



Road Map to Develop Climate Change Related Statistics - Slovenia

1. Current conditions in the country regarding climate change

Slovenia lies in a temperate climate zone and is the southernmost country of the Central Europe region. With its 20.273 km², Slovenia is considered to be relatively small country but has a rather diverse climate conditions: from sub-mediterranean in the south-west coastal region, to prevailing continental climate in the lowlands and Alpine (mountain) climate in the mountains area. Settlement is mostly confined in the coastal region and the lowlands.

The average temperatures and precipitation are therefore not evenly distributed across the country. The mountains area receives more than 2000 mm of precipitation (both in form of rainfall and snowfall), while the lowlands in the north-east part of country can receive just around 700 mm of precipitation annually. The coastal region and lowlands in the north-east, where most of agricultural land is situated, are quite exposed to summer drought, which can last more than few weeks or even months. Other extreme climate events that can occur throughout the country include hail, sleet, floods, severe windstorms, etc.

It is expected, that climate change will have a significant impact in Slovenia. Data shows that average annual temperatures have risen for 2 degrees Celsius in the past half century alone (which is far more than world average) and projections suggest that this trend will continue due to a geographical position of the country. Furthermore, the decrease of precipitation, especially through summer months will continue with even more significant trends in the future.

In the last decade, Slovenia managed to lower the amount of greenhouse gas emissions (hereinafter referred to as GHG) for 18%. Since forests (which are also carbon sinks) represent around 60% of state land cover and this percentage has increased in recent decades, Slovenia can more easily follow goals on GHG emissions. However this cannot be an excuse to delay actions in order to limit emissions origination in burning fossil fuels etc. Many actions, directed towards limiting GHG emissions, have already been undertaken in the state.

In 2015, 80% of GHG originated from the energy sector, 10% from the agriculture, 7% from the industrial processes and 3% from waste management. Around two thirds of electricity in Slovenia is generated in nuclear and hydro power plants and one third in thermal power plants (coal based). There is an initiative aimed to building new set of

hydro power plants, but this process was slowed because of insufficient funds during the financial crisis. The room for improvement is also in the transport sector: the share of electric and hybrid cars is negligible and the role of public transport is rather minor.

1.1. Data needs and stakeholders

In Slovenia, data on environmental and climate change related statistics is collected, processed and published by Slovenian NSO, i.e. Statistical Office of the Republic of Slovenia (SURSTAT) and Slovenian Environment Agency. The policies and measures of the Government of the Republic of Slovenia related to climate change are coordinated within an Environment and Climate Change Division under the Ministry of the Environment and Spatial Planning.

The need and demand for environmental and climate change related data is growing (among media, interested public, various environmental institutions, students, scientists, etc.). The public interest is increasing because the consequences of climate change is becoming more and more obvious – especially in the recent years, when occurrence of severe climate events is quite frequent (heat waves, droughts, floods, occasional shortages of drinking water, etc.).

2. Assessment of priorities in the development of climate change-related statistics

Assessment of priorities was made with help of assessment tool for climate change-related statistics and completing the Excel prioritization tool. With a help of example road maps (attached to invitation to pilot testing of national road maps), we prepared this first national road map, which aims to reflect stakeholder priorities.

The aforementioned “process” revealed some strengths and weaknesses of existing climate change-related statistics in Slovenia’s NSO and also presented us with the opportunities, through which this statistics could be and should be improved.

The following subchapters (i.e. 2.1., 2.2. and 2.3.) include revised priorities for developing:

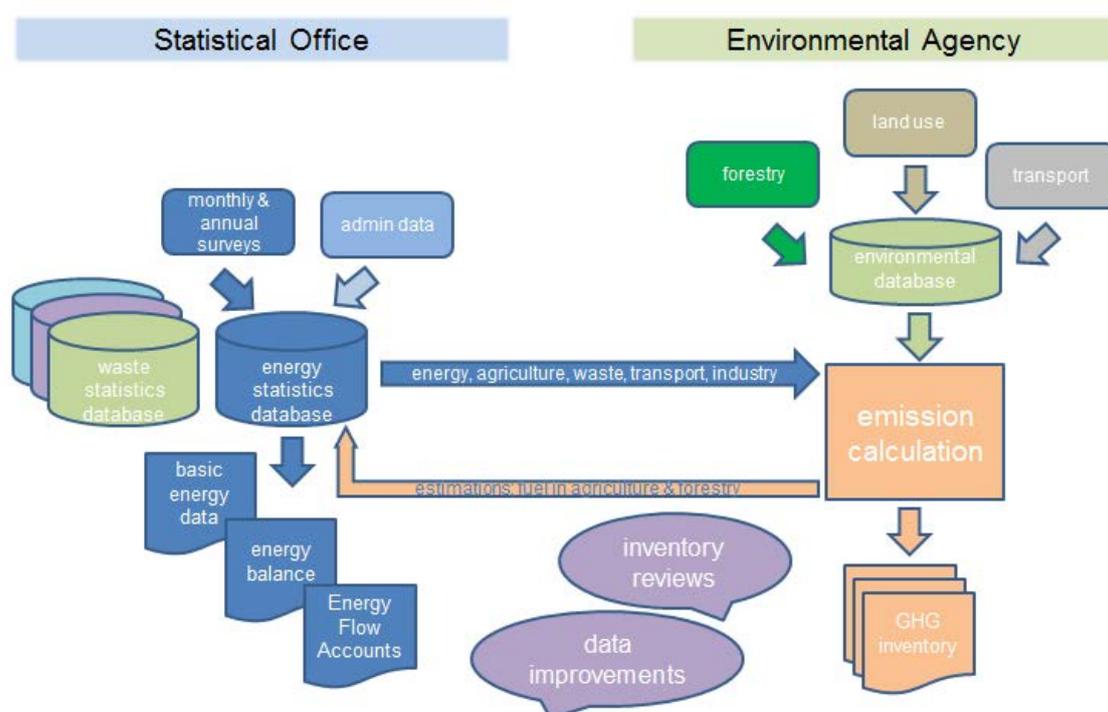
1. data for GHG inventories,
2. other climate change related statistics and indicators,
3. statistical infrastructure (organization) and capacity.

The final chapter (3) describes key findings of road map pilot testing in the form of a commentary on the process that followed the preparation of road map and lessons learned during this.

2.1. Priorities for developing data for GHG inventories

Background: Slovenian Environment Agency produces an annual inventory report of GHG emissions to the UNFCCC. Most of the data directly connected to climate change are collected by SURS (energy, agriculture, waste and transport) and then reported by Slovenian Environment Agency. In regard to Regulations (EU) No 691/2011 and 538/2014 of the European Parliament and of the Council, SURS produces environmental accounts (which, among others, include air emission accounts). Those data are compiled in accordance to SEEA framework and reported to Eurostat regularly.

Figure 1: How the data on GHG emissions is collected and processed in Slovenia



Analysis of priorities showed that only some of the recommended actions are still needed to be taken on this field in order to meet climate change data needs. Most of the actions that were proposed in recommendations and needed little time to be implemented were already realised.

However, some actions are not so time consuming and can start shortly or have already been undertaken:

Seek closer collaboration between the statistical community and international organisations working on climate issues (recommendation No 3.1)

Attending UNECE forums and similar meetings present the opportunity to exchange experiences, therefore such closer collaboration is very welcome and needed in order to learn various methods and therefore potentially enhance the quality of data.

Responsible agencies: SURS, UNECE, EEA, Eurostat

Start: Immediately

Duration: On-going

Expected result: Improved knowledge and understanding, more quality data.

Existing international networks of NSOs could facilitate the exchange experience (recommendation No 3.5)

Even though SURS obtains data on GHG inventories from Slovenian Environment Agency, exchanging experiences through existing international networks (among EU members, candidate and potential candidate countries) could help with establishing the methodology to provide early estimates of GHG emissions within SEEA framework.

Responsible agencies: SURS, Eurostat, etc.

Start: Immediately

Duration: On-going

Expected result: Improving understanding and quality of data.

We estimate that following actions will need some more time (at least a few years) to be implemented:

Improving the quality of energy statistics in particular (recommendation No 1.3.2)

There is still some improvement needed in compilation of energy statistics, especially on the field of: data on renewable energy, final energy use in industry and service sector and NACE allocation of energy use in the transport sector.

Responsible agencies: SURS, Eurostat

Start: Within two years

Duration: Three years

Expected result: Improved methodology on the field of energy use, which will be useful in processing energy statistics and GHG emissions statistics (NACE allocation).

Improve data on waste and the production of heat and electricity for own use and from renewable energy sources (recommendation No 1.3.4)

Quality of data on heat and electricity produced by autoproducers is still to be improved. Data on waste generation in production and service sector is obtained through individual questionnaires, but a goal is to obtain data from an administrative source - record lists of waste collectors (there is still a need to improve the quality of this records).

Responsible agencies: NSO, Ministry of the Environment and Spatial Planning, Slovenian Environment Agency).

Start: Within two years

Duration: Three years

Expected result: established process of obtaining data on waste generation in production and service sector through reliable administrative source.

Improve the timeliness of activity data (recommendation No 1.3.5)

The NSO aims to produce early estimates of air emission accounts in following years, given that data on GHG emission inventories will be made available in time.

Responsible agencies: NSO, Slovenian Environment Agency, European Environment Agency, Eurostat.

Start: Within two to three years

Duration: Three years

Expected result: Producing early estimates of GHG emission (air emission accounts) in T+9 months timeline.

2.2. Priorities for developing data on other climate change related statistics and indicators

SURS was included in some pilot projects and started delivering data on environmental accounts on voluntary basis (reporting some of the data on environmental accounts to Eurostat just became obligatory in 2017). Besides that, environmental statistics is quite developed and integrated into scope of work within SURS. Some of the data are exchanged and processed in cooperation with Slovenian Environment Agency (e.g. data used for aforementioned environmental accounts, data on waste, some of the data on agriculture and quality of water) and some other institutions (e.g. energy statistics in cooperation with Directorate for Energy, land cover and forest statistics in cooperation with Slovenian Forestry Institute). Several SURS surveys are conducted independently, i.e. with a help of questionnaires, direct queries, etc.

Some of the recommendations under chapters 4 – 6 have already been met, while some are still need to be taken into account. Firstly, we list some actions that do not require much time to be implemented:

Create national forums or events for discussions between users and producers of climate change statistics (recommendation No 4.1)

Discussions between users and producers of climate change already exist, but are organized and lead by Ministry of the Environment and Spatial Planning. SURS is already engaged in these discussions and strive to maintain this in the future.

Responsible agencies: SURS, Ministry of the Environment and Spatial Planning, Slovenian Environment Agency

Start: Immediately or as soon as possible

Duration: On-going

Expected result: Closer collaboration and improved communication among producers and users of climate change related statistics.

Promote the use of existing official statistics and indicators (recommendation No 4.2)

There are already a lot of inquiries on climate change-related data, this data are often summarized in media and scientific articles, but there is still room for improvement. SURS will seek the ways to establish more direct connection with data users (media, students, scientists, etc.).

Responsible agencies: SURS, Slovenian Environment Agency.

Start: Immediately

Duration: On-going

Expected result: Better understanding and increased use of climate change related statistics among users (institutions, interested public, students and researchers).

Provide access to climate change-related statistics and indicators (including scientific data collected by others) using NSOs' dissemination channels (recommendation No 4.3)

SURS does not publish data that have been (in the same form and units) published via other channels for other purposes and are already made publicly available by other stakeholders, nevertheless SURS includes links to those data in related publications. Most of the climate change related statistics is already on SURS website (except of data on temperatures, precipitation and other weather conditions, which are published by Slovenian Environment Agency).

Responsible agencies: SURS, Slovenian Environment Agency.

Start: Immediately

Duration: On-going

Expected result: Improved availability of data and user experience.

We estimate that following actions will need some more time (at least a few years) to be implemented:

Address the difficulties in matching data from different statistical domains (recommendation No 5.2)

Key issue is establishing the connection between energy flow accounts and air emission accounts. The methodology is yet to be established on European level.

Responsible agencies: Eurostat, SURS

Start: Within three years

Duration: Three years

Expected result: Air emission accounts are directly connected to physical energy flow accounts.

Geo-reference all relevant data to support analysis of the spatial dimension of data linked to climate change (recommendation No 5.3)

All geo-referenced data is already available via so called "STAGE" system. However, not all data can be geo-referenced (some of the data is collected only on national level). SURS will strive to implement this action with new statistics and in case if some existent statistics will enable data availability on larger scale.

Responsible agencies: SURS, Slovenian Environment Agency

Start: Within two years

Duration: The process is always on-going

Expected result: climate change adaptation measures will be more directly oriented on areas, which are more vulnerable.

Produce statistics for new geographical areas (recommendation No 5.4)

See recommendation No 5.3

Responsible agencies: SURS, Slovenian Environment Agency.

Start: Within two years

Duration: The process is always on-going

Expected result: see recommendation No 5.3.

2.3. Priorities for developing statistical infrastructure (organization) and capacity

SURS already strictly follows demands for processing environmental statistics on national and international level. In compiling the data SURS meets requirements of EU regulations. All the work on environmental statistics is incorporated within special division, i.e. Environmental Statistics Division. This enables closer and more qualitative collaboration among experts for environmental statistics. Most of employees have background in environmental sciences. There is a close collaboration with other national institutions, such as Slovenian Environment Agency, Ministry for Environment and Spatial Planning, Ministry for Agriculture, Forestry and Food, etc. However, increasing demand for data and new assignments, as results of growing environmental awareness and sensitivity, will probably require some adaptations of statistical infrastructure, especially in employing new qualified staff and ensuring more funds for this field.

We estimate that following actions will need some more time (at least a few years) to be implemented:

Build knowledge and understanding of the natural sciences among NSO staff (recommendation No 8.1)
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<i>Most of the staff in SURS, working on a field of the environmental statistics, has a background in natural sciences. However, natural sciences covers wide range of expertise, therefore SURS should look after various profession profiles (in natural sciences) when hiring new staff or either use the knowledge from existing staff from other departments (which are not directly included in the work on the environmental statistics, but have a background in natural sciences, which can be used in work processes in department, responsible for environmental statistics).</i>
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Responsible agencies: SURS

Start: Within a year or two

Duration: On-going process (may take several years)

Expected result: Employees of Environmental Statistics Division within SURS have qualifications and backgrounds from various fields of natural sciences. Quality of work process is improved.

Earmark sufficient resources for the development of environmental statistics and

climate change-related statistics (recommendation No 9.4)

Development of new statistics in the field of environmental and climate change related statistics would require more resources (financial, human). Since the environmental issues are becoming more and more important on national and global level and requirements for collecting and reporting data are increasing, there is expected to be a need to ensure more resources, especially financial.

Responsible agencies: SURS, Slovenian Environment Agency

Start: Within two years

Duration: On-going process (may take several years)

Expected result: Sufficient human, organizational and financial resources that enable SURS and Slovenian Environment Agency to develop and manage existing and new-developed environmental and climate change related statistics.

3. Key findings and evaluation

Slovenian NSO (SURS) compiles environmental accounts (namely: air emission accounts, physical energy flow accounts, environmental taxes, material flow accounts, environmental goods and services accounts, environmental protection expenditure accounts) and some other environmental studies indirectly connected to climate change (e.g. environmental, sustainable development and green growth indicators).

The most data directly connected to climate change is monitored and processed by Slovenian Environment Agency, e.g. data on GHG and pollutants emissions (based on territory principle, reported to UNFCCC and European Commission), temperatures and other weather/climate conditions, water (sea, river, lakes) conditions, other data on environment and ecosystem conditions, etc.

Data that have once been collected and then published by Slovenian Environment Agency are not published again by SURS. SURS obtains some (administrative) data from Slovenian Environment Agency which are then taken into account in their own research (e.g. environmental accounts under SEEA framework). On the other hand, Slovenian Environment Agency also obtains some data from SURS (e.g. data on transport, energy, waste, etc.). **Exchange of data between SURS and Slovenian Environment Agency is based on formal mutual agreements.** Data transmission among both subjects runs mostly through single entry points in electronic (normally tabular) form.

After evaluation, 29 out of 43 sub-recommendations listed in MS Excel prioritization tool were recognized as already completed or not essential in order to develop official statistics to meet climate change data needs. However, on 14 sub-recommendations further action is still needed. Most of those recommendations (9) require at least a few years to be completed. Main reasons for this are:

- SURS is not the only partner in process, therefore it has a rather limited direct impact on the actions and decisions made (some of the actions require cooperation with Slovenian Environment Agency and/or other national or international organization);
- some actions require more time by its nature; the process to implement is long and require more resources;
- the timeline for some of the actions is difficult to determine, especially with actions that require development of new methodological processes and statistics.

Review of the remaining proposed recommendations revealed that SURS will need to generally focus on the following coursework:

- improving and developing new methodologies in environmental and climate change related statistics, increasing the data quality, including providing early estimated data through a cooperation with partner agencies (e.g. Slovenian Environment Agency);

- promoting environmental and climate change related statistics, which includes ensuring simplified access to all relevant data (user-friendly policy), connecting the producers, stakeholders and users of data and promotion through media channels;
- closer work with the international community – follow the new requirements, involve in the preparation of new policies, exchanging the experiences;
- ensuring sufficient resources for work on environmental and climate change related statistics on a long term; implement measures in the work organization in SURS, where needed.

Developing the national road map was recognized as an important step in a way towards determining further work on ensuring qualitative environmental and climate change related statistics. SURS will strive to implement remaining recommended actions in the following years. However, especially with actions that require more resources (new assignments, development of new methodologies and statistics), **SURS expects leading international institutions (including UNECE) to apply proper measures, which will require actions from national institutions (NSOs and others) and therefore enable more quality, harmonized and comparable data.** This specifically relates to actions, where NSOs are not the only partners in the process of implementation.

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