BROCHURE on the Awareness Raising Workshop

Inventory Compilation and Management of National Systems

Ankara, Ministry of Environment and Urbanisation (MoEU)

28 - 29 September 2011

October 2011

CONTENT

Main objective of the project

According to the project fiche, the overall objective of the *Improving Emissions Control* (IEC) twinning project is to "*improve the environmental conditions in Turkey by implementation and enforcement of the EU environmental* acquis *in the frame of ambient air quality.*" Desired conditions include meeting the EU standards set for ambient air quality towards further protecting human health and the environment.

The Twinning project should "*establish the necessary capacity within the Ministry of Environment and Forestry to transpose and implement National Emission Ceilings Directive (2001/81/EC) in Turkey*". The project will strengthen the institutional capacity to transpose the NEC Directive, to prepare inventories and projections and to develop national strategies for reducing emissions. It will be attempted to strengthen intra-institutional cooperation and to utilise all relevant expertise as efficiently as possible. As Turkish experts will be trained in all areas relevant for the implementation of the NEC Directive, the Turkish expertise in the field of air emissions will be improved and thus ensure a sustainable effect of the project. The implementation of the NEC Directive will ultimately help to improve ambient air quality and thus protect human health and the environment in Turkey.

Main objective of the workshop

The workshop has been organised under activity 2.2. The main objective was awareness raising of stakeholders responsible for implementation of the NEC Directive by showing the importance of activity data for compilation of inventories and projections.   Furthermore, this workshop intended to present national experience from MS on the implementation of the National Emission Ceiling Directive (NECD).

Participants

Relevant experts were identified and invited by the Ministry of Environment and Urbanisation (MoEU). More than twenty experts from the MoEU, Statistical Office and Ministry of Transport and Communications (MoTC) participated at the workshop (see list of participants in Annex).

Agenda

Participants have been welcomed by the Head of Air Management Department at MoEU Mr. Nihat YAMAN who also kindly took over the chairing of the sessions.

Presentations were held by the MS experts Katarina MARECKOVA, Manfred RITTER, Stephan POUPA and Melanie SPORER Environment Agency Austria (EEA), Agita GANCONE Latvian Environment, Geology and Meteorology Centre (LEGMC) and Gökşin TEKİNDOR from BC - MoEU (Air Management Department)   (detailed agenda see in Annex).

Summary from Presentations

Katarina MARECKOVA - Emission Reporting under NECD

The main objective of National Emission Ceiling Directive (NECD) is the limitation of emissions of acidifying and eutrophying pollutants and ozone precursors in order to improve the protection in the Community of the environment and human health by establishing national emission ceilings.

NECD provides a legal bases (Council Decision 2001/81/EC) for reporting of EU MS. National emissions and projections of NOx, NMVOC, SOx and NH_3 should be reported annually; national programs in 3 years cycle. All information is to be provided to EC and copied to the EEA via ReportNet.

Emissions should be compiled in line with *EMEP/EEA air pollutant emission inventory guidebook* (EMEP/EEA, 2009). According to the *Guidebook* (EMEP/EEA, 2009) it is good practice to report inventories which are complete, consistent, comparable, transparent and neither overestimated nor underestimated as far as can be judged. Parties are also encouraged to minimise uncertainties as far as practicable.

Transparency means that Parties provide clear documentation (IIR) and report emissions and activity data at a level of disaggregation which provides sufficient understanding of how the inventory was compiled, assuring it meets good practice requirements.

A key category is one that has significant influence on a country's total inventory in terms of absolute levels of emissions, the trend in emissions, or both. Following the EMEP/EEA Guidebook (EEA/EMEP, 2009), the Key categories are those which, when summed up in descending order of magnitude, cumulatively add up to 80% of the total level. Countries are recommended to start with key categories when developing or improving national inventories.

Katarina MARECKOVA – Reporting templates

Under LRTAP Convention, Parties are required to report on the substances and for the years set forth in protocols that they have ratified and that have entered into force

- 1984 EMEP protocol (Turkey signed and ratified)
- 1985 and 1994 Sulphur Protocols
- 1988 NOx Protocol
- 1991 VOC Protocol
- 1998 Heavy Metals Protocol
- 1998 POP Protocol
- 1999 Gothenburg Protocol
  to abate Acidification, Eutrophication and Ground level Ozone

UNECE Guidelines for Estimating and Reporting Emission Data (ECE/EB.AIR/97) provide definitions, deadlines and formats for reporting of emissions and projections. Reporting obligation under NECD and CLRTAP are harmonised and information to these bodies should be reported in line with the reporting Guidelines (ECE/EB.AIR/97). The reporting obligations are further elaborated in 7 annexes to the Guidelines. The guidelines provide also templates (excel tables) in which emissions and projections should be reported. It is important that reported numbers are explained and documented in accompanying Informative inventory report (IIR).

Transparency means that Parties provide clear documentation (IIR) and report emissions and activity data at a level of disaggregation which provides sufficient understanding of how the inventory was compiled, assuring it meets good practice requirements.

All relevant documents and templates can be downloaded from the CEIP web site (http://www.ceip.at/reporting-instructions/).

Katarina MARECKOVA - NECD Status report

NECD Status report is the EEA publication compiled annually by the ETC ACM and it presents summary information on status of reporting by EU Member States (MS) and status of their compliance with emission ceilings. The report also contains summary information on reporting obligations and formats, dataflow and emission trends. Country profiles are provided as Annex to the report and show for each country e.g. trends, distance to ceilings and key categories for all 4 pollutants . The report can be downloaded at http://www.eea.europa.eu/publications/nec-directive-status-report-2010.

Turkey

NOx emission trends and projections in Turkey

	Key data	Value	Unit	
NOx emission profile	Total NOx emissions 1990	643.7	(Gg)	
	Total NOx emissions 2009	863.0	(Gg)	
	NOx emissions in 2009 per capita	12.1	(kg/cap.)	
	NOx emissions per GDP in 2009	1.1	(g/PPP)	
	Share of NOx in EU-27 in 2009	NA	%	

	Current and projected progress towards ceiling	Value	Unit	
Progress towards ceiling	2010 Emission ceiling	NA	(Gg)	
	2010 WM projections (existing measures in place)	NE	(Gg)	
	2010 projected effect of (planned) additional measures	NE	(Gg)	
		Absolute	Unit	Relative (%)
	Distance to NOx emission ceiling in 2009	NE	(Gg)	NE
	Comparison of 2010 emission ceiling with WM projections 2010	NE	(Gg)	NE

	Trend of total NOx emissions	Absolute	Unit	Relative (%)
NOx trends	Trend of total NOx emissions, 2008-2009	3.1	(Gg)	0.4
	Trend of total NOx emissions, 1990-2009	219.4	(Gg)	34.1
	Trend of NOx emissions per capita, 2000-2009	-2.2	(kg/cap.)	-15.1
	Trend of NOx emissions per GDP, 2000-2009	-0.7	(g/PPP)	-39.7

1 = highest value; the number in brackets shows the number of Member States that reported data.
GDP data from Eurostat http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home accessed: 24.02.2011
Population data from Eurostat http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home accessed: 24.02.2011

Figure 1 Example of Country profile: Turkey, NOx emissions

Manfred RITTER - The Role of Emission Reporting for the Austrian Air Pollution Management

The first presentation given by the MS Project Leader Mr. RITTER introduced the work of the Air Pollution Department at the Austrian Environment Agency (Umweltbundesamt) , described the policy interface by submitting the main stages in the policy cycle, and gave practical examples of implementation .

According to the Environmental Control Act, Umweltbundesamt is the national entity with overall responsibility to compile the Air Emission Inventory in accordance with the international reporting obligations. The department "Emissions & Climate Change" is responsible for compiling the Austrian Air Emission Inventory (OLI) in accordance with international guidelines and in line with international reporting formats. The inventory preparation involves about 16 people with different responsibilities. It is important to cooperate with all stakeholders and use consistent data in all analyses and strategies.

At the end Mr. Ritter talked about his experience on dealing with the management challenges of emission reporting. Umweltbundesamt has a clear task definition for state-of-the-environment assessments, its data and assessments are in no way policy prescriptive. The inventory follows a "best science" approach and is protected from non-scientific influence through a ISO 17020 accreditation.

The national strategy is based on expert assessments prepared by Umweltbundesamt, but with the overall responsibility of the Ministry of the Environment. The air quality department offers specific assessments and takes part in the stakeholder work groups.

Manfred RITTER - The Austrian NEC Strategy

The second presentation by Mr. RITTER was devoted to the development of Austrian NEC Strategy. The national strategy is based on expert assessments but prepared by the Ministry of the Environment.
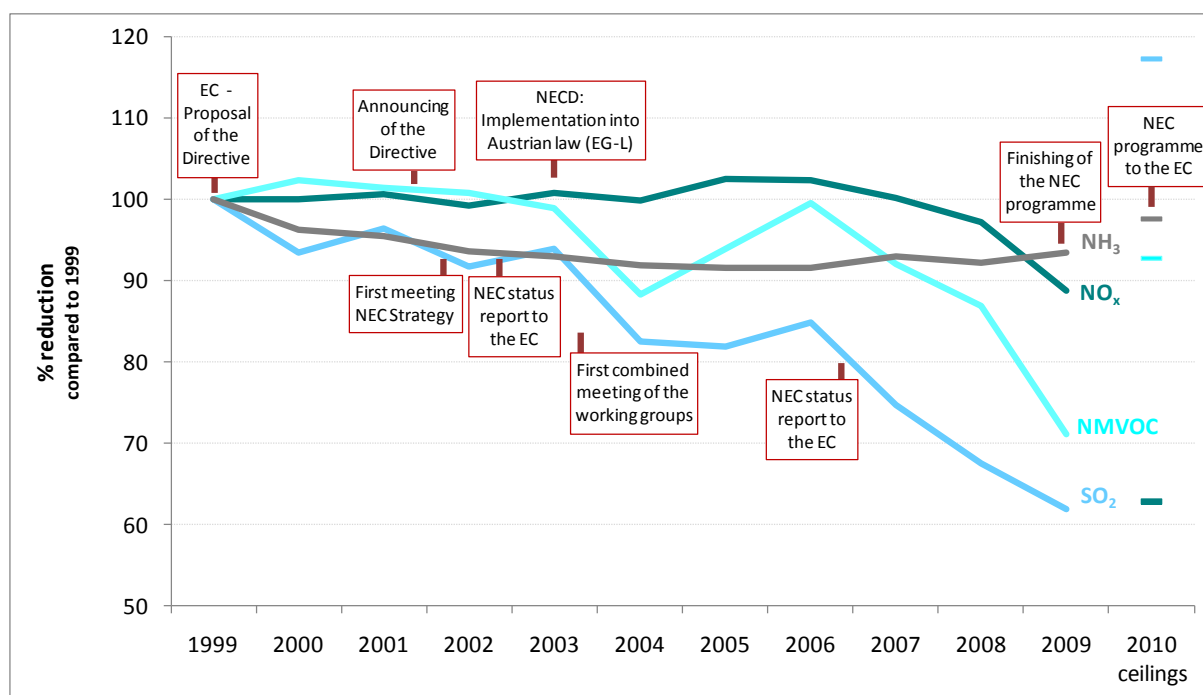

Figure 2   Example of timetable for emission reduction set in National strategy,   Austria.

The air quality department at Umweltbundesamt offers specific assessments and takes part in the stakeholder work groups. The Austrian National Program:

- Lists legal instruments that have an effect on the NEC emissions (Austrian and EU)
- Present historic and current emission trends
- Specifies existing policies and measures (PAMs) to achieve these targets
- Gives emission projections for 2010 (2015 and 2020 are not presented in the program)
- Lists additional PAMs, which were proposed by sectoral working groups (based on sectoral targets defined by the MoEU)
- Gives a rough estimates of the quantitative effect of these PAMs
- Presents every PAM in the standardized format following the recommendation of the European Commission

Stakeholders like Ministry of Economic and Ministry of Transport are involved by different means. NEC Directive transposition is done in consultation within NEC working groups which were supported by experts of all Ministries involved. The final program was adopted by the Government in 2010.

Agita GANCONE- Emission Inventory System in Latvia

Ms. GANCONE started with an introduction of the Emission Inventory System in Latvia. Detailed roles and responsibilities of institutions that are involved in the preparation of the national inventory are prescribed in the regulations, including the designation of an institution controlling the quality assurance/quality control (QA/QC) procedures.

The single national entity with overall responsibility for the Latvian Air and Greenhouse Gas (GHG) Inventory is the Ministry of the Environmental Protection and Regional Development of the Republic of Latvia (MEPRD). It is responsible for final checking and approving of the inventory before the official submission to the European Commission, for preparing formal agreements with inventory experts regarding the transport sector and for experts that evaluate the quality assurance process.

LEGMC is a governmental Ltd and responsible for preparing the Air and GHG inventory. LEGMC collects activity data from other institutions like the Central Statistical Bureau (CSB), Ministry of Agriculture and different enterprises to use them for emissions calculation regarding Energy, Industrial Processes, Solvent and Other Product Use, Agriculture and Waste sectors.
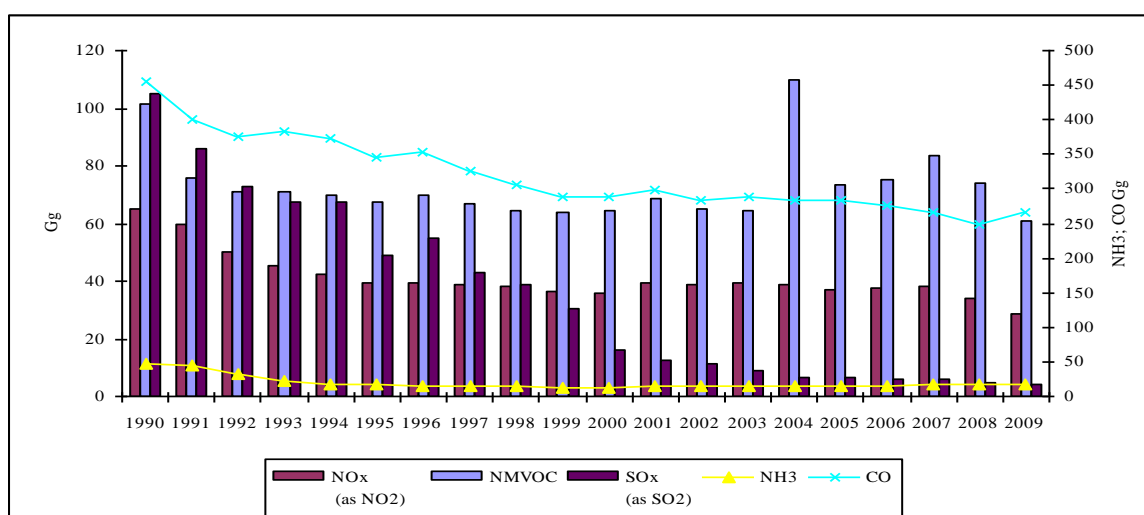

Figure 3 Example of emission trends 1990-2009 in Latvia (sulphur dioxide, nitrogen oxides, carbon monoxide, non-methane volatile organic compounds and ammonia)

CSB publishes the data (fuel consumption, number of livestock, etc.) by sectors as a whole, without distinguishing separate company specific information, thus ensuring confidentiality.

Since submission 2009, the Institute of Physical Energetic (IPE) calculates emissions for the transport sector according to agreement with MEPRD.

The process of inventory compilation consists of inventory planning where methodological and organisational issues (incl. time frame of inventory preparation) are decided. Latvia's emissions inventory is based on EMEP/EEA 2009, IPCC 1996 and IPCC GPG 2000 methodologies. Nomenclature for Reporting (NFR) format is used to prepare the inventory for 1990–2009. To calculate emissions, supplemental locally developed databases in Excel format were used for all sectors except for Road Transport, where COPERT IV is used.

Stephan POUPA - Emission Inventory – Data Management

The first presentation of Mr. POUPA dealt with the data management for data quality and the needs to be integrated into the inventory process. The main tasks of data management are: data collection from sectoral experts, provide tables for analysis and written reports, check of data quality (completeness, consistency, significant outliers), create and restore data backups (versions, recalculations) and data reporting to NEC.
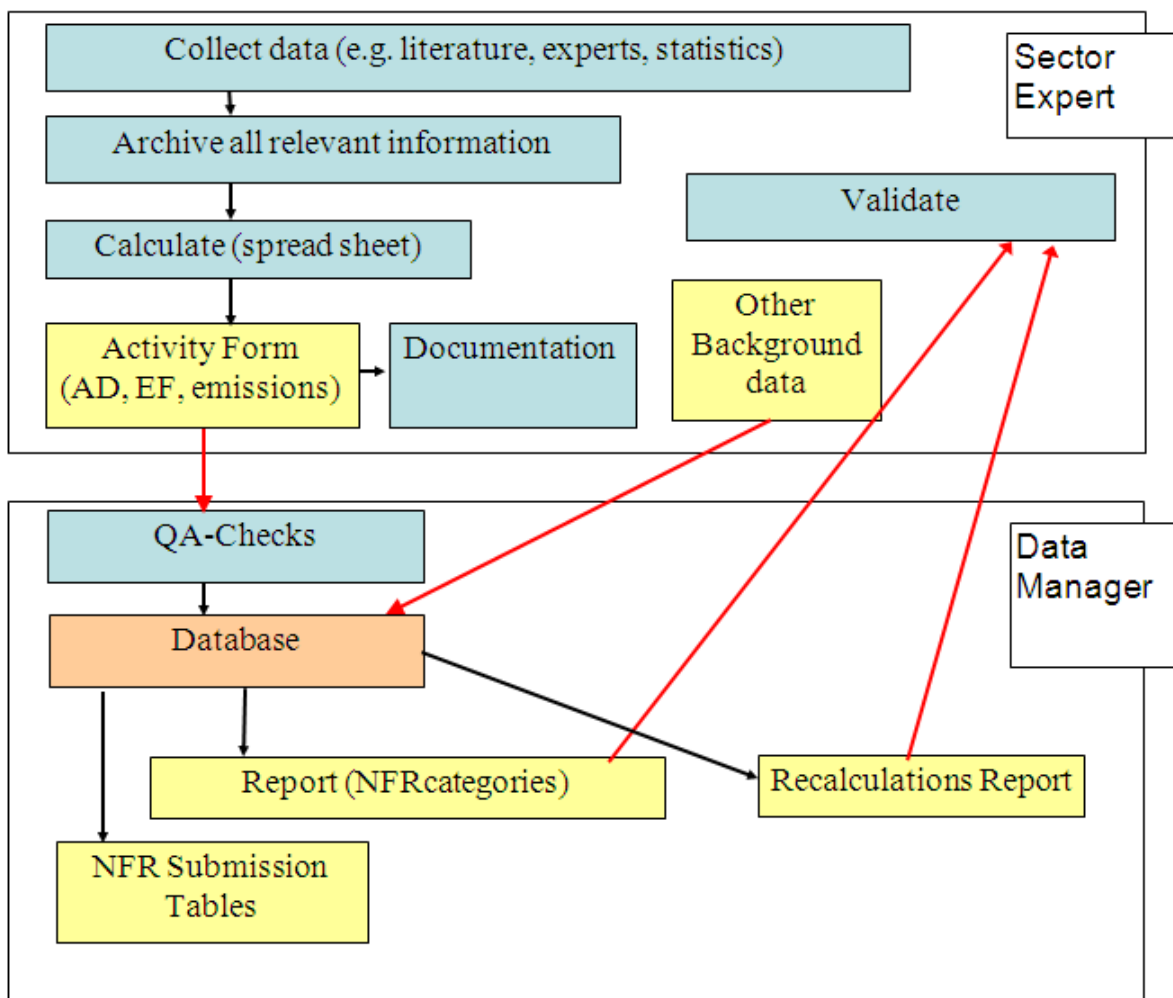

Figure 4 inventory process example of data flow in the sectoral inventory compilation

In general, emission inventory systems /databases can be setup to cover GHG reporting under the UNFCCC and air pollutant reporting under NEC/CLRTAP (e.g. Austrian inventory). Data reporting under NEC must follow specific formats (EMEP NFR tables) which are the same as under CLRTAP.

Central data collection, processing and storage are important for data quality. They are used to provide a link from more detailed bottom up to more aggregated data used for reporting.

Centralized data computing is efficient and avoids errors in data computing and transfer. Numerical activity data and emission factors should be linked with written documentation (reference to data sources, methodology description). Simple systems are using spreadsheet solutions (Excel), but the disadvantage is that the maintenance costs will be higher. In contrast to higher software and data complexity, the CollectER© and ReportER© software, that is hosted by EEA, is a free tool based on MS-Access following the CORINAIR methodology.

Stephan POUPA -Air Emission from Stationary Fuel Combustion

The presentation about the Air Emissions from Stationary Fuel Combustion reflected the methodology, energy statistics, EMEP/EEA Guidebook and example calculation.

Depending on the importance of an emission source, different levels of methodologies should be applied. The simplest form of emission calculation is to multiply fuel consumption with an emission factor. The emission factor is reflecting the technology behind the fuel combustion technology (e.g. a coal boiler) and the emission abatement technologies (e.g. flue gas cleaning). Thus, there is high uncertainty in using default emission factors which will not reflect real conditions in the country. The EMEP/EEA Air Emissions Inventory Guidebook provides emission factors for different type of fuels and technologies (tier 1 and tier 2 methods). The tier 2 method needs fuel consumption by technology and emissions factors which are related to the technology. For each technology the fuel consumption must be known. Basic equation:

$$E_{Source,Fuel,Pollutant,Year} = \sum_{Technology} (AR_{Source,Fuel,Technology,Year} \times EF_{Source,Fuel,Technology,Pollutant})$$

The most important source of activity data are energy statistics. To understand trends in fuel consumption and data uncertainty, emission inventory experts should stay in contact with statistics divisions. Energy statistics does not provide fuel consumption by technology. Especially for residential heating the share of fuel used in different technologies (e.g. stove, boiler) must be assessed by additional information (surveys, experts). Emissions should be allocated to sources where they occur, e.g. emissions from electricity production are allocated to power plants and not to electricity consumers.

Double counting with process emissions must be avoided, especially in case where fuel is in contact with process material, e.g. cement kilns or blast furnaces. Emissions which are occurred from non energy use of fuels are in general reported as "industrial processes". For large facilities (power plants, integrated iron and steel works) emissions should be considered from measurements, e.g. from the Large Combustion Plants Directive. To avoid double counting with energy statistics, the fuel consumption and the sector where the plant is allocated in energy statistics must be known (Economic Statistics Code). Emissions from industrial electricity auto producers should be allocated to industrial subsectors if available or reported under category "1 A 2 f – other manufacturing industries".

Gökşin TEKİNDOR – Regulation on "Energy and Large Combustion Plants in Turkey"

Mr. TEKİNDOR hold a presentation to the Energy and Large Combustion Plants in Turkey. He referred to the strategies while reflecting the 2023 targets that contain all domestic coal and hydraulic potential that will be used, the installed capacity for wind to 20.000 MW, the geothermal to 600 MW and the proportion of nuclear energy which will be 5%.

Principally, he made reference to the transposition of the LCP Directive (2001/80/EC) Regulation on "Large Combustion Plants" that sets limits for PM, SO_2, CO and NO_X and came into effect on 8th June

2010 (No. 27605). The target of the Regulation is abatement of pollutants caused by combustion plants with thermal input equal to/or less than 50 MW. Mr. TEKİNDOR underlined that since the "National Abatement Plan" has not yet been prepared in Turkey for SO_2, NO_2 and PM; Article 3 of the Directive will not take place in the Regulation on LCP.

Melanie SPORER – Development of National Emission Projections – Introduction

The presentation of Ms. SPORER   was devoted to national emission projections. A general overview of reporting requirements and the overall process of scenario development has been provided. Further, it introduced in Austria's institutional arrangements, quality management and timeline for the preparation of projections as an example.

The following figure illustrates the different scenarios (wm[1], wam, wom projections) that have been defined for reporting to the UNFCCC Secretariat and the EC. This concept is currently applied for GHG as well as air pollutant emission projections.
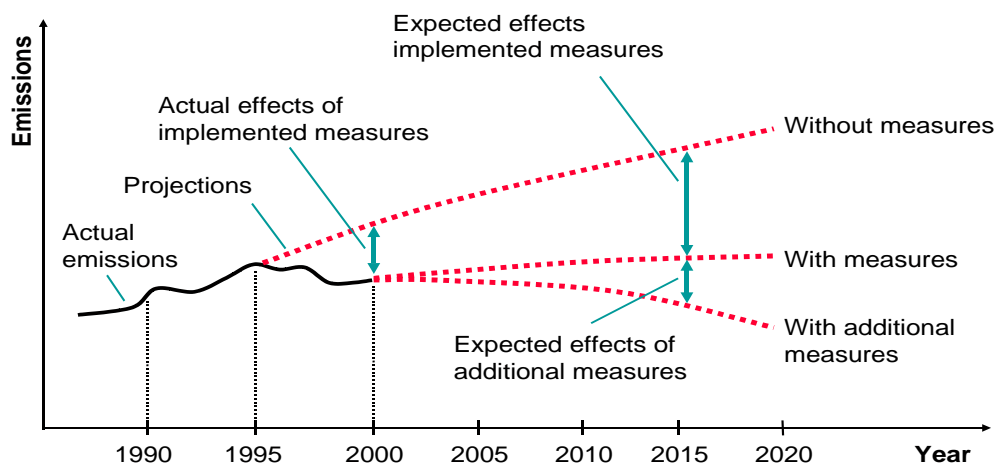

Figure 5 Projections example *Source: UNFCCC Guidelines on Reporting and Review FCCC/CP/1999/7, Part VI Projections and the Total Effect of Policies and Measures, para 29, 38*

Basic terms that are used in the context of emission projections are also explained on the project website http://nec.cygm.gov.tr/nec   - go to glossary.

Reporting of projections:

Guidance, reporting templates, example reports and legal basis are also available on the Improving Emissions Control project website. International obligations under   UNFCCC and Kyoto Protocol (GHGs) and under UNECE/LRTAP Convention (air pollutants) are reflected in European directives:

- EU GHG Monitoring Mechanism (GHG) -> UNFCCC and KP
- NEC Directive (air pollutants) -> UNECE/CLRTAP

Melanie SPORER – Development of National Emission Projections in Austria

The number of different institutions is involved with the preparation of emission projections and its reporting in Austria.

The Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management is obliged to deliver Austria's emission projections to the EU and the UN and mandates the

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[1] WM -with measures, WAM -with additional measures, WoM -without measures or baseline scenario

Austrian Environment Agency to coordinate the development of emission projections and to report the required data in a format in line with the legal basis.

Modelling framework: The sectoral activity forecasts are mostly modelled by subcontracted institutions (e.g. universities). Only the activity forecasts of waste and F-gases are calculated at the *Environment Agency*.

Team Austrian Environment Agency: About 3 people are involved with the coordination, data compilation and updating the projection reports. Another 1 to 2 persons per sector (Energy, Industry, Transport, Buildings, Industrial Processes and F-Gases, Waste, Agriculture) are responsible for analyzing the projected activity data, identifying appropriate emission factors, calculating the emissions, interpreting the projected trend and reviewing the final version of the report.

Key economic parameters used by the development of projections are e.g. GDP, population, stock of dwellings, international fuel prices.

Quality assessment and quality control (QA/QC):

- ✓ Data consistency checks
- ✓ Documentation of data inputs/outputs
- ✓ Documentation of changes in calculation files
- ✓ Use synergies: often same sector expert for emission inventory and emission projections
- ✓ Plausibility checks with global emission models such as GAINS/PRIMES
- ✓ Important: iterative feedback loops between modelling teams, sector experts, inventory experts and stakeholder (Ministries)
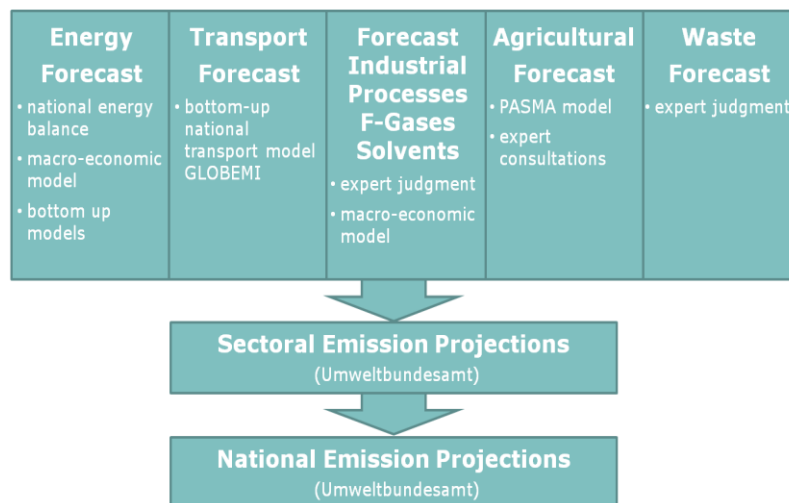

Figure 6 Example of data low

Timeline for development of projections:

The preparation of the latest emission projections took Austria one and a half year: preliminary workshop, kick-off, scenario development, participation process, emission calculation, compilation, reporting templates under NEC, CLRTAP and EU-MM, report under NEC, CLRTAP and EU-MM, final meeting.

Discussion and Next Steps

Ms. MARECKOVA distributed the CLRTAP & EEA Inventory Review Report to the participants. She showed and provided the Turkish emission country profiles that are compiled by the EEA. Further the importance of using standardized formats for reporting and importance for documentation and archiving of all information has been stressed;

Mr. POUPA mentioned that the national energy statistics are collected by the Ministry of Energy and Natural Resources and that TURKSTAT prepares the national energy balance (IEA Joint Questionnaires);

Mr. RITTER addressed differences between the Austrian and Turkey approach to managing emission reporting. Furthermore, the process of preparing a NEC strategy was discussed in more detail.

Ms. SPORER announced the extension of the glossary on the project website in terms of emission projections by Umweltbundesamt. She gave the Austrian report on GHG emission projections to Ms. Koçer (MoTC) upon her request for further details on Austria's transport model.

The inventory compiled under TA project should be provided to MoEU and the responsible MoEU staff to help with identification of priorities for training on inventory preparation and reporting.

In respect to the Turkish inventory system, the establishment of a 'register of large point sources' would be very useful. Such database could serve in addition for modellers (air quality studies) and other national legislation requirements plus for reporting under LCP, CLRTAP and other international obligations. Umweltbundesamt could assist by with developing such system.

In the second half of the project (month 16-20, August 2012-December 2012) another workshop regarding the present progress in developing national inventory system has been planned.

Annexes

1- Agenda
2- List of participants – 28.09.2011
3- List of participants – 29.09.2011

Agenda

28-Sep		
09:30	**Welcome**	Mr. Nihat YAMAN, MoEU
10:00	**Data reported under NECD directive, NECD Status report**	Katarina Mareckova (Environment Agency Austria)
	CLRTAP, Reporting Guidelines	
	Questions	
11:00	*Coffee break*	
11:30	**The Role of Emission Reporting for the Austrian Air Quality Management , (**institutional roles, resources, cooperation with MoE… practical examples)	Manfred Ritter (Environment Agency Austria)
	Questions/Discussion	
12:30-14:00	*Lunch break*	
14:00	**Emission inventory system in Latvia** (roles, resources,… practical examples e.g key categories, trends)	Agita Gancone (Latvian Environment, Geology and Meteorology Centre)
	Discussion	
15:00	*Coffee break*	
15:30	**Emission Inventory – Data Management (**different approaches to data storage and management , Austriaan expirience **)**	Stephan Poupa (Environment Agency Austria)
16:30-17:00	Questions /Discussion	
29-Sep		
09:30	**Development of national emission projections – introduction (**planning, data required, tools, guidelines, resources, reporting, experience form Austria)	Melanie Sporer (Environment Agency Austria)
	Questions/Discusion	
10:30-11:00	*Coffee break*	
11:00	**Air Emissions from Stationary Fuel Combustion**	Stephan Poupa (Environment Agency Austria)
	Questions/Discusion	
11:45	**IPPC**	Mr. Gökşin TEKINDOR
	Questions/Discusion	
12:30-14:00	*Lunch break*	
14:00	**The Austrian NEC strategy** (preparation process and content)	Manfred Ritter (Environment Agency Austria)
	Questions/Discusion	
15:00	*Coffee break*	
15:30- 16:00	**Wrap up , Next steps, Closing of the workshop**	Katarina Mareckova (Environment Agency Austria)

PARTICIPANT LIST

Venue: MoEU, 22nd floor; 09:30-16:00

Date: 28.09.2011

Twinning Workshop on "Management Issues in Reporting Emissions Data for the NEC Directive"

"Improving Emissions Control" Twinning Project TR08IBEN02

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PARTICIPANT LIST

Venue: MoEU, 22nd floor; 09:30-16:00

Date: 28.09.2011

Twinning Workshop on "Management Issues in Reporting Emissions Data for the NEC Directive"

"Improving Emissions Control" Twinning Project TR08IBEN02

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Twinning Workshop on "Management Issues in Reporting Emissions Data for the NEC Directive"

Venue: MoEU, 22nd floor; 09:30-16:00
Date: 28.09.2011

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PARTICIPANT LIST

Twinning Workshop on "Management Issues in Reporting Emissions Data for the NEC Directive"

Venue: MoEU, 22nd floor; 10:00-16:00

Date: 29.09.2011

"Improving Emissions Control" Twinning Project TR08IBEN02

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Twinning Workshop on "Management Issues in Reporting Emissions Data for the NEC Directive"

Venue: MoEU, 22nd floor; 10:00-16:00

Date: 29.09.2011

"Improving Emissions Control" Twinning Project TR08IBEN02

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