Conference on Climate Change and Official Statistics
Oslo, Norway, 14-16 April 2008

Report

Introduction

1.   The Conference on Climate Change and Official Statistics, organized by the United Nations Statistics Division in collaboration with the Statistical Office of the European Communities (Eurostat) and the World Bank, was held in Oslo, Norway, from 14 to 16 April 2008. The Conference was hosted by Statistics Norway.

2.   Climate change is high on the political agenda at all levels. The global official statistics community presently engages the issues of climate change in an ad hoc manner. Some national statistical offices are heavily engaged and provide all official estimates required in the monitoring efforts. Some engage only in analytical efforts, principally to investigate the effects of mitigation protocols on national economy or the impact of climate change in planning scenarios. Many others have no activities at all related to this topic. There is a need to discuss how official statistics can contribute to the measurement and monitoring of the different aspects of climate change and to bring together all current activities into a coherent framework. The conference was therefore designed as a forum for the exploration of ideas and to establish an agenda for future work.

3.   The Conference was attended by 116 participants representing 55 countries (national statistical offices and environmental ministries) and 15 organizations.

4.   The Conference was opened by Kristin Halvorsen, Minister of Finance for Norway. Introductory speeches were made on behalf of the sponsoring organizations (Paul Cheung, UNSD; Pieter Everaers, Eurostat; and Eric Swanson, World Bank) to outline their objectives for the Conference. The opening remarks stressed the importance of high quality, timely, and reliable statistics for informed policy and decision making and outlined the challenges that face official statistics in providing the information needed for the monitoring, measurement and analysis of the issues related to climate change.

5.   The Conference had seven sessions. A brief summary of the presentations, discussions and conclusions of the sessions are given in the subsequent paragraphs.

Session One: Setting the scope

6.   The three speakers in Session One (Mohan Munasinghe, Vice-President of the Intergovernmental Panel for Climate Change (IPCC), Jacqueline McGlade, Director of the European Environment Agency (EEA), and Robert Smith on behalf of Alex Manson, Director-General, Strategic Policy Branch and Special Advisor on Climate Change of the Canadian National Ministry of Environment) explained the scientific and policy framework of climate change and the demand for statistics created by these frameworks. The speakers focused on different scales: they described the frameworks and the related data demands as they are perceived at the global, regional and national level.

7.   The presentations and the discussion that followed them stressed the fact that the contribution of the countries to climate change and the impacts that face them are unequal, and therefore the priorities for related statistics will differ according to their situation. The main focus of the industrialized countries is on the emissions of greenhouse gases and their mitigation, while most developing countries' climate change policies have a focus on adaptation. The presentations highlighted that future emphasis would be on combining mitigation and adaptation strategies. It was stressed that while climate change is a most pressing challenge, it has to be looked at in relation to other important environmental and development issues, and strategies to combat climate change have to be considered within the broader framework of sustainable development. Therefore the statistical tools to integrate social, economic and environmental information are crucial in this respect.

8   One of the main messages of the discussion was that the human aspects of the impacts of and adaptation to climate change are very important in developing countries and statistics that describe these aspects have to be developed and integrated in the existing frameworks. Other important issues were identified such as the growing interest in sub-national data as countries are increasingly looking at the right level to deploy funds. The general need for timelier, more frequent (e.g. quarterly, seasonal) data was stressed. The need for geo-referenced and spatially disaggregated data was repeatedly mentioned, underlying the importance of spatial analysis. The presentations and the discussion brought to light a long list of detailed data needs including e.g. the pressing need for better land use and land cover statistics, and the need for statistics to assess the mitigation potential of the different sectors. To meet the demands for more and new statistics NSO-s have to work in new ways, undertake new surveys and collect more data while, on the other hand, their resources are limited and they should not increase the response burden for data providers. There is a need to prioritize, to determine where is the most pressing lack of data and where are 'the low hanging fruit' areas. It was agreed that an inventory of these needs have to be set up and the related tasks have to be prioritized according to their urgency and feasibility.

Session Two: Greenhouse gas emission calculations as part of official statistics

9.   The seven presentations in Session Two were looking for the answer to the question what should the role of official statistics be in the estimation of greenhouse gas

emissions and in informing adaptation and mitigation strategies. Are our statistics adequate?

10.	Astrid Olsson of the UN Framework Convention on Climate Change explained the measurement and review frameworks that underlie the Kyoto protocol. Presentations from several National Statistical Offices (Kathrine Loe Hansen, Statistics Norway; Riitta Pipatti, Statistics Finland; Santaram Mooloo and Anand Sookun of the Ministry of Environment and the Statistical Office of Mauritius, Konstantin Laykam, Federal State Statistics Service of the Russian Federation) described their national emission inventory systems and the role of the NSO-s therein. The last two presentations (Robert Andres, Carbon Dioxide Information Analysis Center of the US Department of Energy and Norihiko Yamano of the OECD) focused on the use of international statistics (energy statistics and input-output tables) for the estimation of greenhouse gas emissions at the global, regional and national level.

11.	Depending on the development of their statistical infrastructure and the role of the NSO-s in the national statistical system, the engagement of national statistical offices in the production of the GHG estimations and inventories differ from country to country. However, the critical public and policy relevance of emission calculations, the high quality requirements and the need for visibility and credibility would require that NSO-s actively engage in this work and that climate change related and other environmental statistics be mainstreamed in the overall work of statistical offices. NSO-s need to collaborate with the scientific and policy making community and this is even more the case at the international level. The discussion concluded that the role of NSO-s and that of the international statistical community should be strengthened significantly for several reasons, even if the NSO is not necessarily the final provider of the emission calculations,

12.	First, the emissions (and removals) of greenhouse gases are calculated/estimated on the basis of activity statistics with the help of emission factors. While the development of the methods of calculation/estimation and the establishment of the emission factors have been outside the scope of official statistics, the basic activity statistics come from official statistics. The reliability of the calculations depends on the quality of these statistics; therefore NSO-s should be involved in the process to better understand the special needs that the calculation of greenhouse gas emissions creates for statistics. Statistics underlying the estimation of greenhouse gas emissions encompass and feed primarily on energy statistics, but also on a wide spectrum of statistics on basic activities such as, production of industrial commodities, agriculture, forestry, transport, international trade, land use and land cover, waste-water, wastes, etc.

13.	Second, NSO-s should be involved in the development of the methodologies for emission inventories in order to make the other players (environmental ministries, research institutes etc) better understand the role of existing statistical standards, classifications, and the advantage of their use that is the possibility to link greenhouse gas emissions to the industries/activities that are responsible for them, and thus improve the usefulness of these data for analysis.

14.   Third, while regular reporting to UNFCCC is obligatory only to the Annex I countries, non-Annex I (developing) countries also have to be prepared for the calculation of their GHG emissions/sinks if they want to benefit from the different adaptation/mitigation schemes that aim at their support. In the case of non-Annex I countries special attention has to be paid to statistics on land use, land cover and forestry.

Session Three: What is the role of official statistics in the measurement of the impacts of, vulnerability and adaptation to climate change?

15.   The first pesentation by Jose Marengo of INPE, Brazil described different climate change scenarios and their social, economic and environmental impacts in the hotspot regions of South America by making extensive use of spatial analysis. Robert Smith from Statistics Canada analysed the tools that are available for official statisticians for the measurement of the different impacts of climate change, focusing on the possibilities that the application of the System of integrated Environmental-Economic Accounting (SEEA) offers. Subsequent presentations dealt with the role of and demands for statistics in the measurement of various impacts on the natural environment, the society and the economy.

16.   Andre Jol of the European Environment Agency looked at ecosystem impacts. Peter Harper of the Australian Bureau of Statistics showed how water accounts might be used to analyse the demand and supply for water which had become more vulnerable as a result of climate change. The presentation of Sourav Chakrabortty, Central Statistical Office of India, described the role of the NSO in the Indian Natural Disaster Recovery System under development. Sonya Ahamed from CIESIN, Columbia University reflected on the shortcomings of demographic data from the point of view of risk assessment in spatial analysis. Eva Laczka of the Hungarian CSO described the potential of agricultural statistics for the analysis of the impacts of climate change. The presentation by Kseniya Lvovsky from the World Bank summarized the needs for statistics to support adaptation responses.

17.   The representatives of three National Statistical Offices (Walter Radermacher, Statistisches Bundesamt Germany; Peter van de Ven, Statistics Netherlands, and Brita Bye, Statistics Norway) spoke about the approaches they use for the assessment of impacts of climate change and of different mitigation measures on the economy. The presentations covered the use of the German input-output tables for the analysis of the difference between production and consumption based GHG emissions; the analytical usefulness of the SEEA and the Norwegian example of an integrated environment-energy-economy model.

18.   During the discussion it was pointed out that the measurement of the impacts of climate change require information from basically all areas of official statistics as well as a lot of information that is to a large extent based on sources outside the statistical system such as meteorological and hydrological information, physical environmental data and data from scientific research. The assessment of impacts and vulnerability contains a lot of scientific and statistical uncertainties. Impacts of climate change affect each country,

or each group of countries, in a different way; therefore the statistical response will also be different, as it was reflected by the presentations. One of the key challenges with regard to statistics is the need to bring together different types of information from very different sources, and the presentations illustrated some very relevant approaches for that. Spatial analysis, the use of geo-referenced official statistics such as population censuses or agricultural censuses is essential for the assessment of the social and environmental impacts, vulnerability, and their regional variations. Indicators also play an important role in the assessment of impacts and vulnerability and the robustness of the indicator sets depend to a large extent on the underlying statistics.

19.   Linking social, environmental and economic information is essential for these types of analyses and NSO-s can and should play a role in that. Existing tools such as the SNA (Input-Output tables) and the SEEA, if they are well established, offer the possibility to analyse the linkages between the environment and the economy in a consistent fashion; therefore they can be used for the analysis of the impacts of climate change and the related mitigation measures on the economy. However, while the SEEA is capable of showing linkages between the environment and the economy, it is not yet capable for a similar integration of social data.

20.   The most vulnerable and affected countries do not have the statistical and other monitoring infrastructure that are needed for these types of analyses. While the sophisticated analysis of well established systems, presented in many of the papers, offer promising solutions, there is an increasing requirement for the development of simple statistical tools for countries with less developed statistical systems and resources. The need for focusing on a core set of simple standard tables was repeatedly mentioned especially in relation to the development of the SEEA.

Session Four: Carbon emission trading and other mitigation strategies

21.   The Australian Bureau of Statistics has been given additional resources to improve statistics that are relevant to the carbon emission trading scheme being established in Australia and the plans how to do that were described in the presentation by Peter Harper. Thomas Olsen, Statistics Denmark gave a presentation on how environmental-economic accounts can be used to analyse the structural impact of introducing emission trading schemes.

22.   Presentations by Xu Huaqing, Head of the Research Centre of Energy, Environment and Climate Change of China and Martin Nesbit of the Department of the Environment, Food and Rural Affairs of the United Kingdom dealt with national mitigation strategies and the related need for statistics. Matthias Bruckner from the UN Division of Sustainable Development spoke about monitoring mitigation of climate change as part of monitoring sustainable development.

23.   It was agreed that emission trading schemes are an increasingly important tool in the mitigation of GHG emissions and statistical offices have to be prepared to monitor the carbon market and its impacts on the economy. The importance of emission trading in the national economy varies from country to country and region to region according to the

uneven distribution of emissions. However, while it is important to follow the flow of emission permits and measure the impacts of emission trading on the economy, it is even more important to ensure that the GHG emission calculations, that are the basis for the allocation of those permits, are of the highest possible quality. Reliable emission estimates are also a key to the assessment of the effectiveness of all other mitigation measures. Developing countries also have to be prepared for that as the accurate estimation of their energy related emissions (from e.g. small scale energy uses) as well as their emissions/sinks by aforestation, deforestation, land use and land cover changes increases the confidence of the mitigation measures implemented within the different mitigation schemes.

Session Five: How can official statistics support climate change scenario development and modelling and better inform the IPCC Fifth Assessment Report?

24.   In his presentation Dennis Trewin, Consultant to UNSD, reflected on the criticisms of some of the statistical assumptions in the scenarios in IPCC's Fourth Assessment Report such as the rates of economic and population growth or the non-use of Purchasing Power Parities. The scenarios are built on assumptions of economic growth, population growth, the application of new technologies, energy intensities and carbon intensities etc. These statistics were not sourced from the most authentic sources. The official statistics community has not been involved in IPCC's work on scenario development and modelling. Jose Marengo from Brazil, a prominent IPCC scientist, reflected on the quality and the sources of available international statistics. He also mentioned that for the Fifth Assessment Report the focus will move from the global to the regional, national and even sub-national scale which will require more consistent statistics. There was a general agreement that there should be a dialogue and collaboration between the IPCC and official statisticians. This collaboration would contribute to the improvement of the internal consistency of the variables used and thus improve the probability of a given scenario. On the other hand, the better involvement of official statistics in the IPCC work would contribute to the improvement of the statistics that are needed for scenario development and modelling. The discussion brought up several issues such as the discrepancies between national and international data; the need for better data on energy and carbon intensities, research and development statistics and statistics on innovative (low carbon) technologies. As a conclusion it was suggested that the UN Statistical Commission should connect with IPCC about ways of future collaboration.

Session Six: Bringing it all together

25.   Statistics to describe and monitor all aspects of climate change are manifold and come from multiple sources. There is a need for frameworks and standards that integrate statistics related to climate change and link official statistics with other information.
The first presentation by Heinrich Bruengger of UN ECE focused on the principles and functions of official statistics in relation to environment statistics in general and to statistics on climate change in particular. Subsequent presentations illustrated different approaches to integrate or bring together statistics on different aspects of climate change.

26.   Presentations by Gilberto Calvillo of INEGI, Mexico and Sonya Ahamed from CIESIN/Columbia University described how spatial frameworks and spatial information systems can be used to bring together social, demographic, economic, environmental and cartographic information for the analysis of the impacts or possible impacts of events relevant to climate change.

27.   Two presentations dealt with indicator frameworks and their use in bringing together statistics on the different aspects of climate change. Matthias Bruckner of the UN Division of Sustainable Development gave a presentation on the CSD set of indicators of sustainable development and their relevance to climate change statistics. Stephen Hall of the Department of the Environment, Food and Rural Affairs of the United Kingdom explained the development of their indicator set.

28.   The last two speakers, Alessandra Alfieri of UNSD and Viveka Palm of Statistics Sweden highlighted the usefulness of the System of integrated Environmental and Economic Accounts in the integration of environmental and economic statistics by using standard concepts and classifications.

29.   The discussion focused on the advantages and disadvantages of the three approaches in terms of their compliance with the criteria for official statistics, their relevance for different purposes and their requirements in terms of time and resources. Participants agreed that the three approaches are complementary, and that the priority given to one or the other will highly depend on the general statistical development and available knowledge and resources in a country. All three approaches, however, depend on the availability and quality of basic statistics which have to be developed before any of the approaches can be taken. While the development of standards is essential in statistical work, it has to be ensured that the standards are implemented through outreach and capacity building and this is a long and resource demanding process. In many countries, particularly in Africa, a lot of basic statistics (including population and economic statistics) is missing. It was argued that in the development of environment (and climate change related) statistics bottom up and top down approaches can equally be succesful. The development of a set of indicators may be the fastest and cheapest way to start. Indicators can be derived from basic statistics without an accounting framework provided that, in order to comply with the principles of official statistics, they apply standard statistical concepts and classifications. The use of an accounting framework such as the SEEA as the basis for deriving indicators further improves internal consistency of environmental and economic data when basic statistics are systemized and aggregated.

Session Seven: Conclusions and recommendations

30.   As an introduction to the concluding session, Walter Radermacher presented a "toolbox" of official statistics. He looked at the different types of statistics (the tools) in terms of their empirical measurabilty, theoretical consistency and political relevance. He explained the relationship between the tools, such as basic statistics, GIS, accounts,

indicators and modelling, and the different functions of statistics such as collection, systematisation, analysis, aggregation and communication. His conclusion was that the different tools represent different levels of aggregation and serve different purposes, therefore they complement each other, the accounting framework serving as the backbone of the aggregation pyramid.

31.   Paul Cheung, Director of the UN Statistics Division gave a summary of the conclusions of the three day discussions at the Conference. The conclusions covered the context in which official statistics should engage in climate change related statistics; the substantive areas for this engagement; and the question how to govern this process. The summary of the conclusions and the subsequent discussion is given below.

32.   The presentations and the discussion showed that there is a huge demand for new, more, better statistics to understand the driving forces, pressures, impacts of and responses to climate change. However, a lot of this demand is beyond the competence of official statistics and national statistical offices. The core competence of official statistics is to deal with the present and the past processes, not with the future. Many offices don't have the resources to deal with these issues and don't even have environment statistics programmes. On the other hand, the existence of national climate change strategies in more and more countries as well as the high interest in this conference suggest that there is a change in momentum and the countries' interest in environment statistics is increasing. However, the growth of environment and climate change related statistics has to be organic, countries must feel the need and have the will to develop these statistics; the Statistical Commission should not impose a stringent agenda on the countries.

33.   Official statistics have to demonstrate their relevance. A lot of basic statistics are collected but more serious efforts have to be made to organize these data. This is especially true for the statistics needed for the emission calculations. Statistical offices have to understand the methodology of these calculations and contribute to its improvement by offering the potential of the use of standard statistical classifications that are applied in economic statistics. The Statistical Commission will set up a working group to look into these issues and to develop the knowledge base of national statistical offices in this area.

34.   In relation to the measurement of the impacts and vulnerability the role, competence and strength of official statistics is not so straightforward. A major task should be to gather and compile examples, good practices. There are examples of ongoing work, such as the development of the statistical data base on natural disasters in India, that belong to the competence of the statistical offices.

35.   There is an important role for statistical offices in the understanding of emission trading schemes and other mitigation measures. This requires sophisticated, advanced analysis of standard tools such as the input-output tables or energy supply and use tables, the existence of which is the prerequisite to the analysis. Not many countries have the possibility for this but it is an important development work that has to be pushed forward.

36. Indicators are valuable tools to convey important messages for policy formulation, decision making and the general public. Indicator sets are policy driven and country specific, and they must have practical value for the countries. Therefore, while acknowledging the importance of indicators at the national or regional level, the Statistical Commission will not put the development of a new internationally agreed global basket of climate change related indicators on its agenda.

37. More work will be done for the further development and implementation of the System of integrated Environmental-Economic Accounts. It is a framework that has proven its potential and added value in many areas of environmental-economic analysis and it is the most practical way forward. A stepwise approach and the development of simplified standard tables that many countries can implement is an essential part of this agenda.

38. Much more has to be done on the use of geographical information systems and on the development of spatial data infrastructures. The example of Mexico and Brazil shows that there is a great potential in the use of GIS for spatial analysis of the impacts of and vulnerability to climate change and for the integrated analysis of different types of information. UNSD will engage all stakeholders to initiate this process as soon as possible.

39. The execution and implementation of these tasks, including engaging with IPCC and UNFCCC on a more formal basis as well as the transfer of knowledge to countries will require proper governance. The process should be governed by a body of senior statisticians from the countries. The United Nations Committee of Experts on Environmental Economic Accounting (UNCEEA) offers a structure for governing the work on the development of climate change related official statistics. Comprising senior level experts in environment statistics and accounting, this body had been created for advocating the SEEA. We will propose to the Statistical Commission to extend the mandate, change the name, adjust the membership of the Committe and its Bureau and trust this Committee with the governance of the statistical tasks related to climate change.

40. It was agreed that based on the conclusions of the Conference, a detailed review of the principles and major areas of work will be prepared and circulated to the patrticipants. This paper will be the basis for discussions at different international and regional statistical fora. The output of these discussions is expected to be a recommended roadmap for the development of official climate change statistics both at the national and the international level, to be submitted to the 40th session of the UN Statistical Commission in March 2009.