

Regional Training Seminar on assessment of GHG Inventories in Waste

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National system

- The Republic of Serbia has realized in 2010 its 1st National Communication (INC) as a Non Annex 1 Party to the UNFCCC. This first inventory concerned two years of reporting, 1990 and 1998 and 2015 for projections.
- The GEF/UNDP BUR (including the Inventory chapter) is in draft and should be adopted and submitted to the UNFCCC by the end of 2015.
- At the same time, the Republic of Serbia is currently working on its GHG Inventory for the GEF/UNDP Second National Communication(SNC), which is expected to be published in 2016.
- The BuR and SNC GHG Inventory was developed by SEPA, and later reviewed by the Faculty of Mechanical Engineering (University of Belgrade).
- The Republic of Serbia has the challenging goal to be prepared for the Annex 1 reporting. The SNC and the BUR will report 1990 – 2013 GHG emissions consistent with the IPCC 2006 Guidelines in terms of methodology.
- Projections and mitigation programme for the period till 2020, 2030 is being prepared by Faculty of Mechanical Engineering and using relevant model (LEAP model). Long-term framework mitigation strategy by 2020/2030/2050, following the EU Roadmap 2050, will be prepared.



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Institutional arrangements

- Ministry of Agriculture and the Environmental Protection is a National Focal Point for *UNFCCC*, while Inventory preparation is under responsibility of Serbian Environmental Protection Agency (SEPA).
- Establishment of national GHG inventory of the Republic of Serbia is stipulated by the Law on Air Protection (OG 36/09 and 10/13) which in Article 50 prescribed that in order to monitor emissions and removals of greenhouse gases, National greenhouse gas inventory is established, which is under the responsibility of SEPA - Department of National Register of pollution sources .
- In accordance with the obligations under this section in the Department of National Register of pollution sources of the Agency, in 2012 began with the establishment of the National inventory of emissions of greenhouse gases.



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Institutional arrangements

- Other institutions which are relevant contributors for the GHG Inventory are:
 - The Statistical Office of the Republic of Serbia (SORS) which is publishing sectorial statistics for the Republic of Serbia (energy, industry, transport, agriculture, waste, etc.). It is also in charge of producing the annual Serbian Energy Balance (EB) and reports those data to Eurostat and International Energy Agency (IEA).
 - Ministry of Mining and Energy (MME) – Strategy Planning Office: Based on their own survey to energy suppliers and transformation operators, this section of the MME carries out annually a three years energy balance containing data from the previous year, the current year and a forecast for the following year. The Strategy Planning Office is also in charge of the Energy strategy.
 - Ministry of Internal Affairs - Police: The Serbian Police is responsible of the vehicle registration and maintain the related database.
 - Customs Office
 - Public Utility Companies



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GHG emission projections

- Under the GEF projects: “Second National Communication (SNC) of the Republic of Serbia to the UNFCCC” and “First Biennial update report (FBUR) under the UN Framework Convention on Climate Change” that are on-going, for the first time GHG modeling is conducted. Projections will be made for the period 2020, and 2030 and overall 2050.
- Moreover, preparation of these GHG projections will be a basis for the preparation of Climate change strategy, with Action plan.
- Currently, there is no legally defined responsibility of specific institution(s) for projections, while this as well as QA/QC procedures will be defined and legally prescribed under the IPA 2013 project: “Establishment of mechanism for the implementation of MMR”. The project has began in May 2015.



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GHG emission projections

- Projections are presented on sectorial basis for three scenarios:
 - ‘basic scenario’ (implementation of PaMs that are planned in the applicable national legislation and plans)
 - ‘with measures’ (adopted legislation and measures that are currently being implemented)
 - ‘with additional measures’ (PaMs that are under discussion and have a realistic chance of being adopted and implemented in the future period)



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GHG emission projections (Gg CO₂ eq)



- 'basic scenario': the composition of municipal waste and dominant way of waste treatment remains unchanged, i.e. it is assumed that will be continued poor disposal of separated waste on landfills.
- 'with measures': improving waste management practices, including reduction of biodegradable components of waste disposed in landfills and increase recycling.
- 'with additional measures': increasing the amount of biological treatment of municipal wastes, mostly using the anaerobic digestion. Thermal waste treatment with heat recovery is foreseen only in the largest cities (Belgrade, Novi Sad and Nis).



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Greenhouse gas inventory

- For inventory compiling was used the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, as well as all other instructions whose use is mandatory.
- To calculate the emissions of greenhouse gases from all categories, it is used the IPCC Inventory Software 2006th.
- Uncertainty analysis was not performed.
- 2006 IPCC Guidelines for GHG Inventory offers default values for the Activity data and Emission factors uncertainties, which were used.



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BUR Inventory

- According to political and economic situations during the 90' of the last century and also economic crisis after 2008, emission of GHG decreasing differently in differently sectors in 2013, but the share in total emission remain same as in the base year. The largest share in latest year of GHG inventory, 2013, came from the energy sector (79.43 % of the total emissions).
- As in the 1990, the next in terms of contribution to the total GHG emissions in 2013. was the agriculture sector which emitted was 10.59 % of the total GHG emissions. In contrast of 1990 the emission of GHG in 2013 from waste management sector contributed with 5.13 % of the total GHG emissions, while industrial sector remained with the least contribution with 4.85%. These sectoral shares are, with minor changes, consistent throughout the period 2010-2013.

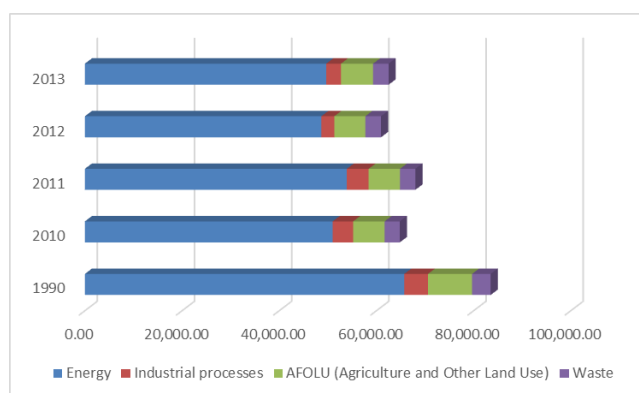


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BUR Inventory



GHG emissions by sectors, 1990, 2010-2013 (Gg CO₂ eq)



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Waste sector

- In 2013, emissions from the waste sector were 5.1% of total GHG emissions. In the period 2010-2013, emissions have increased by 2.1% due to higher emissions rate from wastewater treatment and discharge, and in comparison with 1990 they decreased by 16.5%.



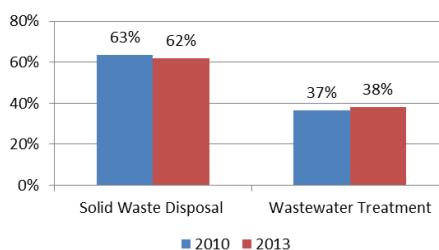
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Waste sector

- Within the sector, 61.9% of the emissions were from solid waste disposal on land, followed by 38.1% from wastewater treatment and discharge.



Comparative view on shares of GHG emissions from source categories within Waste sector in 2010 and 2013.



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Waste sector

- Under the activity 2.6. of the IPA 2012 project: "Establishment of a monitoring, reporting and verification system necessary for the effective implementation of the EU emissions trading system (EU ETS)", analysis on compliance of National GHG inventory's preparation with the EU and UNFCCC requirements was conducted.
- The main technical recommendations had been considered by SEPA concerning the waste sectors.
- Still there is left other improvements to be done.



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Key source categories

- 4.A – Solid Waste disposal
- 4.D – Wastewater Treatment and Discharge



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NE categories

- 4.B – Biological Treatment of Solid Waste
 - No composting centers, even though it was planned to have 7 by National Waste Management Strategy
- 4.C.1 – Waste Incineration
 - No municipal solid waste incinerators, even though it was planned to have 4 by National Waste Management Strategy
- 4.C.2 – Open Burning of Waste
 - Forbidden by law



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Critical issues

- QA/QC implementation according IPCC guidelines is not requested for NAI countries. As a consequence, no documentation and no clear QA/QC activities are established in Serbia. However, establishment of robust QA/QC procedures and documentation is a key element of Annex I reporting. Moreover, by principle, QA/QC procedures aim to improve the quality of data in regard of GHG emissions. Such improvement leads to a better assessment and follow up of policies and measures in place at national level.
- Annex I require to justify data by providing relevant underlying documentation and by maintaining an archive system to ensure the tracking of information. Such requirement does not apply to NAI countries and, as a consequence, is currently not establish in Serbia.
- There is currently no improvement strategy formalized (the main possible improvements concerns the TACCC principles).



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Challenges

- The key short-term challenges in further development of GHG inventory are primarily related to institutional and human resources strengthening and data flow management, including IT infrastructure, since existing capacities are underestimated when comparing to the monitoring and reporting requirements.



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