

Climate Change and European Official Statistics

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Abstract

According to an approach widely shared in the European Statistical System (ESS), “climate change related statistics” (CCRS) are environmental, social and economic high quality statistics and indicators suitable for monitoring changes related to climate change. The component “State” of the *Driving forces, Pressures, State, Impacts, Responses* model (DPSIR) is not covered by the CCRS currently produced within the ESS. The latter is responsible for providing a substantial amount of basic data that serve as inputs for the GHG emissions inventory. As core priorities for the future, it is envisaged to produce early estimates of CO₂ emissions based on monthly energy statistics and to investigate the “consumer perspective” of global climate change. Recommendations on how to improve CCRS in the ESS are expected from the UNECE Task Force on climate change related statistics.

Keywords

Sustainable development, GHG emissions, climate change, air emissions accounts, emission inventory, driving forces

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INTRODUCTION

Despite the controversial discussions that have characterized the debate on climate change for quite a long period, it is widely recognized that alterations caused by human activities to the natural environment are at the origin of this phenomenon to a large extent. Now the issue is definitely on top of global concerns in the political agenda on sustainability, and not only from an environmental viewpoint. While the United Nations Framework Convention on Climate Change (UNFCCC) encourages a significant reduction of greenhouse gas emissions and the Kyoto Protocol sets binding targets for these emissions, the outcome document of the Rio+20 United Nations Conference on Sustainable Development reaffirms that “climate change is one of the greatest challenges of our time” (United Nations, 2012).

This is very clear to statisticians. As it is maintained in a paper presented in 2008 at the Oslo *Conference on Climate Change and Official Statistics*, the Intergovernmental Panel on Climate Change (IPCC) “has been incredibly successful in organizing the collective effort of many of the world’s top scientists. It has been also incredibly successful in its advocacy role. It has had a fundamental role in convincing global and national policy makers that climate change is an issue that has to be addressed”; as the author

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argues, “that battle has largely been won” and “its major challenge now is to provide the best possible evidence base to support policy makers” (Trewin, D. 2008).³

The Oslo Conference reflects the official statistical community’s awareness of the importance of climate change in a statistical perspective, as well as the feeling that there is a need to better identify the role that the same community has to play in this field.⁴

Starting from the consideration that official statistics are used to identify and track changes in a changing world, it has been suggested that statisticians would have to look at climate change as “simply another type of driving force that produces change that needs to be identifiable” (Radermacher, W.⁵ et al, 2009).

Currently, an approach widely shared in the European Statistical System (ESS) is to look at statistics for climate change as “climate change related statistics” (CCRS), i.e. statistics and indicators for monitoring changes related to climate change. Accordingly, the term CCRS refers to environmental, social and economic statistics measuring the drivers, impacts and costs of climate change; it is not meant to cover data measuring climate and weather directly, for example data on temperature and precipitation (UNECE, 2013). Also, CCRS are not necessarily thought as a new system of climate change statistics.

As a matter of fact, CCRS do not feature as such in the Classification of Statistical Activities (CSA), which describes the wide set of information supplied by National Statistical Offices (UNECE, 2009). Indeed, CSA includes a breakdown into detailed subject areas for long-established subject matters such as social and economic statistics, which is not the case, instead, with “environment”. The latter is shown as one comprehensive category with no further breakdown, which mirrors the relatively more recent engagement of NSIs in the environmental field and also the significant role played by actors other than statistical ones such as ministries and governmental agencies. In no case CCRS are identifiable as such within CSA, neither within statistical activities dealing with the natural environment nor within those dealing with social and economic aspects.

In line with the above, the Framework for the Development of Environment Statistics (United Nations Statistics Division, 2013), which the UN Statistical Commission endorsed at its 44th Session in 2013, considers “Climate Change” among four main cross-cutting environmental issues – the others being “Water”, “Energy” and “Agriculture and the Environment” – and describes “Statistics on Climate Change” as an application of the FDES itself (United Nations, 2013).

CCRS have become more and more the focus of users’ demand over time. In particular, high interest in CCRS has been expressed within most significant initiatives on well-being and sustainability: the EU Commission’s initiative “GDP and beyond”, calling, among other things, for statistics on climate change with a view to complement Gross Domestic Product (Commission of the European Communities, 2009); the Commission on the Measurement of Economic Performance and Social Progress, calling for a well-chosen set of physical indicators to describe the environmental aspect of sustainability including the climate change (Stiglitz, J. E. et al, 2009); the co-operative project Sponsorship Group on “Measuring Progress, Well-being and Sustainable Development”, co-chaired by Eurostat and INSEE, calling for the development of indicators related to climate change as one of the first priorities for future work (ESSC, 2012).

But it is at the UNECE that the most recent initiative concerning CCRS has been pursued: in November 2011 the Bureau of the Conference of European Statisticians set up the “Task Force on climate

³ The Oslo Conference was convened by the United Nations Statistics Division (UNSD), in collaboration with Eurostat, the World Bank and Statistics Norway. At the time of the conference, Dennis Trewin was former Chief Executive Officer of the Australian Bureau of Statistics and a member of the Australian State of the Environment Committee.

⁴ See also the *Conference on Climate Change, Development and Official Statistics in the Asia-Pacific Region*, organized jointly by the Korea National Statistical Office (KNSO) and UNSD in the same year in Seoul: <http://unstats.un.org/unsd/climate_change/Korea/default.htm>.

⁵ Walter Radermacher currently is, and was when he argued about climate change and the role of statisticians at the 57th Session of the ISI, Eurostat’s Director General.

change related statistics”. The ongoing work of the latter, particularly relevant for the ESS, is focused on climate change in a very systematic way and is aimed at better understanding the role of official statistics in this field, with a view to come up with recommendations that will be of great interest for the European National Statistical Institutes (NSIs) (UNECE, 2013).

1 EUROPEAN OFFICIAL STATISTICS AND EUROSTAT’S ACTION CONCERNING CLIMATE CHANGE

1.1 The institutional arrangement of European official statistics

Similarly to the case of other areas of official statistics, the role of the ESS in the area of CCRS depends heavily on the institutional arrangement characterising the work carried out by statistical authorities within the EU.

According to the European Statistics Regulation (Official Journal of the European Union, 2009), Eurostat works in partnership with the national authorities responsible for the development, production and dissemination of European statistics in each Member State and in each European Economic Area (EEA) as well as European Free Trade Association (EFTA) country. These are NSIs, but also other authorities, and the ESS is the partnership between Eurostat and these national authorities; it functions as a network. Eurostat has a leading role in harmonization of statistics in close cooperation with the national statistical authorities. Member States collect data and compile statistics for national and EU purposes. The ESS work concentrates mainly on EU policy areas and, with the extension of EU policies, harmonization has been extended to nearly all statistical fields.

By sharing a common ESS definition of quality in statistics, Eurostat and the statistical authorities of the EU Member States have committed themselves to take an encompassing approach towards high quality statistics. This includes the implementation of the European Statistics Code of Practice (ESCP), which targets both processes in the statistical production and outputs of this production, i.e. the European official statistics, as well as institutional and organisational factors. The ESCP includes fifteen key principles for the production and dissemination of European official statistics and the institutional environment under which national and Community statistical authorities operate. Out of these fifteen principles, seven refer to the institutional environment: professional independence, mandate for data collection, adequacy of resources, quality commitment, statistical confidentiality, impartiality and objectivity, sound methodology; in addition to that, three principles refer to statistical processes: appropriate statistical procedures, non-excessive burden on respondents, cost effectiveness; finally, five principles refer to statistical outputs: relevance, accuracy and reliability, timeliness and punctuality, coherence and comparability, accessibility and clarity.⁶

The above highlights that in the ESS CCRS are intended to be high quality statistics and indicators as far as climate change is concerned. They are to meet requirements typical of official statistics such as, in particular, those set out in the ESCP.

CCRS provided within the ESS represent a clear case of application of the vision outlined in the 2009 Communication from the Commission to the European Parliament and the Council on “The production method of EU statistics: a vision for the next decade” – COM(2009) 404 (Commission of the European Communities, 2009) – in which the Communication puts an emphasis on combining the information produced in different areas to develop cross-cutting datasets suitable to satisfy different specific user needs. In the light of this vision, the ESS has one major comparative advantage in the area of climate change, in the same way as for other cross-cutting areas: i.e. access to large and diverse micro-level data and the

⁶ These principles largely transpose the fundamental principles of official statistics adopted by the United Nations and, in general, the existing international rules. A set of indicators of good practice for each of the fifteen principles provides a reference for reviewing the implementation of the Code.

possibility of combining various types of information at the micro-level, thereby increasing the consistency of the figures produced and their quality.

1.2 Significant steps made by Eurostat in relation to Climate Change

In recent years Eurostat has made a number of significant steps with a view to best satisfy user needs related to climate change. Major achievements include the following: the introduction in the organisational chart of the “Environmental accounts and climate change” unit (E.2); the setting up of an internal reflection group on climate change-related statistics; the development of a legal base for environmental accounting; the setting up of the Sponsorship Group on “Measuring Progress, Well-being and Sustainable Development”, in collaboration with the French NSI (INSEE); the active participation in the UNECE Task Force on climate change related statistics; the production and publication of the statistical guide “Using official statistics to calculate greenhouse gas emissions: A statistical guide” (2010 edition). Main achievements are further explained below.

As concerns the legal base for environmental accounting, following a preparatory work carried out within the ESS, in July 2011 the European Parliament and the Council adopted the Regulation (EC) No 691/2011 on European environmental economic accounts (Official Journal of the European Union, 2011). This includes, in particular, a module for air emissions accounts (Annex I to the Regulation), which, among other things, covers greenhouse gas emissions and is directly connected, therefore, to climate change issues.

In November 2011 the European Statistical System Committee (ESSC) adopted the final report of the Sponsorship Group on “Measuring Progress, Well-being and Sustainable Development”. The report (ESSC, 2011) translates the recommendations from the Stiglitz-Sen-Fitoussi Commission and the directions given by the European Commission’s Communication “GDP and beyond” into a plan for concrete actions to be put in place within the ESS, among which actions related to environmental sustainability – one of the priority areas – are covered. Climate change is specifically considered in the section dealing with environmental sustainability, where climate change is explicitly referred to as follows: “First priority will be given to the following areas: ... Further develop indicators related to climate change, also by using data derived from accounts: the module on Air emission accounts, covering greenhouse gas emissions, is already part of the first set of modules included in the EU Regulation on environmental economic accounts. Besides indicators derived on the basis of Air emission accounts, further indicators relevant to climate change mitigation and adaptation need to be developed in collaboration with other stakeholders ... Regularly produce environmentally-extended Supply and Use Input/Output Tables (SUIOT) to investigate the “consumer perspective” of global climate change or air pollution ... The following indicators could be further developed or result from the first priority areas listed above: ... Expenditure related to climate change adaptation ...”. A further statement included in the report, also relevant in relation to climate change issues, is as follows: “c. Improve timeliness of climate-related indicators by developing early estimates of CO₂ emissions based on monthly energy statistics: The methodology for using monthly energy statistics to produce early estimates of CO₂ emissions from energy is in an advanced stage of development by Eurostat. ... In addition, Eurostat is looking into developing “now-casting” techniques which could later be tested by EU Member States to be applied also at national level. With high political importance, such early estimates are also a priority”.

An important step made by Eurostat in terms of providing statistical guidance is represented by the above mentioned publication “Using official statistics to calculate greenhouse gas emissions: A statistical guide”. Following the United Nations Climate Change Conference held in Copenhagen in 2009, Kyoto Protocol countries had committed to reduce emissions; the planned reductions were to be monitored by means of detailed emissions inventories, to which official statistics collected by NSIs were an essential input. With the above publication Eurostat has presented a selection of official European statistics with

relevance for the calculation of greenhouse gas emissions. Topics covered include land use and agriculture, energy, business (industry and services), transport and waste. As a follow up to this publication, a map of data availability was created in the Eurostat portal with the purpose to lead users towards the relevant basic information related to emissions and other relevant aspects of climate change (Eurostat, 2013).

2 EXISTING CLIMATE CHANGE RELATED STATISTICS IN THE ESS

2.1 Climate change related statistics available within the ESS

In the wide range of statistics regularly produced within the ESS there are many that potentially contribute to provide a comprehensive picture of phenomena which in one way or another are related to climate change. Table 1 offers a tentative overview of current situation in this respect.

The first column in Table 1 lists the main sets of data at issue; these sets are associated with the broad categories of phenomena shown in the next column, which are considered to be of particular importance in relation to climate change. The central column lists phenomena that are relevant from the viewpoint of the interaction between climate change and the socio-economic system and to which, therefore, the statistics listed in the first column are connected; one example is the existence of the economic system itself, with production and consumption activities or its dynamics such as the internationalization of the economy, which constitute driving forces at the origin of certain alterations of the natural environment which in turn cause changes in climate patterns. For purposes of presentation and to help better understanding of the different sets of data listed in the first column, the latter are also labelled (in the third column) in terms of categories of the Driving forces–Pressure–State–Impacts–Response model (DPSIR).

Table 1 Supply of climate change related statistics in the ESS

Main CC related statistics in the ESS	Main CC related phenomena	DPSIR
GDP Industries' production Construction Agriculture Manufacturing Transport Energy	production	D
Gross inland energy consumption Number of cars, km driven Energy consumed for heating houses Food consumption	consumption	D
Trade data Tourism data Data on international transportation (land, rail, water, air)	internationalization of the economy	D
Basic data for GHG Emissions Inventories Energy Agriculture Forestry Waste Trade Air emission Accounts GHG emissions by economic activity Sector statistics Transport (e.g. emissions from vehicles) Agriculture (agri-environmental indicators)	emission of pollutants	P

Legend: ESS stands for European Statistical System; CC for climate change; DPSIR for driving forces, pressures, state, impacts, responses; GDP for Gross Domestic Product; D for driving forces; GHG for greenhouse gas; P for pressures; R for responses; GVA for Gross Value Added.

Source: Own construction

Table 1 Supply of climate change related statistics in the ESS

Continued

Main CC related statistics in the ESS	Main CC related phenomena	DPSIR
Environmental Protection Expenditure Environmental Taxes (by industry) Environmental Subsidies Price changes (e.g. of energy price)	market instruments	R
	switch to renewable energy	R
	recycling	R
Agricultural production and crop statistics (yield, areas harvested, etc.) Fisheries statistics (catch, aquaculture production) Forestry statistics (area, land change, forest damage, trade in wood) Water statistics (abstraction, wastewater treatment) Health statistics (causes of death including by vector-borne disease) Economic statistics (e.g. GDP, GVA per region, etc.) Population and migration statistics	vulnerability	I

Legend: ESS stands for European Statistical System; CC for climate change; DPSIR for driving forces, pressures, state, impacts, responses; GDP for Gross Domestic Product; D for driving forces; GHG for greenhouse gas; P for pressures; R for responses; GVA for Gross Value Added.

Source: Own construction

As shown by Table 1, the statistics produced within the ESS typically do not cover the component “State” of the DPSIR, which mainly refers e.g. to information on concentration of greenhouse gases in the atmosphere, on air temperature, on sea temperature, i.e. to data mostly produced outside the ESS. Also, Table 1 highlights how phenomena like the switch to a more sustainable use of energy sources, as well as recycling, are not yet regularly covered within the ESS.

Eurostat makes use of figures that are part of CCRS in particular for compiling indicators for “Climate change and energy” in the context of Eurostat’s Sustainable Development Indicators (SDI) – the indicator system established to monitor the EU Sustainable development strategy.

2.2 The ESS’ and Eurostat’s role in climate change measurement

Currently, the ESS is responsible for providing a substantial amount of basic data that serve as inputs for the GHG emissions inventory. In a sense, these are complementary data. A central role in the calculation of emission inventories could even be envisaged for Eurostat, and actually at the national level such a role is played in some cases, e.g. by the Finnish NSI. Any innovation of this kind would require evaluation in close liaison with the IPCC, while the main stakeholders at the EU level would be DGs CLIMA and ENV and the European Environment Agency. In addition to that, the ESS – and Eurostat in particular – provides information that adds value to already existing data, as in the case of emissions figures calculated according to a consumption-perspective.

As for the future, the Sponsorship Group on “Measuring Progress, Well-being and Sustainable Development” has identified priorities for the ESS in relation to climate change; the core priorities are as follows: to produce early estimates of CO₂ emissions based on monthly energy statistics, thus improving timeliness of indicators; to produce on a regular basis environmentally-extended Supply and Use Input/Output Tables (ee-SUIOT) to investigate the “consumer perspective” of global climate change in order to develop carbon footprint indicators.

Specific challenges can be envisaged for Eurostat, ranging from possible contributions to the development of guidelines for the calculation of emission factors in some specific domains, such as e.g. agriculture, to the provision of geographically referenced data.

A clear demand has been expressed by the EU Commission with reference to both mitigation and adaptation aspects. As for mitigation of climate change, the Commission's demand is along two lines: the production of data on air emissions and the production of data on environmental protection expenditure. In the first case the idea is to introduce in the calculation of air emissions the consumption-perspective as an approach complementary to the production-perspective. As far as adaptation is concerned, the Commission calls for the production of statistical information mainly based on expenditures data; this is still under discussion, however, since the topic is quite difficult in terms of measurement and data production.

Within the European Statistical Programme 2013–2017, reference is made explicitly to climate change when defining statistical outputs in terms of indicators, accounts and primary/secondary statistics to be used for monitoring the implementation of the Europe 2020 strategy.

The dissemination of data and analyses through "Statistics in focus" highlights as well the role played by Eurostat in the area of climate change. Two recent publications seem to be of particular interest in this respect: "Driving forces behind EU-27 greenhouse gas emissions over the decade 1999–2008" (EU-ROSTAT, 2011a) and "CO₂ emissions induced by EU's final use of products are estimated to be 9 tonnes per capita" (EUROSTAT, 2011b). The first publication is a clear demonstration of the role played by the ESS in the process of producing information crucial for the Kyoto protocol's needs: official statistics collected by the ESS are used to estimate greenhouse gas emissions which are then reported in emissions inventories; thus, while the inventory data is collected by the European Environment Agency, Eurostat's statistics provide a solid basis for analysis of the underlying driving forces behind emissions. The second publication presents modelling-estimations based on environmentally extended input-output tables which have been compiled for the very first time for the aggregated EU. Another significant Eurostat publication is the statistical article "Sustainable development - Climate change and energy" (EUROSTAT, 2011c) in "Statistics Explained", which provides an overview of statistical data on sustainable development in the areas of climate change and energy.

3 POSSIBLE IMPROVEMENTS IN CLIMATE CHANGE RELATED STATISTICS WITHIN THE ESS AND BEYOND

Hints on possible future developments for CCRS in the direction of enhancing the role of NSIs come from the Meeting on Climate Change Related Statistics for Producers and Users, organized in Geneva on 19–20 November 2012 by the UNECE Task Force on climate change related statistics. The Meeting identified, on the one hand, possible specific data improvements to better meet users' demand, and, on the other hand, more general improvements concerning the role of NSIs within the overall "infrastructure" of CCRS production.

On the basis of the outcome of the session "User needs and data gaps", the following items can be identified as concerns improvements in the production of CCRS to better meet users' demand:

- detailed geo-referenced data and spatial statistics,
- statistics on green growth and sustainable development,
- environmental subsidies and taxes,
- employment and turnover in green sectors,
- higher level of detail for existing statistics both with regard to economic sectors and geographic breakdown,
- investments in adaptation measures,
- climate-related morbidity and mortality,
- resilience of people, economic systems and ecosystems, population dependent on subsistence farming and access to reliable water supply,
- indicators that include causality assumptions, such as mortality due to heat waves,
- improved quality and availability of data underpinning GHG emission estimates.

As concerns more general improvements, a number of interesting points can be derived from the main conclusions of the panel discussion and the open discussion of the Meeting.

An important issue is how can national statistical offices better organize themselves to contribute to the emission inventory compilation process. With regard to this, the main conclusions of the Meeting are as reported hereafter.

NSIs should be part of the national system of greenhouse gas emission inventories in all countries, and this should be established through official agreements. NSIs' involvement can be beneficial since their existing role in the collection of economic, social and environmental statistics would reduce the need for additional data collection, help to improve data quality and enable linking of emissions with particular sectors of the economy. NSIs usually enjoy high public trust as professionally independent producers of statistics. Countries that are just building up the inventory system should involve the NSI from the beginning to avoid creating burdensome and overlapping data reporting systems.

NSIs should be proactive in reaching out and improving communication with emission inventory compilers. Well-functioning communication channels are a key to bridging the gap between statisticians and the emission inventory system. NSIs and inventory compilers should meet to discuss how the emission inventory system works and how the National Statistical System can contribute. Information on what data are needed would help NSIs to better organize their work related to climate issues and would optimize the data for the purposes of emission inventories.

NSIs should review the existing reporting systems for CCRS and emission inventories to identify any duplicated processes and to move towards multipurpose data systems serving various user needs. The existing data pool of NSIs is not used to its full potential for climate change analysis. Parallel and sometimes duplicate reporting exists, for example energy data reported both in energy statistics and emission inventories. This leads to unnecessarily high costs of data collection and additional burden for respondents. Production of emission inventories and other CCRS would benefit from coordination with the NSI.

NSIs should be active in improving coherence of emission inventories and official statistics where possible. New areas for using common tools, terminology and definitions can be identified in cooperation with the emission inventory compilers. For example, NSIs should be more aware of how the activity data are used in the inventories to be able to take into account the related data needs.

NSIs should actively follow up on the meetings of the Conferences of the Parties (COP) to be able to prepare for forthcoming data requirements. Whereas a more active role of NSIs would enhance the quality of emission inventories in several countries, the delicate negotiation process of the Kyoto protocol needs to be respected. NSIs should, therefore, rely on existing frameworks and existing data rather than on building something new or parallel to the emission inventories. NSIs can add value to the process by assessing data availability and feasibility of requirements related to the Kyoto protocol, and by preparing themselves for new data requirements, for example regarding the flexibility mechanisms.

Based on the outcome of the Meeting, a number of recommendations for the future could be formulated by the UNECE Task Force on climate change related statistics, that the Conference of European Statisticians and the ESS could consider with a view to improve CCRS. Such recommendations can be derived starting from the following:

- NSIs should start improving their contribution to climate change analysis based on their core competencies, for example, in provision of data for research and other producers of CCRS, linking climate information with other statistical data and harmonizing methods, concepts and classifications, etc. Taking on new tasks involves respect for the traditional role of NSIs: they do not usually compile forecasts or make judgements about cause-effect relations. The improvements should be implemented in steps: by first organising the existing data, secondly improving the quality and usefulness of data and exploring needs for new statistics after that (such as data on resilience, risks

and vulnerabilities to climate change). In the longer term, a set of regularly produced CCRS should be developed to be part of official statistics.

- NSIs should have a role in disseminating climate information to make it more accessible and easy to use, even when the information is not produced by the NSI. Scientific climate information is often complex and difficult to communicate and understand. Communicating statistics is the core business of statistical offices. NSIs should create a dissemination platform or a portal for CCRS to bring together at least the regularly produced CCRS. Through the portal NSIs could disseminate their existing statistics with relevance to climate change and provide access to CCRS produced by other organizations and research.
- The key for improving CCRS is to improve communication at all levels and to establish a clear institutional setting for producing CCRS. Closer collaboration within a country, between countries and among international organizations could bring the work forward. The dialogue between users and producers of climate information should continue. Nationally improving communication between emission inventory compilers and the NSI is particularly important. International organizations, for their part, should work closer together to harmonize data requirements and collection. In some cases, national legislation related to CCRS needs to be reviewed with the aim to clarify division of work, support cooperation between agencies and ensure access to the required data.
- The need to change existing frameworks of official statistics to serve climate change data needs has to be examined. For instance, CCRS may require changes in the System of National Accounts in some future revision, so as to strengthen the links between emission trading systems (the carbon market) and national accounts.
- New solutions are needed in NSSs for dealing with confidentiality issues to ensure a better response to climate data needs. Climate change analysis can benefit from detailed, often geo-referenced, data and the possibility to combine data.
- The organizational structure of NSIs may require modernizing to support production of CCRS that cuts across the statistical system. Traditionally, the organizational structure of NSIs is set up to produce different economic and social statistics, rather than multi-domain statistics such as CCRS and other environmental statistics. Modernizing statistical production may also release resources that can be used to meet new user needs related to climate change.
- A new kind of expertise will be required from statisticians producing CCRS. Traditionally, statisticians have been professional data managers specialised in narrow societal issues. CCRS require the understanding of natural science and knowledge that cuts across many societal issues.
- The international statistical community and NSIs should invest in building capacity and knowledge required for CCRS in all countries. The need for reliable, comprehensive and objective CCRS is increasing, but countries have different levels of capacity for reporting climate change information: some provide emission inventory data and others do not. NSIs have extensive experience in effective statistical capacity building that should be gradually enlarged to include climate issues.

CONCLUSION

The Rio+20 Conference on Sustainable Development has reaffirmed that climate change is one of the greatest challenges of our time.

In line with the outcome of the Conference, the ESS' commitment to best contribute to the knowledge base needed for this challenge has been increasing in recent years, as proven by the inclusion of climate change-related statistics in the European Statistical Programme 2013–2017. The CCRS produced within the ESS are typically meant to include environmental, social and economic high quality statistics measuring the drivers, impacts and costs of climate change. The fact that they typically do not cover the component “State” of the DPSIR is quite natural. As a matter of fact, information on e.g. concentration of greenhouse

gases in the atmosphere is mostly produced outside the ESS. Indeed for such data it is not easy, for the time being, to follow the same approach towards high quality statistics as e.g. for data on driving forces.

Particularly important in a long-term perspective is that climate change has been indicated by the Sponsorship Group on “Measuring Progress, Well-being and Sustainable Development” as one of the first priorities for future work. This is in line with the “GDP and beyond” initiative of the EU Commission and at the same time it reflects recommendations from the Commission on the Measurement of Economic Performance and Social Progress, calling for them to be made operative.

According to specific priorities identified in relation to climate change by the Sponsorship Group on “Measuring Progress, Well-being and Sustainable Development”, the ESS is supposed to develop in due time early estimates of CO₂ emissions as well as environmentally-extended Supply Use Input/Output Tables aimed at investigating global climate change in a “consumer perspective”. As environmental accounts qualify as statistical tools particularly suitable for this kind of analysis, they will possibly play an increasing and central role in the future in relation to climate change issues.

The overall role that official statistics can play in general in the field of climate change will be better understood based on the final report of the UNECE “Task Force on climate change related statistics”. The recommendations expected from the UNECE task force will be of specific interest for the ESS.

Given also more and more binding budget constraints all over the EU, possible duplicated processes in the production of data related to climate change would have to be identified, with a view to move towards multipurpose data systems serving various user needs. To that end, NSIs would be best candidates to review the existing reporting systems for CCRS and emission inventories.

Furthermore, coherence of emission inventories and official statistics would have to be improved to the extent possible. NSIs should be active in promoting this, in particular by identifying, in cooperation with the emission inventory compilers, areas for using common concepts, definitions and classifications, as well as statistical tools.

REFERENCES

- COMMISSION OF THE EUROPEAN COMMUNITIES. *Communication from the Commission to the Council and the European Parliament GDP and Beyond Measuring Progress in a Changing world* [online]. Bruxelles: EC, 2009. [cit. 16.3.2013]. <<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0404:FIN:EN:PDF>>.
- ESSC. *Sponsorship Group on Measuring Progress, Well-being and Sustainable Development: Final Report Adopted by the European Statistical System Committee* [online]. Luxembourg: ESSC, 2011. [cit. 16.3.2013]. <http://epp.eurostat.ec.europa.eu/portal/page/portal/pgp_ess/0_DOCS/estat/SpG_progress_wellbeing_report_after_ESSC_adoption_22Nov1.pdf>.
- EUROSTAT. *Climate Change* [online]. Luxembourg: Eurostat, 2013. [cit. 16.3.2013]. <http://epp.eurostat.ec.europa.eu/portal/page/portal/climate_change/overview>.
- EUROSTAT. *Driving Forces Behind EU-27 Greenhouse Gas Emissions over the Decade 1999–2008* [online]. Luxembourg: Eurostat, 2011a. [cit. 14.4.2013]. <http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-SF-11-010/EN/KS-SF-11-010-EN.PDF>.
- EUROSTAT. *CO₂ Emissions Induced by EU's Final Use of Products are Estimated to be 9 tonnes per Capita* [online]. Luxembourg: Eurostat, 2011b. [cit. 14.4.2013]. <http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-SF-11-022/EN/KS-SF-11-022-EN.PDF>.
- EUROSTAT. *Sustainable Development – Climate Change and Energy* [online]. Luxembourg: Eurostat, 2011c. [cit. 14.4.2013]. <http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Sustainable_development_-_Climate_change_and_energy>.
- OFFICIAL JOURNAL OF THE EUROPEAN UNION. *Regulation (EC) No 223/2009*.
- OFFICIAL JOURNAL OF THE EUROPEAN UNION. *Regulation (EC) No 691/2011*.
- RADERMACHER, W. et al. *Role of Statisticians in Research and Action on Climate Change*. Powerpoint Presentation at the 57th Session of the International Statistical Institute, 16–22 August 2009, Durban, South Africa, 2009.
- STIGLITZ, J. E. et al. *Report by the Commission on the Measurement of Economic Performance and Social Progress*, Paris, 2009.
- TREWIN, D. *Can the Official Statistical Community Provide Greater Support to the IPPC?* [online]. Conference on Climate Change and Official Statistics, 14–16 April 2008, Oslo, Norway, 2008. [cit. 16.3.2013]. <http://unstats.un.org/unsd/climate_change/>.

- UNECE. *Classification of Statistical Activities* (CSA REV. 1 – October 2009) [online]. Geneva: UNECE, 2009. [cit. 16.3.2013]. <<http://www1.unece.org/stat/platform/download/attachments/58492889/Classification+of+statistical+activities.pdf>>.
- UNECE. *Task Force on Climate Change Related Statistics* [online]. Geneva: UNECE, 2013. [cit. 16.3.2013]. <<http://www.unece.org/statistics/about-us/statstos/task-force-on-climate-change-related-statistics.html>>.
- UNITED NATIONS. *The Future We Want 2012* [online]. New York: UN, 2012. [cit. 16.3.2013]. <<http://www.uncsd2012.org/content/documents/727The%20Future%20We%20Want%2019%20June%201230pm.pdf>>.
- UNITED NATIONS STATISTICS DIVISION. *FDES* [online]. New York: UN, 2013. [cit. 16.3.2013]. <<http://unstats.un.org/unsd/environment/fdes.htm>>.