Environment and Climate Regional Accession Network ECRAN

Environment and Climate Regional Accession Network (ECRAN)

Report on ECRAN Workshop on the National Emission Ceilings Directive

26-28 May 2015, Tirana

Enviroment and Climate Regional Accession Network ECRAN

ENVIRONMENTAL AND CLIMA REGIONAL NETWORK FOR ACCESSION - ECRAN

WORKSHOP REPORT

Activity No 2.5

WORKSHOP ON THE NATIONAL EMISSION CEILINGS DIRECTIVE

26-28 MAY 2015, TIRANA, ALBANIA

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

Table of Contents

LIST OF ABREVIATIONS	
CAFE	Clean Air For Europe
CNG	Compressed Natural Gas
DG	Directorate General
EC	European Commission
EEA	European Environmental Agency
EMEP	European Monitoring and Evaluation Programme
ETS	Emission Trading System
EU	European Union
GAINS	Greenhouse Gas and Air Pollution Interactions and Synergies
GDP	Gross Domestic Product
ICO	Company Identification Number
IIASA	International Institute for Applied Systems Analysis
IIR	Informative Inventory Report
LEGMC	Latvian Environment, Geology and Meteorology Centre
LRTAP	Long-range Transboundary Air Pollution
MS	Member State
NACE	Nomenclature Statistique des activités économiques dans la Communauté européenne
NEC	National Emission Ceiling
NEIS	National Emission Information System
NFR	Nomenclature for Reporting
NGOs	Non-governmental organisations
NMVOC	Non-methane volatile organic compound
PAM	Policies and Measures
SEECCA	Southern and Eastern Europe, the Caucasus and Central Asia
TACCC	Transparency, Accuracy, Consistency, Comparability and Completeness
UNFCCC	United Nation Framework Convention on Climate Change
WAM	With additional measures
WEM	With existing measures
WOM	Without measures

I. Background/Rationale

With the help of a questionnaire the training needs of ECRAN beneficiaries (see further info at http://www.ecranetwork.org/) on air quality was assessed. Based on the replies the second out of up to four trainings was held in late May in Tirana, Albania. Overall the training aimed at providing assistance to the implementation of the National Emission Ceilings Directive (NEC-Directive, Dir. 2001/81/EC):

1. Emission inventories for the four NEC pollutants;
2. Emission projections;
3. National NEC programmes.

The main subjects in the consecutive workshops could be, dependent on the beneficiaries needs:

- Implementation of the Stage II VOC Petrol Directive;
- Implementation of Sulphur Content in Liquid Fuels Directive.

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

II. Objectives of the training

General objectives

To assist ECRAN countries in the implementation of air quality related directives

Specific objectives

Capacity building regarding improving emission inventories, developing projections for emissions, and developing and implementing programmes to reduce emissions of the pollutants and to achieve certain targets. Further specific topics will be discussed in working groups.

Results/outputs

The expected results are:

- improved understanding of the requirements of the NEC Directive and their effective implementation;
- exchange of information on the topics described above between ECRAN countries and European Member States.

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

III. EU policy and legislation covered by the training

Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants (NEC Directive) set upper limits for each Member State for the total emissions in 2010 of the four pollutants responsible for acidification, eutrophication and ground-level ozone pollution (sulphur dioxide, nitrogen oxides, volatile organic compounds and ammonia), but leaves it largely to the Member States to decide which measures – on top of Community legislation for specific source categories - to take in order to comply.

The NEC Directive 2001/81/EC is currently being reviewed as part of The Clean Air Policy Package. The proposal repeals and replaces the current Union regime on the annual capping of national emissions of air pollutants, as defined in Directive 2001/81/EC. By doing so, it ensures that the national emission ceilings set in the current Directive 2001/81/EC for 2010 onwards for SO_2, NOx, NMVOC and NH_3 shall apply until 2020 and establishes new national emission reduction commitments ("reduction commitments") applicable from 2020 and 2030 for SO_2, NOx, NMVOC, NH_3, fine particulate matter ($PM_{2.5}$) and methane (CH_4).

The workshop also covered the Gothenburg protocol under the Convention on Long-range Transboundary Air Pollution (LRTAP)

The 1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone and its 2012 amended version sets national emission ceilings for 2020 and beyond for five pollutants: sulphur (SO_2), nitrogen oxides (NOx), volatile organic compounds (VOCs), $PM_{2.5}$ and ammonia (NH_3). It thus builds on the previous Protocols that addressed sulphur emissions (1985 Protocol; 1994 Protocol), VOCs and NOx. These ceilings were negotiated on the basis of scientific assessments of pollution effects and abatement options. Parties whose emissions have a more severe environmental or health impact and whose emissions are relatively cheap to reduce have to make the biggest cuts. The Protocol also sets tight limit values for specific emission sources and requires best available techniques to be used to keep emissions down.

The 1979 Geneva Convention on Long-range Transboundary Air Pollution was the first international legally binding instrument to deal with problems of air pollution on a broad regional basis. It was signed in 1979 and entered into force in 1983. It has since been extended by eight specific protocols. The Convention is one of the central means for protecting our environment. It has, over the years, served as a bridge between different political systems and as a factor of stability in years of political change. It has substantially contributed to the development of international environmental law and has created the essential framework for controlling and reducing the damage to human health and the environment caused by transboundary air pollution. It is a successful example of what can be achieved through intergovernmental cooperation.

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

IV. Highlights from the training workshop

Day 1 – Tuesday, 26 May 2015, Tirana

Overview Status – NEC Revision and Revised GP – Christian Nagl, ECRAN

At the opening of the workshop, a brief introduction was made by Mr. Nagl, introducing a three-day agenda and its activities. Each day was organised in a way that after the presentations and experiences from EU Member States (MS), time was provided for a general discussion on specific topic. General topics included National Emission Ceiling (NEC) Directive and emission inventories, emission projections from EU perspective and NEC programmes. Experience from four MS was presented from the experts from Croatia, Latvia, Slovakia and Slovenia.

Second part of each afternoon session was dedicated to the "tour de table" discussions relevant on the topics presented that day. Participants were given some time for internal discussion and then presentation followed by questions and answers session.

Revision of NEC Directive – Elisabeth Kampel, Environment Agency Austria

The NEC Directive is currently being revised. New reduction commitments were proposed after bilateral consultations with the International Institute for Applied Systems Analysis (IIASA), however, discussion is still ongoing with the European Council and the Parliament. Main proposed changes so far include:

- Partial request of the European Parliament of binding targets for 2025;
- CH_4 commitments might be deleted;
- Shipping flexibility might be deleted;
- Reporting requirements is under construction.

Proposed emission reductions by 2030 based on new IIASA calculations are shown in the table below.

EU28	2005	2012	2020	2030
kt			GP	67% GC
SO_2	7710	-48%	-59%	-81%
NO_x	11531	-27%	42%	-65%
$PM_{2.5}$	1414	-12%	-22%	-54%
NH_3	3878	-5%	6%	-25%
VOC	8775	-24%	-28%	-46%

The emission reductions should lead to a reduction of the impact on life expectancy from exposure to $PM_{2.5}$ from 8.5 months on average in EU28 to 5.3 months in 2030. Also the percentage of ecosystems where critical loads for eutrophication are exceeded should be reduced. Compliance with NO_2 and PM_{10} limit values should be achieved in most areas (save some areas in southern Poland for PM_{10} and in Northern Italy for NO_2). The costs amount to 2.2 billion € on top of the costs for measures under current legislation (89.6 billion €).

The Gothenburg Protocol was revised as well. The original Gothenburg Protocol to abate acidification, eutrophication and ground-water ozone was signed in 1999 and put into force in 2005. The revision process took five years of negotiations, and it was finalised in 2013. Revision was done on reporting

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

guidelines, technical annexes, and harmonisation with other international emission reporting requirements, and adding several new issues:

- Reduction commitments for $PM_{2.5}$;
- Voluntary reporting Black Carbon;
- Revision of technical annexes;
- Flexibility mechanism was adjusted.

Another issue of revision was assistance in countries in Southern and Eastern Europe, the Caucasus and Central Asia (SEECCA) in ratifying and implementing various protocols under the convention.

According to the adjustment procedures, notification must be sent by 15 February and the provision of supporting documents by 15 March. In 2014, two inventory adjustment applications were accepted by the European Monitoring and Evaluation Programme (EMEP) Steering Body, NO_x adjustments from Germany, and NH_3 adjustment from Denmark.

Long-range Transboundary Air Pollution (LRTAP) Convention was ratified by all ECRAN beneficiary countries, except Kosovo*. The status of reporting of the inventory files in the Nomenclature for Reporting (NFR) format and of the Informative Inventory Report (IIR) for 2015 can be seen on the following table.

	2015-NFR	2015-IIR
Albania	NR	NR
Bosnia and Herzegovina	NR	NR
Kosovo*	NA	NA
Montenegro	NR	NR
Serbia	✓	✓
Turkey	✓	✓
FYR of Macedonia	✓	

Emission Inventories: European Perspective – Elisabeth Kampel

Ms. Kampel from the Environment Agency Austria begun the presentation by stating the main tasks of the Agency, including compilation of EU and Austrian submission under LRTAP and NEC Directive, hosting of the Centre on Emission Inventories and Projections (CEIP), participation in TFEIP meetings, quality checking, etc. However, focus was put on LRTAP Convention.

EMEP programme provides scientific support to the LRTAP Convention on:

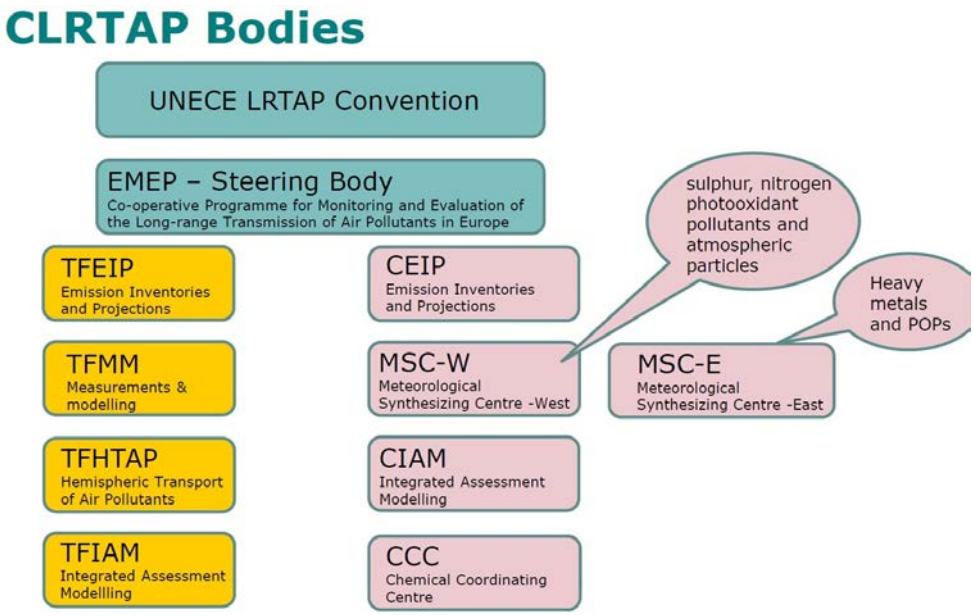
- Atmospheric monitoring and modelling;
- Emission inventories and emission projections;
- Integrated assessment modelling;
- Hemispheric transport of air pollution.

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

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

LRTAP Convention bodies contain five programme centres and four task forces, and their organisation is shown on the picture below.



NEC Directive and LRTAP are very much linked. EU ratified LRTAP Convention in 1982 and the Gothenburg Protocol in 2003. Reporting under NEC and LRTAP are independent from each other but harmonised. EU LRTAP inventory preparation was presented, as well as gap filling at EU level for LRTAP in details.

There are several requirements that should be followed regarding inventories, and that are transparency, accuracy, consistency, comparability and completeness (TACCC). For transparency reasons, inventory report should ease the technical review, and ease assessment of compliance. Notation keys used in the report are as follows:

- "**NE**" – not estimated – for activity data or emissions not estimated;
- "**IE**" – included elsewhere – for emissions estimated but included elsewhere;
- "**C**" – confidential information – for emissions of which the reporting could lead to disclosure of confidential information;
- "**NA**" – not applicable - for activities under a given source category that do occur within the party but do not result in emissions of a specific pollutant;
- "**NO**" – not occurring - for categories or processes within a particular source category that do not occur within a Party;
- "**NR**" – not relevant;

LRTAP Convention inventory review obtains three stages:

- Stage 1 – checks for timeliness, completeness and formats;
- Stage 2 – checks for completeness, recalculations, time consistency, key category analysis, inventory comparisons, comparability;
- Stage 3 – in-depth reviews of selected inventories.

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

Implementation of NEC Directive: Croatian Experience – Robert Rocek, Croatian Ministry of Environmental and Nature Protection

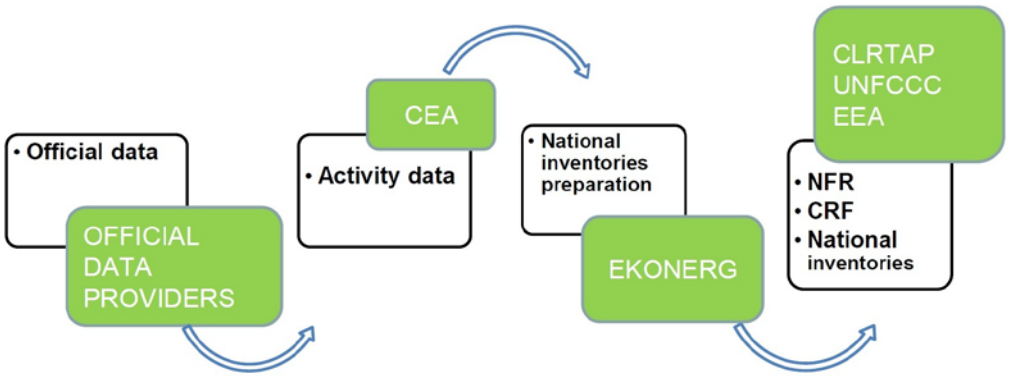
Air protection in the Republic of Croatia is regulated by Environmental Protection Act, and Air Protection Act and other legislation based on them. Legislation based on the Air Protection Act sets legal frame for main air protection topics. Croatia became a party to the Convention on LRTAP in 1991. Ratification of other international treaties happened between 1992 and 2008. With the Air Protection Act, NEC Directive was fully transposed in Croatia.

Responsibilities for the inventories compilation, preparation and reporting in Croatia is divided among several institutions. Thus, the country has a decentralised model of IIR preparation:

- Ministry for Environmental and Nature Protection – National focal point for LRTAP Convention;
- Croatian Environmental Agency – Responsible for inventory preparation and selection of executive institution for annual inventory preparation;
- Energy Research and Environmental Protection Institute (EKONERG) – Executive institution for preparation of Croatian IIR.

There are official data providers for every sector, so for the energy sector, data is obtained from national energy balance, Environmental Pollution Register and Statistical yearbook, that is, from the Ministry of Economy, Croatian Environmental Agency and Central Bureau of Statistics. Depending on the sector, beside the three mentioned, other providers can be included, such as Ministry of Interior and Croatian Centre for Vehicles (transport), International Fertilizer Association (agriculture), etc.

Data flow starts from the official data providers, and ends with the submission to the United Nation Framework Convention on Climate Change (UNFCCC), European Environmental Agency (EEA) and other international and European institutions. The flow is shown on the following picture.



The first national inventory and IIR of the Republic of Croatia was submitted in 1998 for the emissions from 1996. Having 1990 as a base year, until 2013, emissions decreased in Croatia. For example, SO_2 emissions decreased for more than 90%, while lead pollutants decreased for almost 95%. Majority of the pollution comes from the energy sector and industrial processes. Agriculture is the main source of emissions of NH_3, while emissions originating from forest fires are reported but not included in national total emissions.

The process of inventory preparation has three phases:

- Planning – activities related to organisational and technical aspect of inventory preparation;
- Preparation – main phase in the process of inventory preparation;

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

- Reporting and archiving – last phase in the process.

Methodologies used in inventory preparation include utilisation of two approaches, "bottom-up" and "top-down" approach. Combination of these two approaches is reasonable in a way of achieving a balance between resources available and quality of estimations. Software applications used for emission calculations include CollectER database for all sectors, COPERT III for road transport and other software such as AE-DEM for air emissions.

Current problem that the country faces is taking over the activity data from National Environmental Pollution Register and transportation data from ReportER into the excel tables.

Implementation of NEC Directive: Latvian Experience – Ieva Sile, Latvian Environment, Geology and Meteorology Centre

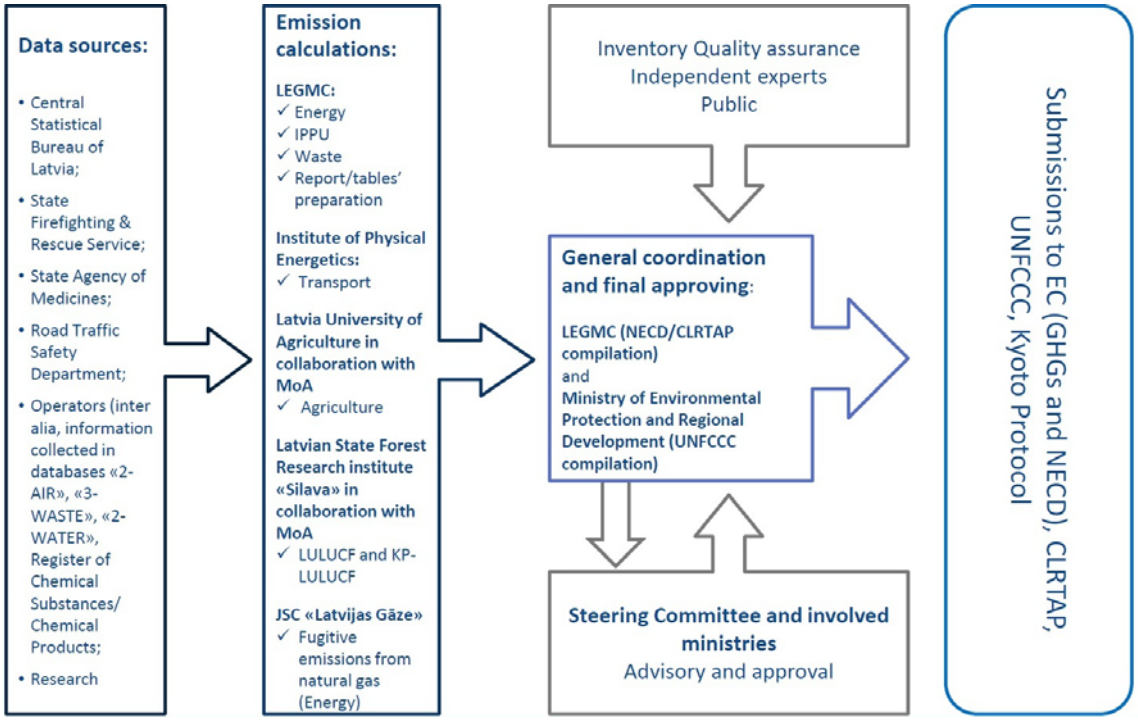
Latvia started to report data under NEC Directive before its accession to the EU, on voluntary basis. First legislation came into force in 2002, "Regulation of total national air emission ceilings". National emission ceilings for the following pollutants were indicated in these regulations, as in the original Gothenburg protocol. However, the new national emission ceilings were compiled for 2010, as shown in the following table.

	Emission in 1990 (kt)	Emission ceiling in 2010 (kt)	Emission reduction in 2010 (%)
SO_2	119	101 (instead of 107)	-15 (instead of -10)
NO_x	93	61 (instead of 84)	-34 (instead of -10)
NH_3	44	44	0
NMVOC	152	136	-11

Considering historical documents, some changes to NEC Directive were proposed, so experts from Latvia went to IIASA in 2006 to clarify data calculation methods. Data from Latvia was exchanged with IIASA, however, the proposal was not accepted and the Directive remained unchanged. In Latvia, NEC emissions have been calculated together with GHG, so the same experts are preparing the reports for UNFCCC, LRTAP and NEC Directive. National system for NEC is in accordance with the regulation from 2012, "Regulations regarding the National Inventory System of Greenhouse Gas Emission Units", and it is formed by responsible ministries, institutions which provide activity data, and institutions which calculate emissions. Organisational structure of the national system was explained, see scheme below.

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium



In contrast to 2002 when there was only one expert calculating all emissions, now there are 10 part-time experts.

Since 2015, NFR14 is used for reporting of NEC emissions. However, the calculations are mostly done in excel sheets. Thus a problem occurs since there is no automatic filling in NFR tables, which can result in numerous mistakes during copying process, or the experts can fill in the template one after another, which is very time-consuming.

Latvia is using "2-Air" web-based reporting system that is submitted once a year. The operators of facilities who have a pollution permit have to report on the activities related to pollution of the ambient air. Around 3000 facilities are reporting to "2-Air". When operators fills in the form, State environmental services reviews the report and accepts it or rejects it, and when accepted, the report can be published publically. "2-Air" data is used for the preparation on of data for international databases, emission inventories and Central Statistical Bureau.

In comparison to 1990 base year, NO_X emissions decreased by approximately 60% in 2010, SO_2 emissions by more than 95%, NH_3 emissions by around 65%, and Non-methane volatile organic compound (NMVOC) by around 38%.

Implementation of NEC Directive: Slovenian Experience – Martina Logar, Slovenian Environment Agency

Slovenia is an EU MS since May 2004, and it has reported its first national emission inventory in December 2004. Last reporting was 17 December 2014, reporting the final data for 2012 and provisional data for 2013. NFR is a standardised format for reporting and it was used for the first time in the last report in 2014. The Slovenian Environmental Agency is responsible for the annual preparation and submission of the national emission inventory, and it is an independent body of the Ministry of the Environment and Spatial Planning. Data flow in the Slovenian inventory system is harmonised with GHG national emission inventory preparation. Apart from the relevant Ministries,

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

the Statistical Office, Agricultural Institute, Slovenian Forestry Institute and Enterprises are also involved in the inventory preparation as well. Sectoral analysis according to NFR include:

- NFR 1 A – Energy: Fuel Combustion: Energy Industry, Manufacturing Industries and construction, transport, other sectors.
- NFR 1 B – Energy: Fugitive Emissions from fuels;
- NFR 2 – Industrial Processes and Product use: Mineral products, chemical Industry, Metal production, other Solvent and product use;
- NFR 3 – Agriculture: Manure management, crop production and agricultural soils;
- NFR 4 – Waste: Solid waste disposal on land, composting, incineration, wastewater handling.

The review of data reported under NECD is performed jointly with those reported under LRtAP Convention. The review process is done in three stages:

- **Stage 1**: An initial check of submissions for timeliness, completeness and formats: every year;
- **Stage 2**: A synthesis and assessment of all national submissions with respect to consistency, comparability, key source analysis, trends and implied emissions factors of data with recommendations for data quality improvement: every year;
- **Stage 3**: In-depth reviews of selected inventories, by pollutant, country, sector: every 4-5 years. Slovenia was reviewed in June 2011, and next review is scheduled for June 2015.

Implementation of NEC Directive: Slovakian Experience – Ivana Duricov, Slovak Hydrometeorological Institute

In the beginning of the 90s, difficult political changes occurred in Europe, and Slovakia split from former Czechoslovakia. However, this issue did not bother the country to establish strict air protection through legislation in 1991. National Emission Information System (NEIS) was established in 1998 and the database was developed in order to fulfil the national legislation in air quality and the requirements in pollutants fees decisions.

In May 2000, the twinning project “Strengthening of Institutions in the Sector of Air Pollution” was launched, in order to provide help to Slovak authorities to fully transpose the NEC Directive. The project resulted in proposals for amendments to legal regulations concerning air protection and the transposition into Slovak legislation. The new Clean Air Act and related ministerial decrees had been adopted by the end of 2002.

In Slovakia, data flow for the inventory outputs starts with the collection of data from various institutions such as Statistical Office, research centres, external experts, and Ministries. NEIS is in charge of yearly collection of data from all industrial installations and producers of pollutants. After data collection and verification the data is reported to LRTAP and EU. Basis for NEIS was developed in 1989, jointly for Czechoslovakia, called REZZO. In 2000, NEIS was put into operation and replaced the old system REZZO. Data collection and processing was undertaken from 2001 on, while NEC Directive entered fully into force in 2004.

According to NEIS, sources are divided into three categories:

- **Large sources** – stationary sources containing stationary combustion units having cumulative heating input over 50 MW;
- **Medium sources** – having cumulative heating input between 0.3 and 50 MW;

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

- **Small sources** – having cumulative heating input less than 0.3 MW.

Emission inventory processing in the energy sector was described. In Slovakia, bottom-up approach is being used, the process starts with detailed technical specification and ends with processing and verification. As for the transport sector, liquid fuels are used, as well as compressed national gas (CNG) and biomass.

NEC Directive pollutants include NO_x, SO_X, NMVOC and NH_3 pollutants. Their decrease was schematically shown starting from year 2000. For both for NO_x and NO_3, pollution decreased by approximately 25%, while for SO_X emissions decreased by 55%. NMVOC remained more or less on the same level since 2000.

Tour de table on NEC/GP Implementation and Emission Inventories

The afternoon session of the first day of the workshop was dedicated to the discussion and presentation of ECRAN beneficiary countries' NEC and Gothenburg Protocol implementation and emission inventories. Representatives from each of the country gave a short presentation of the current situation of the implementation process.

- **Albania** – National Action Plan on Air Quality will be developed by 2016, and it will provide basis for the NEC Programme;
- **Bosnia and Herzegovina** – National Plan on Emission Reduction is under preparation;
- **Kosovo*** - Kosovo* adopted a Law on Air Protection, while transposition of NEC Directive is planned for 2017, putting priorities on inventory, projections, and programme;
- **Former Yugoslav Republic of Macedonia** – national Plan for Emission Reduction is in the process of preparation, planned to be finished by 2017. Air Quality plans on local level have already been prepared and by the end of 2015, Plan for Energy and Industry should be completed;
- **Montenegro** – LRTAP protocols were adopted and implemented in 2010. National Strategy and Action Plan for 2013-2016 included the adaptation of NEC Directive. However, currently the main problem is $PM_{2.5}$;
- **Serbia** – Serbia has not yet developed an Emission Reduction Programme, but the plan is to finish it by the end of 2018. Sectoral policies and measures should be specified, and the implementation period is planned for 2016-2018. Compliance period is 2018-2027.
- **Turkey** – GHG Action Plan has already been prepared. Preparation of the Action Plan is in the process.

Day 2 – Wednesday, 27 May 2015, Tirana

Emission Projections: European Perspective – Elisabeth Kampel

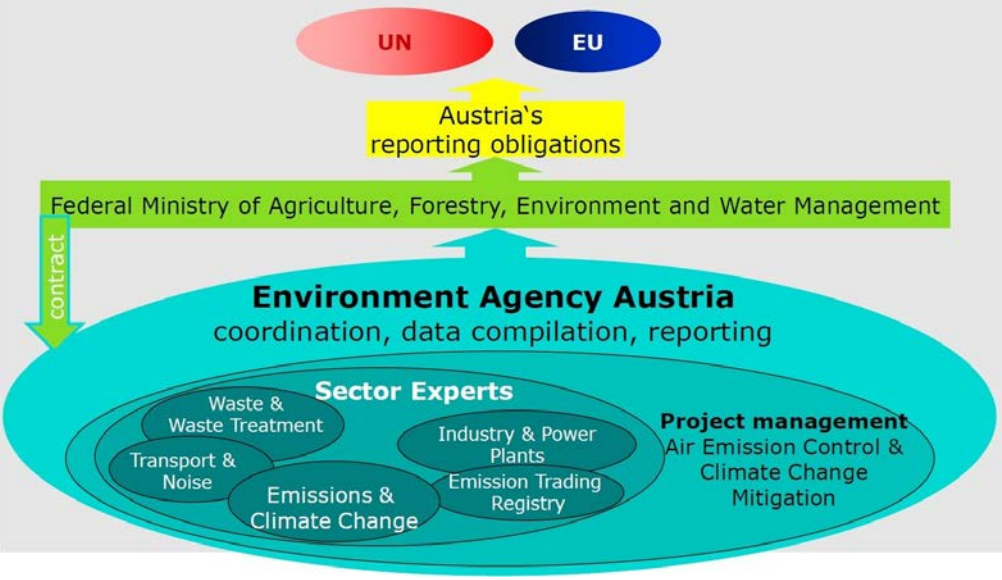
Ms. Kampel started the presentation with the basic of IIASA-GAINS target setting. GAINS is the Greenhouse Gas and Air Pollution Interactions and Synergies Model that provides a consistent framework for the analysis of co-benefits of reduction strategies from air pollution and GHG sources. GAINS has been developed by IIASA and provides an integrated assessment framework describing the pathways of atmospheric pollution from anthropogenic driving forces to relevant health and

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

environmental impacts. It brings together information on future economic, energy and agricultural development, emission abatement potentials and costs, atmospheric dispersion and environmental sensitivities towards air pollution. IIASA-GAINS target setting rely on the process of optimisation. The optimisation concept provides a basis for emission reduction accords. By calculating country- and sector-specific reduction requirements for any exogenously specified environmental target, the GAINS optimisation can provide results that are of immediate relevance to negotiators because they meet the spatial and temporal scales that are relevant for decision makers.

The institutional arrangements for the Austrian National System was presented, starting from the sector experts to the reporting obligations to International organisations, see below.



For each of the greenhouse gases and air pollutants, GAINS estimates emissions based on activity data for a historic year (AD_S), the growth factor for the activity data (GF_n), tand the emission factor appropriate for the future emission rates of the source ad a whole in year n (Ef_n). E_n presents the source emission calculated for the year n.

$$E_n = (AD_S * GF_n) * (Ef_n)$$

However, different methods are used for each of the tier emission standards. Also, key parameters were presented, both macroeconomic and sector specific that include Gross Domestic Product (GDP), population, oil and gas prices, housing characteristics, waste generation, etc.

There are three possible emission mitigation scenarios:

- Without measures (WOM) – excluding all policies implemented, adopted or planned;
- With existing measures (WEM) – including currently implemented and adopted measures;
- With additional measures (WAM) – including planned policies and measures.

Projections show that in WOM scenario, emissions could be more than doubled by 2030 using the 1980 as a base year (peaking in 2001 so far). With WEM, emissions would more or less remain the same as in 1980, but with WAM, they can be cut for more than 50%.

In the end, recommendations were given for the producing proper emission projections:

- Use inventory as starting point;

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

- Define scenario using stakeholders' consultation;
- Concentrate on important categories;
- Use the same expert for the calculation of inventories and projections;
- Keep unimportant key categories under Tier 1;
- Identify improvements needed for next project preparation;
- Provide documentation;
- Quality checks, compare with inventory and international projections.

Emission Projections: Croatian Experience – Robert Rocek

Croatian Environmental Agency, an independent public institution established by the Croatian Government in 2002 is a competent authority for collecting, consolidating, processing, environmental data at the national level as well as developing and monitoring the environment, and reporting. The Agency is central intelligence body cooperation with EEA and other bodies and institutions of the European Commission.

Based on the Gothenburg Protocol and the Regulation on Emission Quotas for certain Pollutants in the Republic of Croatia, the Government of the Republic of Croatia in 2009 adopted the Programme for Gradual Emission Reduction of certain Pollutants in the Republic of Croatia for the period until the end of 2010, with Emission Projections for the period 2010-2020. However, the revision of Gothenburg Protocol defines the emission reduction commitments for NEC Directive pollutants up to 2020 and beyond. Projection of the basic scenario has been performed in three basic steps:

- **First step**: Determination of key emission sources of certain pollutant and its share in the overall emission of monitored pollutant in 2007 in the Republic of Croatia;
- **Second step**: Including data on activity from available development plans;
- **Third step**: In cases where development plans were not available, future data on activity were assumed. The above mentioned was worked out by monitored pollutants and key sectors.

Considered scenarios for the preparation of the programme and the study on the correction of emission projections, apart from three basic scenarios, WOM, WEM, WAM, five more scenarios were included:

- Scenario with crisis under full recovery (CS1) – assuming constant GDP growth rate of 4% in the period 2014-2020;
- Scenario with crisis under mild recovery (CS2) – assuming constant GDP growth rate of 2.2% in the period 2014-2020;
- Scenario with crisis and additional measures for NOx (CS1_WAM+ and CS2_WAM+) – including all WAM scenario measures and adding more measures for NOx;
- Scenario with crisis and additional measures for NOx and with Industrial Directive (CS1_WAM++ and CS2_WAM++) – 30% lower NOx emissions and 60.5% lower SO_2 emissions by 2020;
- Scenario with crisis and with a correction for the VOC (CS1_WM-corr and CS_WM-corr).

Results of emission projections for NEC pollutants were graphically presented for all applied scenarios. For SO_2, best scenarios would be CS2_WMS and CS1_WAMS++, for NO_x CS2_WAMS+ and CS1_WAMS, and for NMVOC it would be CS2_WAMS.

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

Emission Projections: Latvian Experience – Ieva Sile

In Latvia, the responsible institution for data calculations and reporting of projections is the Latvian Environment, Geology and Meteorology Centre (LEGMC). At the beginning, projections data were prepared by external experts and then calculated by both LEGMC and external experts. Projections were not calculated every year due to lack of funding, but at least every four years for UNFCCC reporting and in case when needed. According to the Regulation from the Cabinet of the Ministers from 2003, projection data have to be reported annually. Since 2011, projection data reporting is stated in the Regulations of the Cabinet of Ministers for total national air emission ceilings starting with 2012 every five years. Four institutions are providing relevant parameters:

- **Ministry of Economy** – macro economy, energy, industry, construction, agriculture;
- **Ministry of Transport** – transport;
- **Ministry of Agriculture** – agriculture, forestry;
- **LEGMC** – waste management, waste water management.

Projection calculations by sector were presented including the method used:

- Energy – MARKAL model used, bottom-up approach, including environmental factor;
- Transport – COPERT IV is being used;
- Industrial Processes – calculated activity data by using projected GDP in particular industry in combination with trend of historic time series;
- Solvents – extrapolation from moving mean of three years, it has been used since 2002;
- Agriculture – Data provided by the Ministry of Agriculture,, long-term macroeconomic projection;
- Waste – State planning documents, extrapolation.

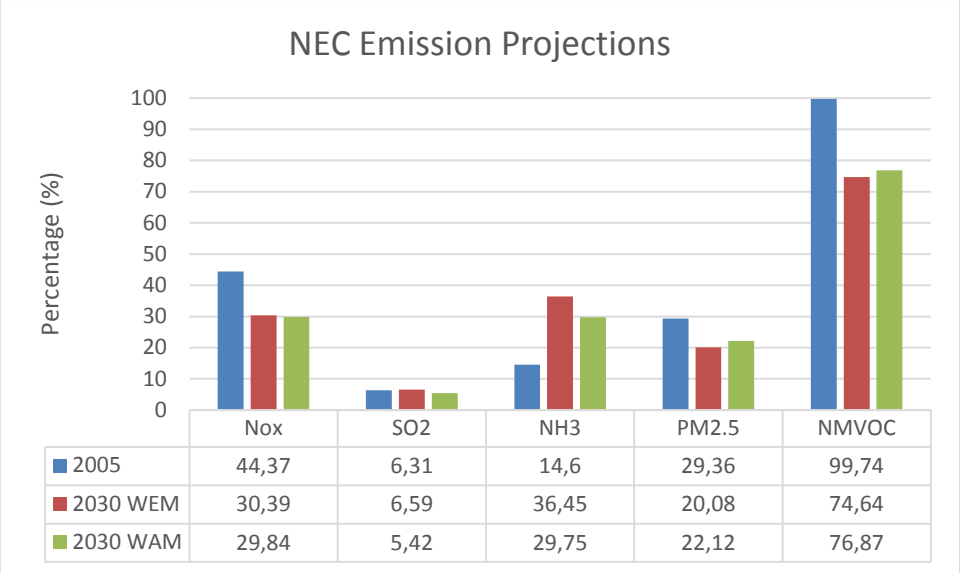
Two possible scenarios for emission projections are WEM and WAM. However, Latvia has traditionally used wood as a fuel both in commercial and residential sectors, therefore, emissions in WAM scenario for $PM_{2.5}$ and NMVOC increases. It is also related with low Tier (Tier 1), which does not distribute residential combustion installation, which has to be improved as soon as possible.

Latvian projections for NO_X, SO_2, NH_3, $PM_{2.5}$ and NMVOC emissions were presented based on data submitted under LRTAP Convention in March 2015 for 2020, 2025 and 2030.

The projections show that emissions will decrease by using WEM or WAM scenarios, except in the case of NH_3. It was already mentioned that emissions in the WAM scenario for $PM_{2.5}$ and NMVOC increases due to use of wood as a fuel, although the difference is small between WEM and WAM scenarios.

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium



	Nox	SO2	NH3	PM2.5	NMVOC
2005	44,37	6,31	14,6	29,36	99,74
2030 WEM	30,39	6,59	36,45	20,08	74,64
2030 WAM	29,84	5,42	29,75	22,12	76,87

One necessary improvement includes the change from Tier 1 to Tier 2. Tier 2 in the residential sector is currently being developed and will most probably be used from 2016 on. The higher the tier the more precise the results, although it requires more resources, but it provides good basis for emission projections.

Emission Projections: Slovenian Experience – Martina Logar

Slovenia reported its first emission projections for 2010 under NEC Directive in December 2004, the same year Slovenia became a part of the EU. Last reporting for the country was in December 2014, and it included projected emissions for 2020, 2025 and 2030, having 2011 as a base year. Projected total emissions are done according to two scenarios, WEM and WAM. The Ministry of Environment and Spatial Planning is the responsible organisation for Slovenian emission projections.

The methodology used for preparing national emission projections is taken from the latest version of EMEP/EEA air pollutant emission inventory guidebook. Methodologies for each of the sectors were described:

- **Energy** - emission projections from energy sources based on projections of energy use prepared in the scope of long-term energy balances for the period 2012 – 2030 prepared by the Ministry of the Economy. A system of models is used for emissions projections and several scenarios;
- **Transport** – two models are used for transport emission projections, an energy model used for the assessment of final energy consumption, and a model which calculates the vehicle fleet structure;
- **Industrial processes and product use** - Emission projections from industrial processes sector were calculated on the basis of the historical development and projections of economic activity (production index) and population projections;
- **Agriculture** - Emission projections from agriculture based on the agriculture development strategy prepared by the Ministry of Agriculture. Data on the extent of crop production and domestic animal production were used for projection estimation;

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

- **Waste** - Emission projections from waste sector based on the Operational programme on urban waste management prepared by Ministry of the environment and spatial planning. Emissions from waste landfills have been estimated on the basis of the projections of the landfilled biodegradable waste.

For each of the sector, reduction measures were listed. Some of the proposed measures in the energy sector include promotion of energy efficiency in industry and generation from renewable energy sources, as well as energy labelling and cogeneration. In the transport sector, it is necessary to provide sustainable transport, promote the use of biofuels and reduce emissions. For the industrial processes, basic measure include emission reduction and lowering solvent content, while for waste and agriculture, it includes emission reduction and rational fertilisation (for agriculture).

The projection with measures and the projection with additional measures differ in energy sector, transport and agriculture. For all other sources the projections are equal. In the energy sector, the WAM projection assume faster replacement of boilers fuelled by oil, in the transport sector to keep the price of fuel above the prices of neighbouring countries, and in agriculture sector, projections WAM assume improvements of the efficiency of domestic animal breeding.

Uncertainties of the projections arise usually from the following issues:

- Uncertainty of the statistical data and emission factors used as a basis for the projections;
- Models used for the projections, which present a simplified picture of the actual events;
- Uncertainty of the scenarios for the implementation of policies and measures since they change over time;
- It is difficult to envisage the actual impact of measures since they are influenced by many factors;
- The uncertainties of future economic, technological and social developments, including the uncertainty of energy prices, growth in the energy supply and demand, the behaviour of the main players in the energy market.

Projections for the NEC Directive pollutants for 2030 are shown below.

	2010	2030	
		WEM	**WAM**
NO_x	≈ 48,0	18,7	17,8
NMVOC	≈ 38,0	25,2	24,2
SO_2	≈ 10,0	3,4	3,4
NH_3	≈ 19,0	17,4	17,3

The differences between WEA and WAM are small. Slovenia met the NED target values in 2013 for all pollutants. However, according to the WAM projection, it is expected that it will be difficult to fulfil proposed reduction commitments for 2030 for all pollutants except SO_2. Still, the largest uncertainty for Slovenia in the preparation of projections comes from the transport sector.

Emission Projections: Slovakian Experience – Ivana Duricova

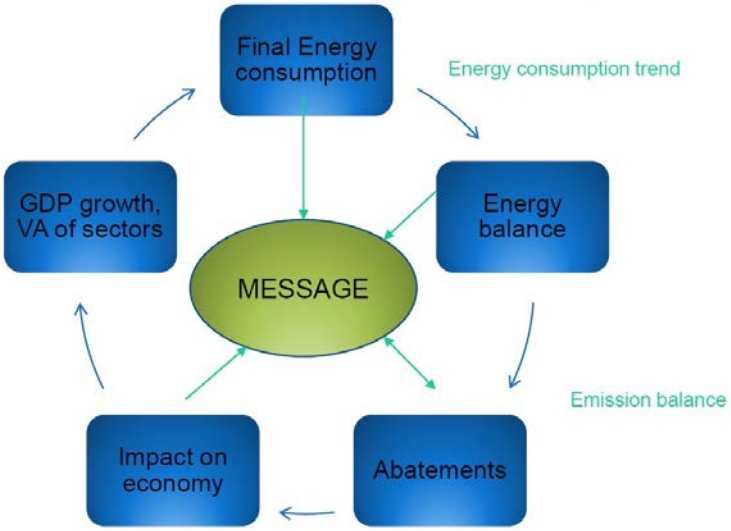
In Slovakia, there are four different methods used for seven sectors:

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

- MESSAGE – for energy sector and industrial processes;
- TREMOVE – for road and non-road transport;
- Expert approach – for agriculture sector and solvents;
- Spreadsheet developed by experts – for waste sector.

Prognosis of macroeconomic parameters were a base for the estimation of the trend of the final energy consumption. Energy balance was calculated based on the data from NEIS/Emission Trading System (ETS) and energy statistics. Other data inputs include fuel prices, investment costs, etc. Modelling in the energy sector by using the above mentioned MESSAGE model was described in details, as on the following picture. Energy consumption trend can be seen from the energy balance that provides information about the emissions. Emissions however, impact the economy and GDP growth, crucial for the final link in the circle, which is energy consumption.



Some of the problems that occur are quantification of PAMs projections. Also, MESSAGE is a linear programme and it does not reflect changes in economic indicators. Consistency of data in the energy sector is also an issue, since energy statistics and NEIS database for the same sources differs. However, new data will be available, a data that was split by NACE (Nomenclature Statistique des activités économiques dans la Communauté européenne, Classification of Economic Activities in the European Community), Company Identification Number (ICO) and type of energy facilities.

In the agricultural sector, data for emission projections is obtained from the Statistical Office, the Ministry of Agriculture and Rural Development, Central Controlling and Testing Institute in Agriculture, and other relevant experts and institutions. Expert approach is being used in this sector, relying on trends in consumption of fertilisers, number of livestock and agricultural drivers.

NEC Directive emissions were shown for 2005 and 2010. Emissions decreased for all the pollutants. Projected emissions for 2020 and 2030 were given as in the table.

	2020-2029	2030
Nox	36%	48%
NMVOC	18%	32%
SO2	57%	82%
NH3	15%	43%
PM2.5	36%	63%

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

Taking into consideration three possible scenarios, WOM, WEM and WAM, using existing measures and additional measures projects the same amount of emissions, except for NH_3, where WAM scenario shows greater decrease than WEM scenario.

Tour de table on Emission Projections

The afternoon session on the second day was devoted to emission projections in the beneficiary countries. Experts from the MS shortly presented their experience in preparing inventory for projection preparation, which was followed by a discussion and presentation of beneficiary countries statuses.

- **Slovenia** – two teams were involved, while projections were calculated by an external contractor due to lack of resources;
- **Latvia** – Action Plan was developed by five experts;
- **Austria** – Seven sector experts plus quality analysis manager and data manager;
- **Slovakia** – one team included with external contracts'
- **Croatia** – one team of four experts from Environmental Agency.

Countries

	Albania	Bosnia and Herzegovina	Kosovo*	FYROM
Institutional Arrangements	Passed Law National Strategy	2 entities 1 person in inventory team	Action Plan 2014	Law Ministry
Ratification	Already done in 2005	Open	NA	IPPP GB protocol 2014
Action Plan and GHG	3rd NCs planned	3rd NCs	Planned	Used to be separated, not are done together
Reporting	Inventory for 2011	planned	Preparation of National Emission Reduction Plan Preparation of Inventory	Started in 2005, completed in 2014
Challenge	Capacity Transparency	2 entities Data collection High level communication	Capacity Finance Stationary sources	Inconsistency with IIASA Historical data Staff Transport
Solution	IPA (2017)			

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

	Montenegro	Serbia	Turkey
Institutional Arrangements	Strategies Legal National Strategy NEC Legislation	Ministry Serbian Environmental Protection Agency (SEPA)	Coordination Board Working Groups
Ratification	HM POPs GB	Law in preparation LCP LRTAP GB Protocol postponed POPs, HM	POPs GB Protocol in process
Action Plan and GHG	BR NCs	Under preparation	Not yet
Reporting	Improved EPA	Reviewed in 2015	Will be done in 2017 excluding POPs and HM
Challenge	Opt-out for thermal PP IT data Transfer	National EFs capacity (2) Projections	Statistics Road transport Energy T1
Solution	Legal framework Improvements	Manual management COPERT IV	Plant specific EF National Inventory Management Specific expertise on VOC and IPCC

Ideas for further TAIEX activities were proposed by the participants and they include:

- Projection models;
- Information/document exchange among ECRAN countries;
- Air Quality data analysis;
- Reporting in new formats;
- Fuel quality;
- E-reporting system;
- Modelling, comparison of different models;
- Inventory preparation;
- Projection preparation;
- Study visits/site visits to EMEP stations;
- Setting NEC.

This Project is funded by the European Union

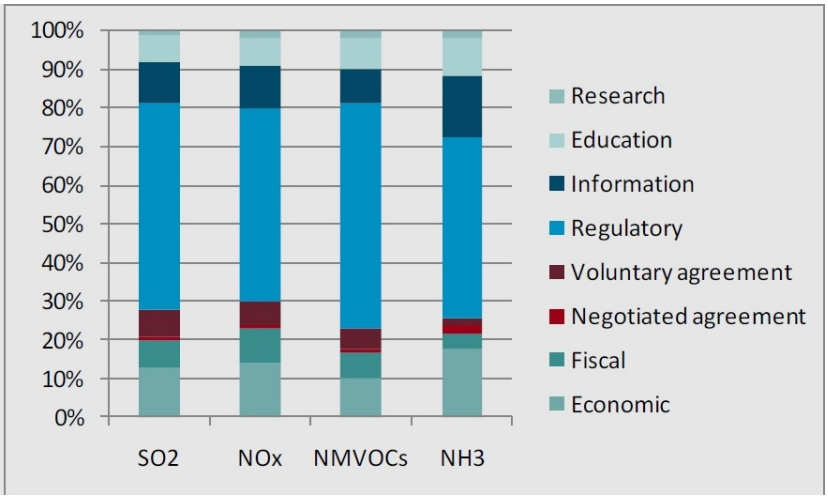
A project implemented by Human Dynamics Consortium

Day 3 – Thursday, 28 May 2015, Tirana

NEC Programmes: European Perspective – Christian Nagl

Guidance on reporting on NEC Directive can be found on EC website, and they were developed by a working group on implementation of the Clean Air for Europe (CAFE) programme.

Article 9 of NEC Directive requires the EC to report the European Parliament and the Council. Types of instruments used to reduce emissions of NEC pollutants are shown on the following graph. The most common instruments used are regulatory instruments, and then comes economic, fiscal and research.



Before report adaptation, consultations must take place, and with public, stakeholders, Non-Governmental Organisations (NGOs), industry and business associations, and advisory council. In most of the member states, programmes are prepared by environmental ministries in coordination with other bodies. A coordination between Air Quality and Climate Change programmes was established in many programmes. Addressed key sectors include energy, industry, transport and agriculture. Key measures for each of the sectors include:

- **Energy sector** – NO_x trading scheme, emission limit values;
- **Transport** - congestion charge, low emission zones, road pricing, and financial incentives;
- **Industry** – EU Directives, voluntary agreements;
- **Agriculture** – reduction of livestock, promotion of low emission, alteration on animal housing and feed, use of anaerobic digesters for biogas production
- **Domestic sector** – improving energy efficiency, low NO_x or type-approved boilers

Examples of best practice programmes were presented, including the Cyprus National Programme report from 2006, Portuguese national Emission Ceiling programme Report from 2006, and United Kingdom National Programme to combat acidification, eutrophication and ground-level ozone from 2007.

Some MS are still experiencing difficulties with non-compliance, especially for NOx. There is hardly any cooperation between some MS; harmonisation with other legislations is not on a satisfactory level as well. The reasons for non-compliance with NOx ceilings are usually large share of diesel vehicles, new sources, poor data quality, and inadequate measures.

The proposed changes for reporting under the revised NEC Directive include

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

NEC Programme: Croatian Experience – Robert Rocek

In Croatia, implementation of air protection measures is regulated by the Air Protection Act. The current legislative framework on air protection and horizontal legislation prescribe a number of measures and instruments. Main goal of the programme are long-term emission reductions of SO_2, NO_2, VOC and NH_3 in order to improve air quality on area of Republic of Croatia, especially in areas where air quality is classified as of third and second category. The programme analyses emission of the following pollutants: SO_2, NO_2, NMVOC, NH_3, $PM_{2.5}$, and heavy metals.

However, corrections of emission projections were made for NEC Directive pollutants. There was a need for further NOx emission reduction measures in 2020 to achieve emission reductions in line with those of the EU MS, which are between -31% up to -56%. Regarding VOCs emission, Croatia has a higher reduction commitment than the EU average (-25%), which requires further considerations. WEM and WAM scenario projections were presented until 2020.

Emissions	Quotas kt/yr	2000. kt/yr	2020. kt/yr	tt/yr (scenario)
SO_2	70	75	18	42 "with measures"
NO_x	87	75	36	91 "with measures" 85 "with additional measures"
NH_3	30	39,3	21	42 "with measures" 40 "with additional measures"
NMVOC	90	87,6	59	44 "with measures" 34 "with additional measures"

There are many possible scenarios with measures and reduction potentials. For SO_2, NO_2 and $PM_{2.5}$, key emission source is the energy sector. There are three potential measures included:

- Measure 1 – increase energy efficiency in direct energy consumption;
- Measure 2 – increase share of renewable energy sources;
- Measure 3 – application of distributed energy sources.

For NOx emissions, key emission source is production of electricity and heat energy, as well as fuel burning in industry, construction and road transport. Suggested measures in this case are:

- Measure 1 – Installation of DeNOx plants, reduction of share of heavy fuel oil;
- Measure 2 – energy efficiency and use of renewables.

Regarding VOCs, selected measures need to be applied by the end of 2015.

NEC Programme: Latvian Experience - Ieva Sile

In Latvia, regulation for national emission ceilings was adopted in 2003, according to NEC Directive from 2001. As Latvia acceded the EU on 1 May 2004, the first NEC programme was developed until then. Two national programmes were developed, the initial NEC programme from 2004, and the updated one from 2006, with changes on national economy, legislation and emission inventory data.

Data used for NEC is from "2-Air", submitted data under UNFCCC, including projections. Responsible institution for the NEC Directive is the Ministry of Environment Protection and Regional Development,

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

at the time only Ministry of Environment. Five sectors were defined for the policies and measures: energy, transport, industrial processes, solvent use, and agriculture.

Main goal is to ensure that Latvia does not exceed national emission ceilings after 2010. This would be possible only if the following actions are performed:

- Increase proportion of renewable energy sources;
- Increase effective and reasonable use of energy resources;
- Develop environment friendly transport system;
- Support implementation of best available technologies, environment friendly and cleaner production and also improving flue gas systems;
- Implement environment friendly and ammonia emission reducing methods in agriculture;
- Support implementation of environmental management.

Each of the suggested measures for each of the five sectors were presented as well. Latvia did not exceed national emission ceilings in 2010.

A National Development Plan 2020 was established as a start-up of Sustainable Development Strategy of Latvia until 2030. Strategic objective covers highly productive manufacturing and internationally competitive services with export potential. 2020 emission projections are set according to the amended Gothenburg Protocol.

Air pollutant	Base value (2010)	2014	2017	2020
NOx	34	32	29	25
SO_2	3.1	3.5	4.8	6.2
$PM_{2.5}$	27	26	25	23
NMVOC	65	62	58	53
NH_3	17	17	16.5	16

In order to achieve emission levels according to the Protocol and revised NEC Directive, methodology must be updated, meaning switching to Tier 2 from Tier 1. Problematics sectors must be revised (energy and agriculture), as well as problematic pollutants (NOx, NMVOC, NH_3).

NEC Programme: Slovenian Experience – Martina Logar

As previously mentioned, Slovenia submitted its first National Programme to the EC in 2005, while revision was submitted in 2007, for the National Programme 2006. The programme contained preliminary emission inventories for 2005 and final inventories for 2004. Projections were made by using WEM scenario. Responsible institution for the preparation of the National Programme was the Ministry of Environment and Spatial Planning, assisted by Slovenian Environmental Agency, Agricultural Institute, National Institute of Chemistry and Jožef Stefan Institute.

The National Programme has been prepared by the Ministry of the Environment and Spatial Planning, followed by public consultation and intergovernmental judgement and adopted by the Government of the Republic of Slovenia. The Programme has been harmonised with the programme for limiting

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

greenhouse gas emissions and with the latest Slovenian submission under the EU Monitoring Mechanism Decision.

General consultation with public, industry and NGOs has been undertaken as part of the usual government practice. When the draft National Programme was announced, it has been given 30 days for comments and suggestions. Slovenia expected to meet its NEC targets for 2010 under WEM scenario for all pollutants except NOx. For NOx, additional measures would have been required.

Measures for emission reduction for each of the NEC pollutants are shown in the table.

	Measures for emission reduction
SO_2	• The application of the Large Combustion Plant Directive (LCPD) and Integrated Pollution Prevention Control Directive (IPCC); • Reducing the sulphur content in liquid fuels; • Using conventional fuels with reduced sulphur contents and fuel switching to lower sulphur sources such as wood and other renewables; • Measures resulting of the execution of the Operational programme to reduce greenhouse gases: reduce energy intensiveness, increasing share of renewable, initiatives for co-production of power and heat, low consumption of fuel in traffic, etc.
NOx	• The application of the Large Combustion Plant Directive and Integrated Pollution Prevention Control Directive; • European Euro standards for road traffic and farm tractors; • Reduction in highway traffic; • Measures resulting of the execution of the Operational programme to reduce greenhouse gases: reduce energy intensiveness, increasing share of renewable, initiatives for co-production of power and heat, low consumption of fuel in traffic, etc.
NMVOC	• Emission limit values for industries using solvents; • Lowering solvent content of paints and broad consumed products; • Energy savings and support of renewable resources; • Abatement technologies in particular for the paints and dry cleaning sectors; • Application of Integrated Pollution Prevention Control Directive; • Limits on pollution from combustion plants; • Sustainable transport measures; • Measures to reduce emissions from motor vehicles; • Limiting pollution from non – road mobile engines.
NH_3	• Promotion of more sustainable fertilisation methods; • Introduction of anaerobic digesters for biogas production on large pig farms; • Rational nitrogen fertilisation of farm plants. • Measures to increase the share of pastoral farming.

In the revised Gothenburg Protocol emission reduction targets were set that have to be met by 2020 for NEC pollutants and $PM_{2.5}$, based on 2005 emissions. The proposal of NEC Directive establishes new national emission reduction commitments applicable for 2020 and 2030.

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

Pollutants	Revised Gothenburg Protocol 2020 reduction targets	NECD Reduction commitment for any year from 2020 to 2029	NECD Reduction commitment for any year from 2030	National projections for 2020	National projections for 2030
	%	%	%	%	%
SO_2	-63%	-63%	-89%	-88%	-92%
NOx	-39%	-39%	-71%	-38%	-64%
NMVOC	-23%	-23%	-63%	-71%	-46%
NH_3	-1%	-1%	-24%	-8%	-12%
$PM_{2.5}$	-25%	-25%	-70%	-23%	-47%

As it was predicted, Slovenia met its targets for the NEC pollutants except for NOx. NOx emissions were above NEC also in 2011 and 2012. Only in 2013, all targets were met. However, problems with this pollutant are expected in 2020 as well.

NEC Programme: Slovakian Experience – Ivana Duricova

National Reduction Programme for pollutants aimed at achieving the national emission ceilings. The document provided the description for projections of these pollutants to 2010. There are five sectors included in the NEC programme in Slovakia: energy, industry, solvents, transport and agriculture.

Energy policy of Slovak Republic was adopted by the government in 2000. Other documents that were used for the energy Polices and Measures (PAMS) are the Action Plan for Renewable Energy Sources 2002-2012, the National Study for Energy Efficiency, reports on progresses, and proposals of a new energy policy. Regarding the legislative changes, many changes occurred regarding various acts, such as the Act on Energy, Act on heat energy and Act on atmospheric protection. Most of the legislation was adopted in 2002 and 2004, but amended and/or repealed in 2010 and 2014.

Policies and measures in the industry sector were based on elaboration of the industrial policy of the EU for the conditions of the Slovak Republic. This document was approved by the government in 1999 and established a new approach to industrial policy. Sectoral Operational Programme for industry and services was adopted in 2003. Several Acts were amended in the legislation regarding the industry sector. Act on integrated pollution prevention and control was adopted in 2003 and amended the last time in 2015. The earlier adopted act was on charges of air pollution, in 1998, but last time amended in 2014.

Programme for decreasing NMVOC set up the arrangements for the ceiling achievement in 2010. Basic infrastructure was provided by the Operational Programme, approved by the Government in 2003. Support was given from structural funds and cohesion fund. However, in the solvents sector, the legislation referred to covers both energy and industry sector.

Documents used for the development of policies and measures of NEC in the transport sector include development of combined and water transport, concept for a mobile park Slovak Railways and its transformation. One of the projects was the development and modernisation of transport infrastructure in seven regions in Slovakia; it was a Sectoral Operational Programme Transport and Telecommunications for the period 2004-2006.

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

Agriculture sector PAMs was based on six relevant documents:

- Programme for Agriculture and Food Industry in the SR 2010;
- The concept of organic farming;
- Concept of Agricultural and Food Policy;
- Medium-Term Strategy Agriculture Policy for 2004-2006: Agriculture and food industry;
- Sectoral Operational Programme Agriculture and Rural Development 2004-2006;
- Rural Development Plan of the Slovak Republic 2000-2006.

In this case, agriculture legislation belongs to a different set of acts and legislation, such as Act on ecological agriculture, Act on protection and use of agricultural land, both adopted in 2004 but amended in 2010s. However, Act on integrated pollution prevention and control covers all five sectors of NEC pollutants.

General Discussion of topics identified during the Day 3

Summary of the exercise was as follows:

	Institutional Arrangements	Status	Problems	Support
Albania	External Projects	Under preparation	Capacity, focus on GHG	
Bosnia and Herzegovina	3 acts, external	Under preparation	Institutional awareness, focus on GHG	
Kosovo*	No legal basis, EPA	Not yet	Capacity and staff	Trainings, TAIEX
FYROM	Project based	SO2, NOx, NH3, 2015-2020 WEM, no WAM	Focus on GHG capacity, inventory inconsistency,	
Montenegro	Not yet	Under preparation	Focus on GHG capacity, inventory inconsistency,	ECRAN training
Serbia	SEPA and possible external sources	IPPC permit issuing, Inventory, Air Protection Strategy	Capacity, LCP Strategy, missing National Documents, challenge in agricultural sector	Use of models
Turkey	Legal basis	Projections of 2011 in excel, GHG priority, not reported yet	GHG focus	Further trainings, exchange of information between ECRAN

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

V. Evaluation

Statistical information

1.1	Workshop Session	ECRAN Multi-beneficiary Regional Workshop on the NEC Directive 26-28 May 2015, Tirana, Albania
1.2	Facilitators name	As per agenda
1.3	Name and Surname of Participants (evaluators) optional	As per participants' list

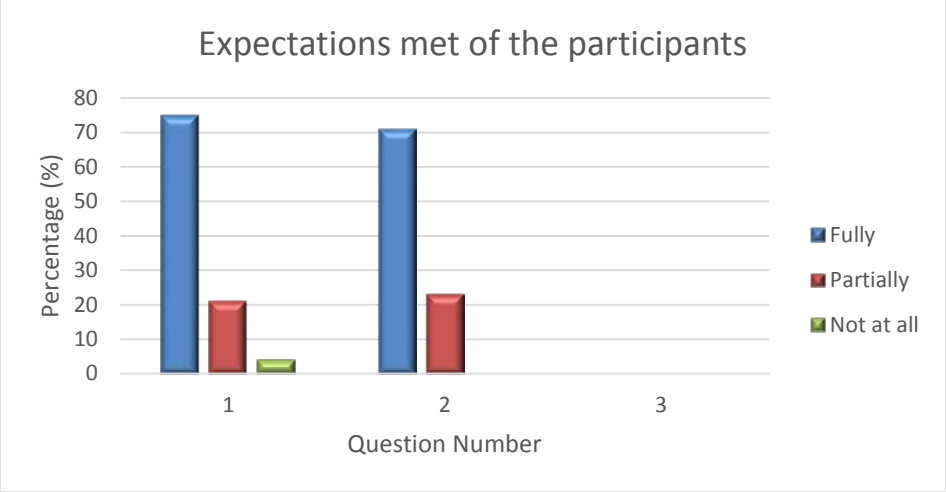
Your Expectations

Please indicate to what extent specific expectations were met, or not met:

My Expectations	My expectations were met			Comment
	Fully	Partially	Not at all	If rated "partially" or "not at all" please indicate how we can improve future workshops
1. I have improved understanding of the requirements of the NEC Directive and their effective implementation.	IIIII IIII (43%)	IIIII III (57%)		
2. I learned about practices in European Union Member States regarding NEC Directive.	IIIII IIIII III (62%)	IIIIIIII (38%)		
3. This workshop will help me to contribute to the NEC Directive implementation in my country.	IIIII IIIII I (52%)	IIIIIIIII (43%)	I (5%)	

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium



This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

Workshop and Presentation

Please rate the following statements in respect of this training module:

Aspect of Workshop	Excellent	Good	Average	Acceptable	Poor	Unacceptable
1. The workshop achieved the objectives set	IIIII I (32%)	IIIII I (32%)	IIII (21%)	II (10%)	I (5%)	
2. The quality of the workshop was of a high standard	IIIII I (33%)	IIIII I (33%)	III (17%)	II (11%)	I (6%)	
3. The content of the workshop was well suited to my level of understanding and experience	IIIII I (35%)	IIIII I (35%)	IIII (24%)	I (6%)		
4. The workshop was interactive	IIIII (26%)	IIIII II (37%)	II (11%)	II (11%)	III (15%)	
5. Facilitators were well prepared and knowledgeable on the subject matter	IIII (21%)	IIIII III (42%)	III (15%)	II (11%)	II (11%)	
6. The duration of this workshop was neither too long nor too short	IIII (22%)	IIIII IIIII (56%)	III (17%)	I (5%)		
7. The logistical arrangements (venue, refreshments, equipment) were satisfactory	IIIII (28%)	IIIII III (42%)	III (15%)	I (5%)	I (5%)	I (5%)
8. Attending this workshop was time well spent	IIIII II (36%)	IIIII (27%)	IIIII (27%)		I (5%)	I (5%)
If any of these aspects given above is rated below average, please indicate what should be improved						

Comments

- Accommodation could be better;
- As my country has not a regulation under NECD, and because of not involved in EI (GHG, inventory NIR or IIR), need more days to understand better.

Comments and suggestions

I have the following comment and/or suggestions in addition to questions already answered:

Workshop Sessions:

- Need more days for the sessions emissions, inventories and projections;
- Good;
- Presentation was too long and not interacting.

This Project is funded by the European Union

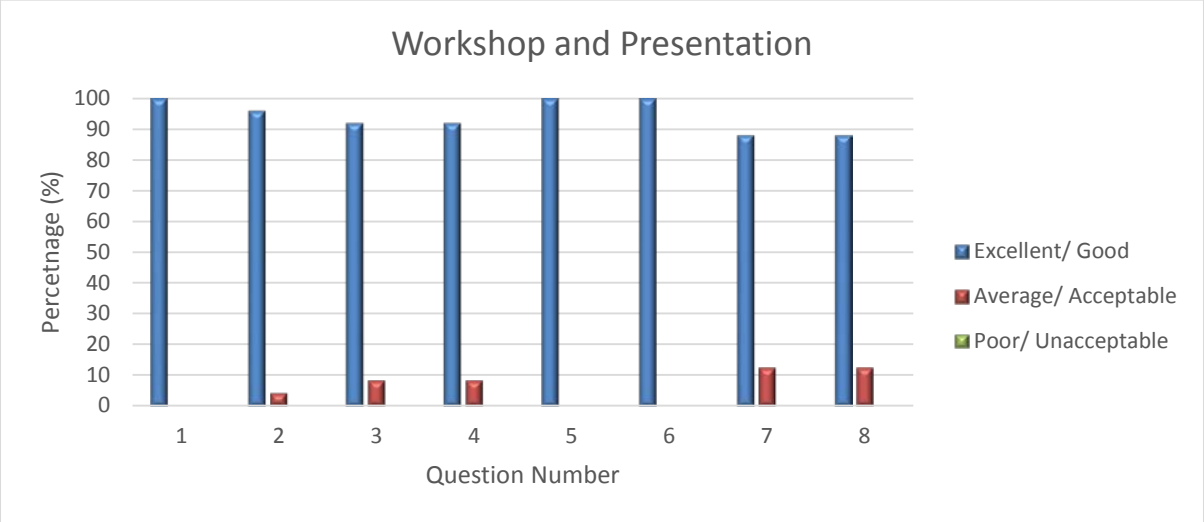
A project implemented by Human Dynamics Consortium

Facilitators:

- Maybe it needed a country experience but well explained;
- Not very good;
- Facilitators are not well prepared (I don't know).

Workshop level and content:

- Very good. Finally enough time for discussions. Usually ECRAN workshops are overcrowded with presentations;
- Nice, but bad hotel;
- The idea was good, but not good for my level;
- I propose that this workshop must be followed with TAIEX assistance on Modelling and projections under NEC, and setting ceilings prepared by Gothenburg Protocol.



This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

ANNEX I – Agenda

Day 1 – Tuesday, 26 May 2015, Tirana

Topic: NEC Directive – emission inventories **Chair and Co-Chairs: Christian Nagl** **Venue: tbc**				
Start	**Finish**	**Topic**	**Speaker**	**Sub topic/Content**
08:30	**09:00**	**Registration**		
09:00	09:05	Welcome and opening	European Commission, DG Environment t.b.c	Welcome, introduction of trainers, introduction of participants
09:05	09:10	Introduction	Mr. Christian Nagl, ECRAN, Air Quality coordinator	Introduction to the purpose of the NEC workshop and its expected outcome
9:10	9:30	Overview status NEC revision and revised GP	Mr. Christian Nagl, Ms. Elisabeth Kampel, Austrian Environment Agency (TAIEX Expert)	Status of the political process to revise the NED Dir., adjustments procedures of the revised Gothenburg protocol, etc.
09:30	10:15	Emission inventories: European perspective	Ms. Elisabeth Kampel	Overview on requirements for NEC/LRTAP emission inventories
10:15	10:30	Q&A	All participants	
10:30	10:45	***Coffee Break***		
10:45	11:30	Implementation of the NECD: Croatian experience	Mr. Robert Rocek, Ministry of Environmental and Nature Protection, Croatia (TAIEX Expert)	Experience in implementing the NECD, developing emission inventories in Croatia
11:30	12:15	Implementation of the NECD: Latvian experience	Ms. Ieva Sīle, Latvian Environment, Geology and Meteorology Centre (TAIEX Expert)	Experience in implementing the NECD, developing emission inventories in Latvia
12:15	12:30	Q&A	All participants	

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

12:30	14:00	***Lunch Break and time for per diem collection***		
14:00	14:45	Implementation of the NECD: Slovenian experience	Ms. Martina Logar, Slovenian Environment Agency (TAIEX Expert)	Experience in implementing the NECD, developing emission inventories in Slovenia
14:45	15:30	Implementation of the NECD: Slovakian experience	Ms. Ivana Duricova, Slovak Hydrometeorological Institute (TAIEX Expert)	Experience in implementing the NECD, developing emission inventories in Slovakia
15:30	16:00	Q&A	All participants	
16:00	16:15	***Coffee Break***		
16:15	17:00	Tour de table on NEC/GP implementation, emission inventories in ECRAN countries	Beneficiaries	
17:00	17:15	General discussion of specific topics identified during workshop day 1	All participants	
17:15	17:30	Closing day 1	Mr. Christian Nagl	

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

Day 2 – Wednesday, 27 May 2015, Tirana

Topic: NEC Directive – emission projections **Chair and Co-Chairs: Elisabeth Kampel** **Venue: tbc**				
Start	**Finish**	**Topic**	**Speaker**	**Sub topic/Content**
08:30	**09:00**	**Registration**		
09.00	09.10	Introduction	Ms. Elisabeth Kampel	
09.10	09:50	Emission projections: European perspective	Ms. Elisabeth Kampel	Overview on requirements for NEC projections
09:50	10:20	Emission projections: Croatian experience	Mr. Robert Rocek	Experience in developing emission projections in Croatia
10:20	10:30	Q&A	All participants	
10:30	10:45	***Coffee Break***		
10:45	11:30	Emission projections: Latvian experience	Ms. Ieva Sīle	Experience in developing emission projections in Latvia
11:30	12:15	Emission projections: Slovenian experience	Ms. Martina Logar	Experience in developing emission projections in Slovenia
12:15	12:30	Q&A	All participants	
12:30	13:30	***Lunch Break***		
13:30	14:15	Emission projections: Slovakian experience	Ms. Ivana Duricova	Experience in developing emission projections in Slovakia
14:15	14:30	Q&A		

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

14:30	15:30	Tour de table on emission projections in ECRAN countries	Beneficiaries	
15:30	15:45	***Coffee Break***		
15:45	16:45	General discussion of specific topics identified during workshop day 2	All participants	
16:45	17:00	Closing	Mr. Christian Nagl	

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

Day 3 –Thursday, 28 May 2015, Tirana

Topic: National programmes to achieve the targets of the NEC Dir. and the Gothenburg Protocol **Chair and Co-Chairs: Christian Nagl, Elisabeth Kampel** **Venue: tbc**				
Start	**Finish**	**Topic**	**Speaker**	**Sub topic/Content**
08:30	**09:00**	**Registration**		
09.00	09.10	Introduction	Mr. Christian Nagl	
09.10	09:50	NEC programmes: European perspective	Mr. Christian Nagl	Overview on requirements for NEC programmes, assessment and evaluation of programmes
09:50	10:20	NEC programme: Croatian experience	Mr. Robert Rocek	Experience in developing and implementing a NEC programme in Croatia
10:20	10:30	Q&A	All participants	
10:30	10:45	***Coffee Break***		
10:45	11:15	NEC programme: Latvian experience	Ms. Ieva Sīle	Experience in developing and implementing a NEC programme in Latvia
11:15	11:45	NEC programme: Slovenian experience	Ms. Martina Logar	Experience in developing and implementing a NEC programme in Slovenia
11:45	12:15	NEC programme: Slovakian experience	Ms. Ivana Duricova	Experience in developing and implementing a NEC programme in Slovakia
12:15	12:30	Q&A	All participants	
12:30	14:00	***Lunch Break including DSA collection***		
14:00	15:15	General discussion of topics identified during workshop day 3	All participants	Discussion of specific topics identified during the workshop to foster communication between the beneficiaries.
15:15	15:30	***Coffee Break***		

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

15:30	16:00	Continuation of general discussion	All participants	
16:00	16:15	Closing remarks, next steps	Mr. Mihail Dimovski t.b.c Mr. Christian Nagl	

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

ANNEX II – Participants

First Name	Family Name	Institution Name	Country	Email
Aspri	KAPO	National Environment Agency	Albania	aspri.kapo@akm.gov.al; asbeka@hotmail.com
Elirjana	Tare	Ministry of Transport	Albania	eliriana.tare@transporti.gov.al
Agron	Deliu	Institute of Public Health	Albania	agrondel@gmail.com
Laureta	Dibra	Ministry of Environment	Albania	Laureta.Dibra@moe.gov.al
Rovena	Agalliu	Ministry of Environment	Albania	Rovena.Agalliu@moe.gov.al
Ilia	Gjermani	Ministry of Energy and Industry	Albania	Ilia.Gjermani@energjia.gov.al
Suada	Numić	Federal Ministry of Environment and tourism	Bosnia and Herzegovina	suada.numic@fmoit.gov.ba
Bakir	Krajinović	Federal hydrometeorological Institute	Bosnia and Herzegovina	bakirk@fhmzbih.gov.ba
Aneta	Stefanovska	Ministry of Environment and Physical Planning	former Yugoslav Republic of Macedonia	a.stefanovska@moepp.gov.mk
Martina	Spasovska	Ministry of Environment and Physical Planning	former Yugoslav Republic of Macedonia	m.toceva@moepp.gov.mk
Lendita	Dika	Ministry of Environment and Physical Planning	former Yugoslav Republic of Macedonia	l.dika@moepp.gov.mk
Besa	Tateshi	Ministry of Environment and Physical Planning	former Yugoslav Republic of Macedonia	b.tateshi@moepp.gov.mk
Svetlana	Gligorova	Ministry of Environment and Physical Planning	former Yugoslav Republic of Macedonia	s.gligorova@moepp.gov.mk
Visare	Istrefi	Ministry of Environment	Kosovo	visare.hoxha@ rks-gov.net

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

First Name	Family Name	Institution Name	Country	Email
		and Spatial Planning		
Nezakete	Hakaj	Ministry of Environment and Spatial Planning	Kosovo*	neezakete.hakaj@rks-gov.net
Shkumbin	Shala	Ministry of Environment and Spatial Planning	Kosovo*	shkumbin.shala@rks-gov.net
Zelfije	Aruqaj	Ministry of Environment and Spatial Planning	Kosovo*	zelfije.aruqaj@rks-gov.net
Hana	Imeri	Ministry of Environment and Spatial Planning	Kosovo*	hana.imeri@rks-gov.net
Olivera	Kujundžić	Ministry of Sustainable Development and Tourism	Montenegro	olivera.kujundzic@mrt.gov.me
Irena	Tadić	Environmental Protection Agency	Montenegro	irena.tadic@epa.org.me
Pavle	Đurašković	Institute of Hydrometeorology and seismology of Montenegro	Montenegro	pavle.djuraskovic@hmz.gov.me
Ivana	Antonovic	Agency for Environmental Protection	Serbia	ivana.antonovic@sepa.gov.rs
Jasmina	Bogdanovic	Ministry of Agriculture and Environmental Protection	Serbia	jasmina.bogdanovic@eko.minpolj.gov.rs
Şeyma	Uçar	Ministry of Environment and Urbanization	Turkey	seyma.ucar@csb.gov.tr
Canan Esin	Köksal	Ministry of Environment and Urbanization	Turkey	cesin.koksal@csb.gov.tr

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

First Name	Family Name	Institution Name	Country	Email
Funda	Filiz	Ministry of Environment and Urbanization	Turkey	funda.filiz@csb.gov.tr
Robert	Rocek	Ministry of Environment and Nature Protection	Croatia	robert.rocek@mzoip.hr
Ieva	Sile	Environment, Geology and Meteorology Centre	Latvia	ieva.sile@lvgmc.lv
Martina	Logar	Slovenian Environment Agency	Slovenia	martina.logar@gov.si
Ivana	Duricova	Hydrometeorological Institute	Slovakia	ivana.duricova@shmu.sk
Elisabeth	Kampel	Environment Agency	Austria	Elisabeth.Kampel@umweltbundesamt.at
Christian	Nagl	ECRAN	Austria	christian.nagl@umweltbundesamt.at
Milica	Tosic	ECRAN	Serbia	milica.tosic@humandynamics.org

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium

ANNEX III – Presentations (under separate cover)

Presentations can be downloaded from:

http://www.ecranetwork.org/Files/AIR_NECD_Workshop_Materials,_May_2015,_Tirana.zip

This Project is funded by the European Union

A project implemented by Human Dynamics Consortium