**SNA/M1.13/09**

**8th Meeting of the Advisory Expert Group on National Accounts,**
**29-31 May 2013, Luxembourg**

**Agenda item: 09**
**Topic: SDMX initiative**

Introduction

A steering group, consisting of the ECB, Eurostat and the OECD, is developing the necessary Data Structure Definitions (DSDs) for the future data exchange of national accounts data. A draft version of the DSDs was finalised, in coordination with the ISWGNA, at the end of 2012, and will be tested through the first half of 2013, so that they can be implemented as of the second half of 2013. The steering group reports progress on their work to the ISWGNA, the IAG and the AEG, to ensure a global input in the development of the DSDs for the national accounts.

Guidance on documentation provided

A note on the progress of developing the SDMX in the area of National Accounts is attached.

Main issues to be discussed

The AEG is requested to provide further guidance on the national accounts SDMX initiative. Especially, advice on the communication of the SDMX-initiative, and advice on the way a worldwide implementation of SDMX could be supported are very much welcomed.

## 1. Introduction

1. The adoption of SNA 2008 / ESA 2010 and the work on the associated transmission programmes created a new momentum for the further alignment of international standards for the compilation and dissemination of macro-economic statistics. In the light of the increasing pressure on resources, there is a growing willingness for closer international cooperation and an increasing emphasis on statistical business process integration. SDMX serves as the standard to facilitate statistical data and metadata exchange initiatives and is thus an enabler for rationalisation of data flows, harmonisation of reporting needs and standardisation of information systems.

2. The SDMX sponsors (BIS, ECB, Eurostat, IMF, OECD, United Nations and World Bank) mandated ECB, Eurostat and OECD to propose so-called Data Structure Definitions (DSDs) in order to implement SDMX in National Accounts according to SNA 2008 and ESA 2010. This comprises in particular the definition of SDMX Data Structure Definitions (DSDs) for transmitting data from reporting countries to international organisations and exchanging these data between the international organisations. It also comprises the maintenance of the DSDs over time, in accordance with the procedures to be agreed upon by the SDMX governance bodies.

3. In the European context an important deadline is September 2014 when National Accounts data according to ESA 2010 have to be exchanged for the first time. For countries outside the European Union, there is no fixed date for the compilation of National Accounts data according to the SNA 2008, but countries are encouraged to change-over as quickly as possible. Some OECD members indeed already have implemented or are close to the implementation of the new standards, e.g., Australia, Canada and the United States. Whatever the case, by the end of 2011, a Steering Group with one National Accounts representative and one SDMX representative from each of the mandated organisations was formed. The Steering Group mandated a Technical Group consisting of National Accounts and SDMX experts, with the main goal to have a go-live deadline in September 2014.

4. To secure the go-live deadline, the technical group was charged to develop a content-oriented package for a pilot implementation with national data providers by the end of 2012. Furthermore, it was decided to conduct the pilot in two phases leading to a first release of SDMX Data Structure Definitions by mid-2013. This would give national data providers and international organisations around one year for testing and fine-tuning the process and the subsequent national implementation of the new DSDs. To guarantee a successful implementation, the project requires the close cooperation between NA and IT/SDMX experts also at national level.

5. In the following section, the main technical issues related to SDMX are shortly explained. Subsequently, section 3 discusses the organisation and the timetable of the whole process to arrive at Data Structure Definitions (DSDs) for the exchange of National Accounts data. Section 4 contains the main conclusions.

## 2. What is SDMX?

6 SDMX (**S**tatistical **D**ata and **M**etadata E**X**change) is an international standard (ISO 17369) for the exchange of statistical information. Sponsored by seven international organisations (BIS, ECB, Eurostat, IMF, OECD, United Nations and World Bank), SDMX allows to standardise concepts, code lists, data structures and many related objects among all organisations involved in statistical data exchange. It thus provides a common "language" between statistics and IT as well as between different organisations to describe when which data should be exchanged by whom and how.

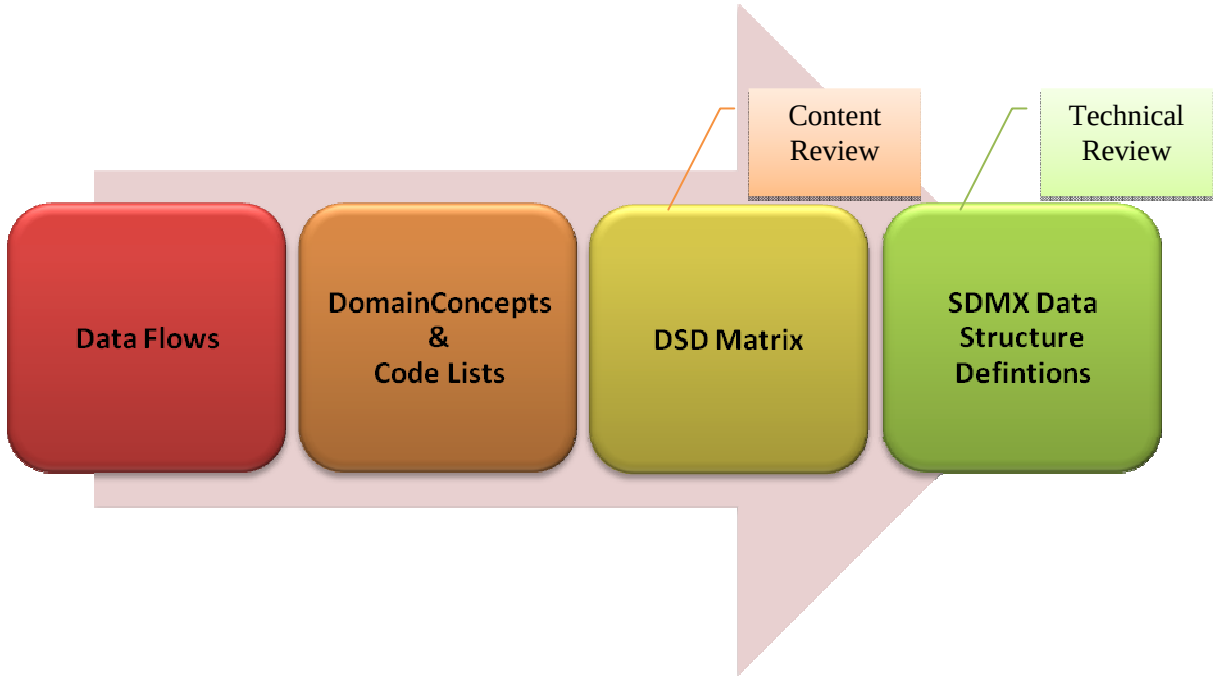
7. A reporting framework, such as the reporting of National Accounts data according to SNA 2008 / ESA 2010, can be expressed in SDMX using a so-called “concept scheme”. Such a scheme lists the statistical concepts (industries, institutional sectors, transactions, assets, etc.) and related code lists (ISIC, SNA-list of sectors, etc.) to reflect the relevant statistical domain, but is not operationally used for data

exchange. The main object which needs to be agreed upon before any data exchange can take place is the Data Structure Definition (DSD), which picks the concepts, gives them a role (dimension, attribute, measure) and takes the related code lists from the concept scheme. Based on that, it defines the structure to be used for generating data according to a specific reporting format.

8. Several other objects (also called artefacts in SDMX) can be used to further narrow down reporting needs and specify additional agreements of the data exchange (e.g. constraints, data flows, provision agreements, etc.). For more detailed information please consult the SDMX.org website.

9. In addition to the structural information, the standard defines a way to manage those artefacts through an SDMX Registry. The SDMX Registry is a shared repository for DSDs and related artefacts. SDMX also defines Web Service interfaces to access structural information from the registry as well as concrete data from an organisation that offers SDMX web service access to its databases. Through the standardisation of structures, harmonisation of content and definition of machine-to-machine interfaces, the data exchange becomes more efficient and allows further automation.

10. Arriving at the DSDs and all SDMX artefacts is a process, which can be visualised as below:



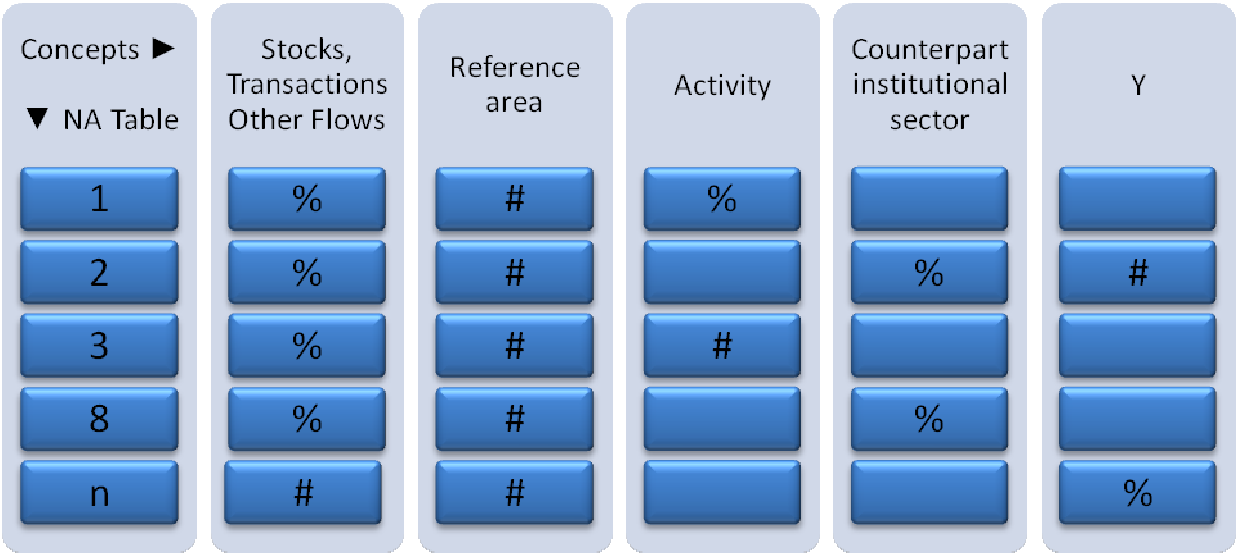

11. Before looking into the concrete structure of the data to be exchanged, the **data flows** from the national data providers to international organisations and between international organisations had to be analysed. In the case of National Accounts as well as in other areas, the general idea was to not only reflect today's reporting needs, but also to use the advantages provided by the SDMX-standard to simplify and rationalise the data exchange at international level.

12. After the data flows had been clarified, it was agreed to start with the definition of the **domain concepts** as a fully comprehensive set of SDMX artefacts to describe the National Accounts domain ("SNA 2008/ESA 2010 Domain Concepts"). These are well-known concepts like "transaction", "activity", "accounting entry", etc. Many of the concepts and associated code lists already exist in SNA 1993 / ESA1995. However, they had to be partly revised and improved in line with SNA 2008 / ESA 2010. Subsequently, the domain concepts were populated with SDMX standard **code lists**, e.g. existing classifications or well-known code lists used in the past and adopted to the needs of SNA 2008 / ESA 2010. The main aspects of the work on the concepts and the code lists were to arrive, as far as possible, at a

(world-wide) harmonisation between organisations participating in the exchange of National Accounts data. Another goal was a close alignment with other statistical domains using the same domain concepts and code lists. In respect of the latter, National Accounts has been aligned as much as possible with the Balance of Payments Statistics. A close cooperation between the groups working on SDMX for Balance of Payments Statistics and the ones working on National Accounts has made this possible.

13. The collection of the concepts and code lists are compiled as an inventory (**Global DSD inventory**), from which a limited number of National Accounts DSDs can be derived. Each of the DSDs describes the data flows for a specific part of the National Accounts (e.g. data flows related to the institutional sector accounts). The overall aim was (a) to create as few DSDs as possible and (b) to share them among the organisations as broadly as possible. The DSDs should however accurately describe the actual data flows. This approach combines maximum harmonisation of the "SNA2008/ESA2010 Domain Concepts" with the flexibility to address all user needs.

14. Following the approach displayed above this has been put into practice by building a so-called matrix of tables defined in the respective transmission programmes for National Accounts on the one hand, and identified concepts on the other hand. As outlined below, this matrix has also been used for the content review phase of the pilot implementation.




#…concept fully used %…concept partially used (blank)…concept not used

15. Based on the feedback received during the content review, the matrix has been updated and an analysis has been made to generate the optimal set of SDMX artefacts (Data Structure Definitions, Code Lists, Constraints, etc.) describing the data exchange for machine to machine communication. For the purpose of visualisation of the detailed coding, these artefacts will also be used as a basis for building tabular EXCEL templates of the respective transmission programmes. The SDMX artefacts and the visual templates will subsequently be tested in the technical review phase of the pilot.

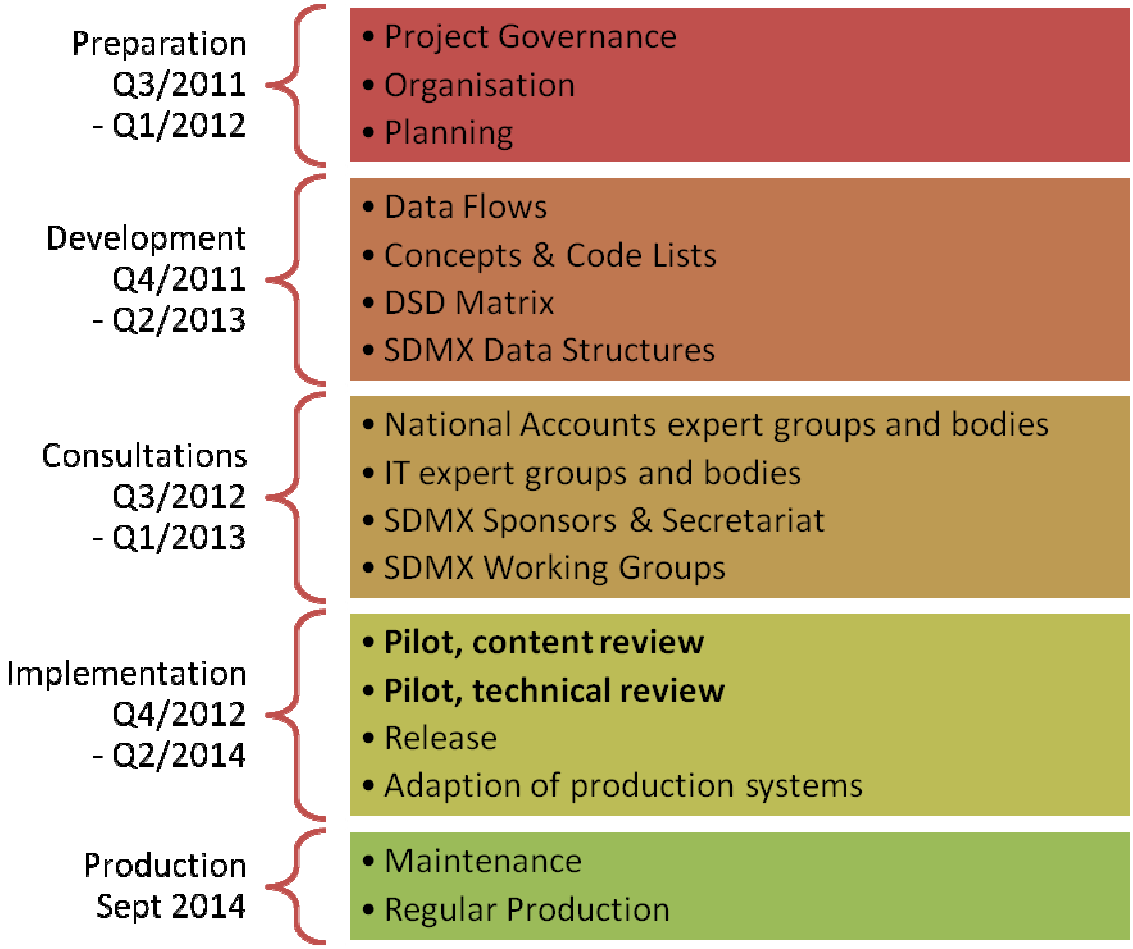
### 3. Organisation and timetable

16. As mentioned in the above, a steering group consisting of representatives of the ECB, Eurostat and the OECD was mandated to develop and test National Accounts DSDs for global use. The project steering group has the following members (contact address: Estat-SDMX@ec-europa.eu):

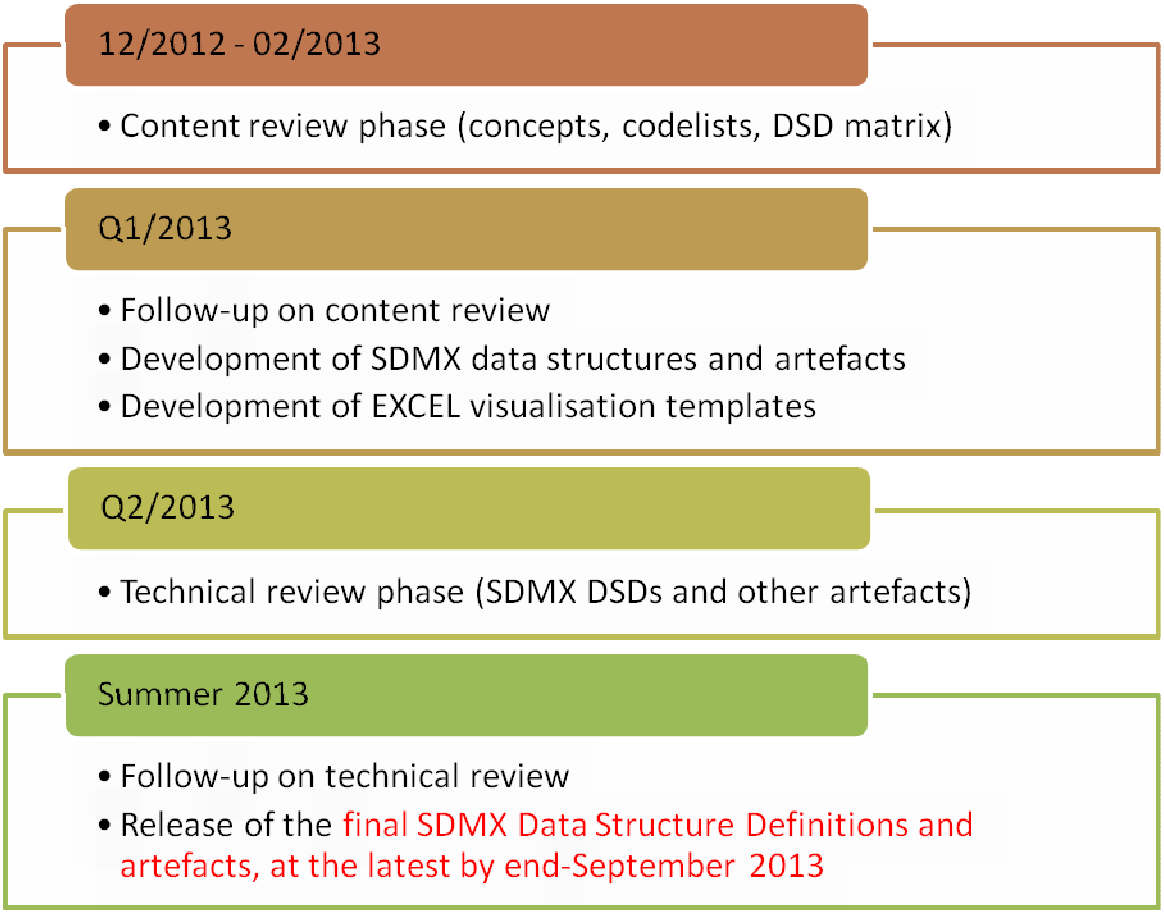
- ECB: Tjeerd Jellema (Head of Section/Euro Area and Public Finance Accounts) and Andreas Hake (Head of Division/Statistical Information Services)
- Eurostat: Silke Stapel-Weber (Head of Unit /National accounts – production) and August Götzfried (Head of Unit/Management of statistical data and metadata)
- OECD: Peter van de Ven (Head of National Accounts Division) and David Barraclough (Head of IT/STD)

The coordination of the project is in the hands of Eurostat: Daniel Suranyi (Project Officer/Management of statistical data and metadata).

17. The work on the new DSDs for National Accounts data transmission programme has been organised around the classical project development phases: preparation, development, consultations, implementation and production. The main content and the timing of each phase are presented below:



18. For the planning of the pilot, the roadmap can be further broken down for the period from December 2012 until mid-2013 as presented below.




19. It was decided to organise the pilot implementation in two test phases, with the first one concentrating on content issues (concepts, code lists, codes etc.) and the second one looking into the technical issues (creation of SDMX compliant national output files, testing of the end to end data transmission). The technical pilot phase is supported by a web-based test environment called "sandbox" and a National Accounts SDMX pilot registry, containing the artefacts.

20. For each of the phases the experts were/are able to participate in a passive or active way. In the first case the content and technical review packages are given to the participant for information. In the second case the participant is able to provide feedback using a pilot questionnaire prepared by the Steering Group. The feedback will be taken on board for the further implementation work.

21. The first phase consisted of the content review by National Accounts experts. A content review package, consisting of:

- The DSD Guidelines giving some background information and explaining how to use the matrix;
- The DSD Matrix itself;
- A short questionnaire (for active participants); and
- as annex: draft recommendations of the SDMX Statistical Working Group was sent out to participants in December 2012.

22. Active participants were asked to return the completed questionnaire by February 15th, 2013. In order to facilitate the content review, two web based Q&A sessions (webinars) were organised on 21st and 31st January 2013. These were followed "live" by about 15 participants. Both sessions were also recorded to enable following to all interested participants.

23. As an important milestone the content review phase of the project for implementation of SDMX in National Accounts has now been successfully finalised. In the content review, between December 2012 and February 2013, 31 organisation from 27 countries participated. Around 500 questions and comments were received from participants. The questions and comments were discussed by the Technical Group and the answers were endorsed by the Steering Group in three meetings held in February, March and April. They very much contributed for considerably improving the DSDs as well as the SDMX related table coding. The feedback received through the content review questionnaire has been published and has served as input for the technical review package.

24. The above mentioned processing of all questions and comments made it possible to start the second pilot phase, the technical review, as of mid- April 2013. The technical review package consists of:

- The updated DSD Guidelines giving some background information and explanations;
- The updated DSD Matrix;
- A short questionnaire on the technical aspects (*for active participants*);
- Excel visualisation templates for table 1 (as an example); and
- as annex: the issue log with all comments received from participants during the content pilot and their follow up actions.

The remaining Excel visualisation templates for the transmission programs of ECB, Eurostat and OECD will be provided on May 17.

25. The Data Structure Definitions and related SDMX artefacts are available for download from the National Accounts pilot registry (http://nac.sdmxregistry.org). No authentication is required for the registry. Additionally a sandbox is available for the participants to test and validate the structure and coding of output files in various formats (http://nac.sdmxsandbox.org). The sandbox requires separate registration. The NSIs and NCBs are encouraged to contact Eurostat us for setting up a sandbox account. Details on the usage of the registry and the sandbox are provided in the online documentation and the DSD guidelines.

26. During the technical review, National Accounts experts are invited to work in close cooperation with IT/SDMX experts in their organisations. It has the following objectives:

- Final review of the data structures and codification in order to identify errors and omissions;
- Creation of SDMX compliant output files at national level with the support of the sandbox validation tool;
- Testing of end to end data transmission using different tools available (Excel, SDMX Converter, SDMX-RI …) with support from the international organisations.

Active participants in the technical pilot test phase are requested to report their findings in the relevant questionnaire by July 19, 2013.

27. The comments provided by the participants in the technical review phase will be thoroughly considered in the preparation of the final package, data structures and related artefacts to be released in September 2013 for national implementation. However, as changes to e.g. the DSD structure are not expected anymore, national preparations could start without delay in all countries, e.g. for establishing the structures of the dissemination databases from which the SDMX messages can be created for data delivery to the respective international organisations.

28. To clarify possible issues and to answer questions that may come up during the review, the international organisations have again offered a webinar and a (physical) technical workshop. Both were organised in two sessions to allow flexibility for participants. The webinars took place in the week of 13 -

17 May. During these seminars, National Accounts and SDMX representatives from the technical group were available to answer questions.

29. Furthermore, a technical workshop will be organised 10-11 June 2013 in Luxembourg. It is intended to be a forum for discussion of the main issues related to the changeover from the ESA95 to the ESA 2010 transmission programme, including changes to codes and code lists; and also related to more SDMX and IT technical questions.

**4. Main conclusions**

30. The implementation of SDMX is a crucial step forward in standardizing and rationalizing national and international exchange of national accounts data and statistical data and metadata in general. The change-over to the SNA 2008 / ESA 2010 creates an excellent momentum for implementing the SDMX-standards. The participation in the test phases shows a clear interest of countries. In this respect, the active participation of countries that have already implemented the 2008 SNA is highly appreciated. Furthermore, it can be noted that all international organizations involved in the collection of national accounts data are also actively engaged in the SDMX Sponsor Group.

31. The AEG is requested to provide further guidance on the national accounts SDMX initiative. Especially, advice on the communication of the SDMX-initiative, and advice on the way a worldwide implementation of SDMX could be supported are very much welcomed.