

Regional Training Seminar on assessment of GHG Inventories in the Forestry and Other Land Use

Macedonia

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This Project is funded by the European Union



Project implemented by Human Dynamics
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- Situated in the central part of Balkan Peninsula
Area 25.713 km²
 - Forests - 40%
 - Agricultural land - 51%
 - Non-productive land - 9%
- The Ministry of Environment and Physical Planning (MOEPP) has been designated as the National Focal Point to the UNFCCC and as Designated National Authority (DNA) for Kyoto Protocol implementation.

GHG Inventory

- Part of I, II and III National Communications on CC and First Biennial Update Report
- Developed for 5 sectors: energy, industry, agriculture, forestry, waste

Overview of National system

- Other ministries that have responsibilities related to climate change include the Ministry of Agriculture, Forestry and Water Economy, the Ministry of Economy, the Ministry of Transport and Communication, the Ministry of Health and the Ministry of Finance. A National Climate Change Committee (NCCC) provides high-level support and guidance for overall climate change policies in the country.
- Climate change issues are incorporated into the Law on Environment, including details on the preparation of GHG emissions inventories. The Law also includes an action plan on measures and activities to abate the increase of GHG emissions and to mitigate the adverse impacts of climate change.



Inventory preparation

- The country has conducted a national inventory of anthropogenic emissions by sources and removal by sinks of all greenhouse gases (GHGs) to identify the major sources and removals/sinks of greenhouse gases with greater confidence so as to adhere to its targets and inform policy decisions. Software.
- The inventory includes a database of six direct gases; CO₂, CH₄, N₂O, PFCs, HFCs and SF₆, and four indirect gases; CO, NO_x, NMVOC and SO₂.
- GHG inventory preparation was coordinated by the Ministry of Environment and Physical Planning and managed by a GHG inventory team with support from a national technical advisor and the Global Support Programme (GSP).

Inventory preparation

- To report up-to-date GHG trends in the FBUR, the TNC inventory has been updated to consider the period 1990 – 2012 using the newest IPCC 2006 Inventory Software.
- The total net emissions in the whole inventory period of 1990 – 2012 demonstrated a slight increase of 0.4% compared to the year 1990

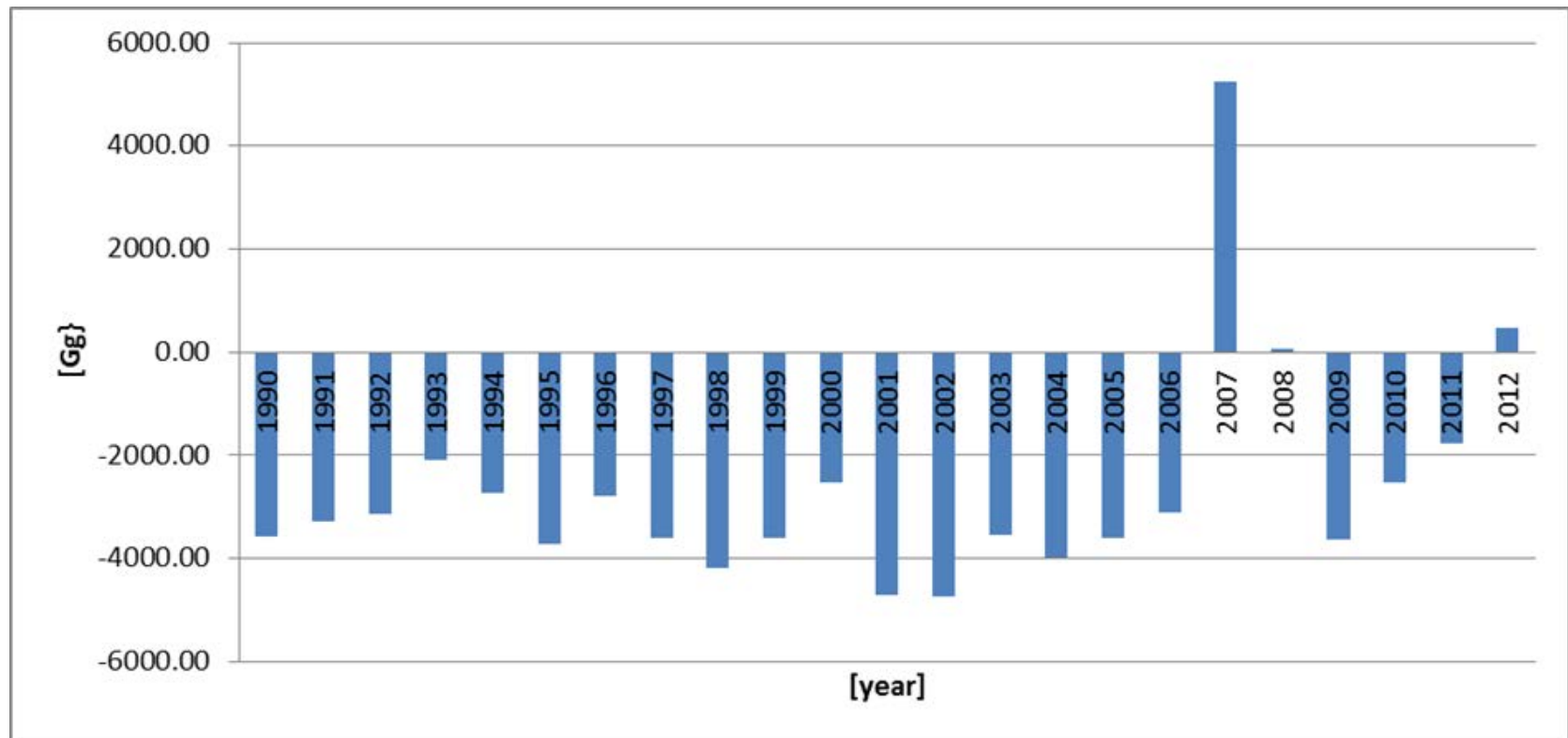
Inventory preparation

- The five most emitting key source categories in Macedonia are:
 - CO₂ emissions from Energy Industries (coal, lignite) (49.5%);
 - CH₄ emissions from Solid Waste Disposal Sites (11.7%);
 - CO₂ emissions from Mobile Combustion, including Road Vehicles (11.6%);
 - Manufacturing industries and construction (8.8%);
 - CH₄ emissions from Enteric Fermentation in Domestic Livestock (3.9%).

AFOLU emissions- Category land

- **Forest Land** - includes all land with woody vegetation consistent with thresholds used to define Forest Land in the national greenhouse gas inventory.
- **Cropland** - includes cropped land, including rice fields, and agro-forestry systems where the vegetation structure falls below the thresholds used for the Forest Land category.
- **Grassland** -includes rangelands and pasture land that are not considered Cropland. It also includes systems with woody vegetation and other non-grass vegetation such as herbs and brushes that fall below the threshold values used in the Forest Land category.
- **Wetlands** - includes areas of peat extraction and land that is covered or saturated by water for all or part of the year (e.g., peatlands) and that does not fall into the Forest Land, Cropland, Grassland or Settlements categories.
- **Settlements** - includes all developed land, including transportation infrastructure and human settlements of any size, unless they are already included under other categories
- **Other Land** - includes bare soil, rock, ice, and all land areas that do not fall into any of the other five categories.

AFOU emissions- Category land in Macedonia (1990-2012)



The emissions from the land and land use are undergoing several major fluctuation in the time-series . The main reason for these major spikes are the forest fires that occurred in several years especially in 2007, 2008 and 2012

Completeness

- Emission/Reductions from Forest Land
- Emission/Reductions from Crop Land
- Emission/Reductions from Grass Land
- Emission/Reductions from Wetland
- Emissions from biomass burning
- Liming
- Urea application
- Managed soils
- Rice cultivation



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Data sources and identified gaps

- The activity data on land use and land use change are gathered from the annual statistical reports published by the State Statistical Office of Republic of Macedonia.
- The statistical office gathers these data through one quarterly and several annual surveys based on accounting and other records provided from the public forestry enterprise, PE “Makedonski Sumi”, and national parks.
- Data on area, establishment, care of forests and use of forests including damages to forests are reported only for state forests, while fire damages include state forests and forests in private property.
- The data for application of fertilizers and urea were acquired from the FAO database. The data for the manure volume was derived from the statistical yearbook prepared by the State Statistical Office. The methodologies for greenhouse emission estimation were used in accordance with the 2006 IPCC Guidelines.



Non-estimates (NE)

- Land conversion
- Emissions /Reduction from settlements
- Organic soils

Key categories

- Emission/reductions from Forest land is observed to be a key category throughout (level) the whole time series.
- The emission spikes derived from the forest fires result this category to be also key category in the trend assessment.



Critical issues

- The very limited activity on land use and forestry limits the complexity and the accuracy of the GHG emissions calculation.
- No data on land use change
- It is important to develop a new forestry inventory that will determine the area, stock, density, annual growth, tree species, commercial and illegal logging, fires and other disturbances, flooding as well as land conversion in forests, croplands, grasslands and settlements.
- Future usage of remote sensing data obtained by satellites. To analyse this data it is recommended the IDRISI Selva GIS and Image Processing software.
- Need for capacity for satellite data analysis.



Progress made

- In FBUR the AFOLU sector was calculated in accordance to 2006 IPCC guidelines for the whole time series, as opposed to the previously used 1996 Guidelines
- Gaps were identified and improvements were proposed.



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Thank you for your attention!

**For more information, please see:
www.klimatskipromeni.mk**



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