formal recommendation when there is a high level of certainty that the benefits of the recommended intervention outweigh the harms. They can be based on a body of linked or indirect evidence, physical and biochemical properties, ethical principles, etc.

The next steps in the development of the guideline include an external review of the draft, the finalization of the draft guideline document, and the WHO review and approval of the final guideline document.

3.11 Health impact assessment – input data and calculation

Mr. Pierpaolo Mudu debated the process of preparing health risk assessments. An Air Pollution Health Risk Assessment aims to estimate the risks of past, current or future exposure to air pollution and of changes in exposure that may result from planned policies or other modifications of air quality. Such an assessment depends on data input from air pollution, population, health data and risk selection.

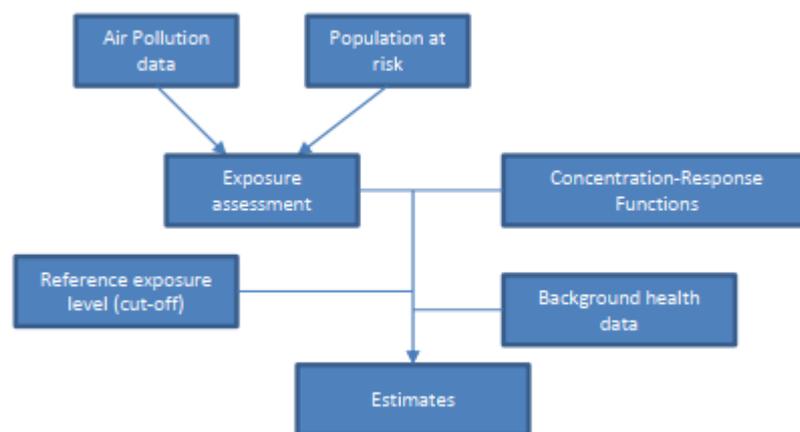


Figure 2 - Health impact assessment model

The AirQ+ is a user-friendly software to estimate the magnitude of the most important and best recognized effects of air pollution in a given population, automatizing the model above. The software is available for download from the WHO website⁶.

Mr. Pierpaolo Mudu gave an example of the potential of AirQ+. In particular, WHO in cooperation with UNECE, and supported by UN Environment is going to publish a report on: “Air Pollution and Human Health: The Case of the Western Balkans”. WHO faced some challenges in running the analysis because of the shortage of data, some uncertainty affecting the quantification of air pollution related health impacts, and communicating the relevance of air pollution and health risks.

Mr. Pierpaolo Mudu concluded that health risk assessments are an important tool to understand the impacts of air pollution, and they can guide policymaking. In this sense, he encouraged the use of AirQ+.

⁶<http://www.euro.who.int/en/health-topics/environment-and-health/air-quality/activities/airqsoftware-tool-for-health-risk-assessment-of-air-pollution>



3.12 Air quality communication – good practice examples

Ms. Inge Zechmann gave a presentation on how to best communicate air quality issues. It can sometimes be difficult, because air quality is invisible in a way. With the exception of extreme events, air pollution is not immediately felt or seen, nor is the policy framework behind air quality management. In addition, the benefits of good air quality are often difficult to perceive. However, they are important. They include savings to economies, more responsibility of actors, better health and better prospects for people and the environment.

Ms. Inge Zechmann placed the need for clean air at the bottom of the pyramid of needs of Abraham Maslow. That bottom are the physical needs of an individual, whereas at the top are self-esteem and self-actualization. In addition, in order to communicate effectively, one must constantly repeat the message. She also highlighted the gap between conveying a message and that message being turned into action.

Successful communication will have a strategy behind it clarifying the what and how it is being said to what target groups. Moreover, it should take into consideration possible multiplication agents (influencers for instance), the topic stakeholders (administration, economic sectors, experts), the science background, and the socio-cultural context where the message will be broadcasted.

Ms. Inge Zechmann focused on communication tools that are widely accessible and can have relatively low costs, such as webservices and apps. As an example she provided best practice examples of communication on air quality through institutional websites of the United Kingdom, France and Austria. Other tools available are the media, social media and events. Each offer different advantages for instance multiplication effect, interactivity or agenda setting. Publications and brochures remain important communication tools. They can provide in depth information and links to other topics.

Ms. Inge Zechmann recommended that the following principles be taken into account for air quality communication:

- Transparency, which can include measures to ease access to data, offering different channels for different audiences and to engage in active communication in emergency situations.
- Dialogue, which should focus on engaging multipliers, the population and the stakeholders
- Continuity, which requires communication to be uninterrupted and to include both positive developments and negative situations

3.13 Air quality plans and measures – current good practice examples

Mr. Christian Nagl presented some examples of best practices in Europe related to air quality plans and measures, which include the expert Panel Clean Air in Cities, the JRC Cross-Cutting Task (CT) 5 AQ management practices, CleanAir Farming, CleanAir project (domestic heating) in Styria, French Citizens' Convention on Climate, and Learning from COVID-19 pandemic - reduction potential of virtual mobility forms and redistribution of public space.

Mr. Christian Nagl concluded that there are a large number of European, national and regional examples available. Data gaps and uncertainties should not hamper implementation of measures, showing the importance of being policy-proactive. Citizen involvement is an important tool to achieve acceptance of those measures. Going forward, the Covid-19 lockdown measures demonstrated the potentials for change and for the equitable, socially relevant and environmentally consequent redistribution of public space.

3.14 Discussion among participants, exchange of experience, specific questions to speakers

Ms. Irde Gürtepe questioned the EPPA project team about the possibility to have legal gap analysis as discussed in the Project Steering Committee. Mr. Mihail Dimovski informed the meeting that the current EPPA work plan includes a component on compliance checking. The beneficiaries may request specific pieces of legislation to undergo a compliance check against the relevant EU directive(s), including air quality acquis. The compliance check reports are provided exclusively to the requesting beneficiary and the EC. As discussed in the Steering Committee it is possible that help will see a change to the work plan that will include a round of progress monitoring. The last round was done in 2016 for the entire acquis



under the competence of DG ENV. The current proposal for progress monitoring will have a reduced scope and it is currently waiting for final input and approval by the EC, the contracting authority.

4 Conclusions

The regional workshop on the implementation of the Ambient Air Quality Directive offered the EPPA beneficiaries a follow up on the topics discussed in the previous capacity building workshop on the same topic (September 2019).

The current event reviewed the progress made by the countries since then, as well as their priorities for air quality management in general. The countries continue to transpose the air quality acquis, and to develop or revise the relevant national strategies and action plans for its implementation. Some progress was noted on the development of the national air monitoring networks and reporting of air emissions and the designation of reference laboratories. There has also been progress in the definition of air quality zones in several beneficiaries. In general, the countries still need to find more resources to fully implement the legislation. Some of the key air pollution problems remain with coal fuelled industry and biomass-based heating in households. Both are significant sources of air pollution in the region.

The workshop offered the opportunity for the EC to present the fitness check of the AAQD and future actions in air quality management arising from that and the EU Green Deal. There were technical presentations on the use of source apportionment and other air quality models, its results when used in the region, as well as its importance for decision-making. The impacts of air pollution in health were also discussed, offering examples of measuring such impacts from the Netherlands and the WHO.

The workshop also offered a window on citizen science initiatives from Norway, and how those are being used to source data that can complement the existing infrastructure of air monitoring. Partially related with this, there was also a reflection on how to communicate air quality issues with greater involvement of the public and stakeholders.

The workshop concluded with a discussion of best practices around Europe in regard to air quality measures.

Finally, the beneficiaries were asked to submit to the EPPA project team their interest regarding the Sulphur Directive and the NEC Directive, as a way to prepare and target those upcoming workshops. Feedback is expected in writing at the countries' convenience. In addition, the project team encourage the beneficiaries to voice any requests for assistance regarding the AAQD. Even though the work plan foresees no further activities in the topic, it is still possible to provide assistance under the project's activity 4.5, which was designed to respond to specific, ad-hoc national requests. The project team also raised awareness for other assistance funding sources such as TAIEX and IPA.

Workshop outputs

The workshop's main outputs were:

- Enhanced understanding of the topic, policy and legislation, challenges and current practices
- Enhanced exchange of experiences within the beneficiary region and between the beneficiary region and EU Member states
- Established contacts between air quality practitioners of the beneficiaries, resulting in better cooperation
- Better capacity to deal with the requirements of the air quality EU acquis
- Identified key issues for implementation of air quality requirements in the beneficiaries

5 Evaluation

The participants were asked to evaluate the workshop by TAIEX using an online survey after the event. The evaluation results are presented below in a summary table.



				No. Responses	Expert Score	Yes / Excellent	No / Good
80126	Workshop - participant - A. Questions	1	Was the workshop carried out according to the agenda?	15	-	15 (100%)	-
		2	Was the programme well structured?	15	-	14 (93%)	-
		3	Were the key issues related to the topics addressed?	15	-	13 (87%)	-
		4	Did the workshop enable you to improve your knowledge?	15	-	11 (73%)	-
		5	Was enough time allowed for questions and discussions?	15	-	14 (93%)	-
		7	Do you expect any follow-up based on the results of the workshop (new legislation, new administrative approach, etc.)?	15	-	12 (80%)	3 (20%)
		8	Do you think that further TAIEX - %pr_c_abbreviation% assistance is needed (workshop, expert mission, study visit, assessment mission) on the topic of this workshop?	15	-	14 (93%)	1 (7%)
		Workshop - participant - B. Expert ratings	-	Mr. Dimovski, Mihail - Other speakers	15	81.66%	6 (40%)
	-		Mr. Nagl, Christian - Other speakers	15	91.66%	10 (67%)	5 (33%)
	-		Ms. Jakir, Vanda - Speaker EU	15	86.66%	9 (60%)	4 (27%)
	-		Mr. Belis, Claudio - Speaker EU	15	86.66%	8 (53%)	6 (40%)
	-		Mr. Clappier, Alain - Speaker MS	15	86.66%	9 (60%)	4 (27%)
	-		Mr. De Leeuw, Franciscus - Speaker PP	15	86.66%	8 (53%)	6 (40%)
	-		Mr. Hirtl, Marcus - Speaker MS	15	85%	8 (53%)	5 (33%)
	-		Mr. Mudu, Pierpaolo - Speaker EU	15	80%	5 (33%)	8 (53%)
	-		Mr. Perez Velasco, Roman - Speaker EU	15	81.66%	7 (47%)	5 (33%)
	-		Ms. Castell, Nuria - Other speakers	15	90%	10 (67%)	4 (27%)
	-		Ms. Loven, Katia - Speaker MS	15	90%	10 (67%)	4 (27%)
	-		Ms. Zechmann, Ingeborg - Speaker MS	15	86.66%	9 (60%)	4 (27%)
	Workshop - participant - C. Logistic Ratings	1	Conference venue	9	-	6 (67%)	1 (11%)
2		Interpretation	7	-	5 (71%)	1 (14%)	
3		Hotel	6	-	3 (50%)	2 (33%)	
4		Flight	6	-	3 (50%)	2 (33%)	



			No. Responses	Expert Score	Yes / Excellent	No / Good
80126	Workshop - participant - D. Comments	-	-	-	-	-
		-	-	-	-	-
		-	-	-	-	-
Workshop - speaker - A. Questions	1	Did you receive all the information necessary for the preparation of your contribution?	4	-	4 (100%)	-
	2	Has the overall aim of the workshop been achieved?	4	-	4 (100%)	-
	3	Was the agenda well structured?	4	-	4 (100%)	-
	4	Were the participants present throughout the scheduled workshop?	4	-	4 (100%)	-
	5	Was the beneficiary represented by the appropriate participants?	4	-	4 (100%)	-
	6	Did the participants actively take part in the discussions?	4	-	2 (50%)	-
	7	Do you expect that the beneficiary will undertake follow-up based on the results of the workshop (new legislation, new administrative approach etc.)	4	-	2 (50%)	-
	8	Do you think that the beneficiary needs further TAIEX - %pr_c_abbreviation% assistance (workshop, expert mission, study visit, assessment mission) on the topic of this workshop?	4	-	3 (75%)	1 (25%)
	9	Would you be ready to participate in future TAIEX - %pr_c_abbreviation% workshops?	4	-	4 (100%)	-
Workshop - speaker - C. Logistic Ratings	1	Conference venue	1	-	-	-
	2	Interpretation	1	-	-	-
	3	Hotel	1	-	-	-
	4	Flight	1	-	-	-

Endnotes

* This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.



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