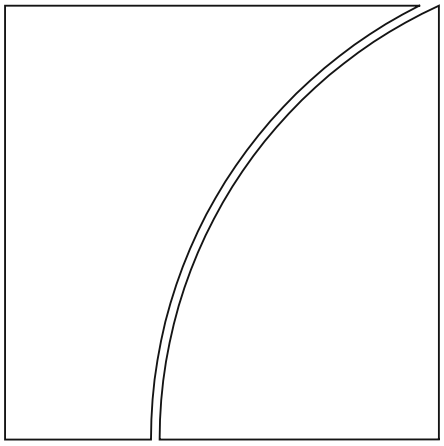
Irving Fisher Committee on Central Bank Statistics



IFC Report

No 4

Central banks' use of the SDMX standard

2015 Survey, conducted by the SDMX Global Conference Organising Committee (this report includes only the central bank responses)

March 2016

BANK FOR INTERNATIONAL SETTLEMENTS

Contributors to the IFC report[1]

Bank for International Settlements (BIS)	Heinrich Ehrmann
	Bruno Tissot (IFC Secretariat)
Central Bank of the Republic of Turkey (CBRT)	Erdem Başer
	Timur Hülagü

This publication is available on the BIS website (www.bis.org).

ISSN 1991-7511 (online)
ISBN 978-92-9197-480-1 (online)

[1] The views expressed in this document reflect those of the contributors and are not necessarily the views of the institutions they represent.

Contents

1. Executive summary

This report presents the results of a survey[2] on central banks' use of and interest in SDMX (Statistical Data and Metadata eXchange). SDMX is an ISO standard to describe statistical data and metadata, normalise their exchange, and improve their efficient sharing.[3] It provides an integrated approach to facilitating statistical data and metadata exchange, enabling interoperable implementations within and between systems concerned with the exchange, reporting and dissemination of statistical data and their related meta-information. Fifty-three central banks worldwide (see Annex A) participated in this survey, which was facilitated by the BIS and the Irving Fisher Committee on Central Bank Statistics (IFC).

This information is derived from a broader online survey (see Annex B), organised by the SDMX sponsor organisations in August–September 2015 with the aim of measuring the acceptance and implementation of SDMX in the international community of official statistics (ie central banks, statistical offices, international organisations) in general. This general survey was prepared for the Fifth 2015 SDMX Global Conference entitled *SDMX in Action* and held on 28–30 September 2015 at the United Nations Conference Centre in Bangkok, Thailand.[4]

This report focuses on three areas of importance to central banks:

(i) their experience with the SDMX standards;

(ii) their degree of satisfaction; and

(iii) their expectations regarding potential developments in the standards.

The main conclusions are the following:

Conclusion 1: The use of SDMX is fairly common amongst central banks.
Two thirds of the respondents already use the standards, and more than one tenth of the group are planning to start using them soon. However, one in four of the respondents do not plan to use SDMX in the near future.

Conclusion 2: The vast majority of central banks using SDMX find the implementation useful.
Less than one tenth of the respondents do not share this positive general view.

Conclusion 3: Most central banks already exchange or share data with international organisations using the SDMX standards.
Central banks already share data extensively with international organisations, and in particular with the IMF and the BIS. In addition, European central banks also participate actively in data-sharing arrangements with the ECB and Eurostat.

Conclusion 4: The use of SDMX standards to share data is still concentrated in a few statistical areas.
Central banks use the SDMX standards mainly in a limited number of statistical areas for which international DSDs (Data Structure Definitions) have been clearly established, eg Balance of Payments (BoP), Sectoral National Accounts (SNA), Foreign Direct Investment and SDDS – the Special Data Dissemination Standard established by the International Monetary Fund to guide countries in the

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[2] For questions regarding this report, please contact the IFC Secretariat (bruno.tissot@bis.org), Heinrich Ehrmann, BIS (Heinrich.Ehrmann@bis.org), Timur Hülagü, CBRT (timur.hulagu@tcmb.gov.tr) or Erdem Başer CBRT (erdem.baser@tcmb.gov.tr). The contributors thank Gyorgy Gyomai (OECD Statistics Directorate) for analysing the survey results.

[3] https://sdmx.org/.

[4] See the *2015 SDMX Survey Results* presentation on unstats.un.org/unsd/SDMX/sdmxglobalconference2015/default.html.

provision of their economic and financial data to the public. The versions of the standards most commonly used are SDMX-ML 2.0 and SDMX-ML 2.1.

Conclusion 5: For most central banks, SDMX implementation is directed towards data dissemination. Data collection and metadata collection are comparatively less important objectives. Note: for most central banks "dissemination" includes their reporting to international organisations.

Conclusion 6: Looking ahead, macroeconomic and finance statistics (in addition to the areas already covered such as SNA/BoP), **international trade statistics, business statistics and prices are the four priority domains for developing new SDMX data structures.**

Conclusion 7: SDMX is very convenient for users of statistics. A key benefit of implementing the standards for central banks is to ease the reporting burden to international organisations.

Conclusion 8: The main challenge is that internationally agreed DSDs/MSDs are still missing for some important statistical domains. (See Conclusion 6). The lack of adequate human resources and training capacities as well as problems in getting subject-matter statisticians' support are also widely reported as issues to be addressed for further implementing SDMX concepts and processes.

2. Background: SDMX

In 2001, the Bank for International Settlements (BIS), the European Central Bank (ECB), Eurostat, the International Monetary Fund (IMF), the Organisation for Economic Cooperation and Development (OECD), the World Bank and the United Nations Statistics Division (UNSD) joined forces to develop more efficient processes for the exchange and sharing of statistical data and metadata. The seven sponsor organisations[5] called their initiative *Statistical Data and Metadata eXchange* (SDMX). The objective was to give easy access to statistical data as well as to facilitate access to metadata that make the data more meaningful, comparable and usable.

SDMX provides an integrated approach to:

- facilitating statistical data and metadata exchange:
- enabling interoperable implementations within and between systems concerned with the exchange of information; and
- processing and disseminating statistical data and their related meta-information.

The SDMX information model covers and describes the key concepts around statistical data, metadata and data exchange processes. This model comprises the following elements: descriptor concepts (ie concepts associated with the statistical data); the packaging structure (ie observation level, series level, data set level); the dimensions and attributes for descriptor concepts; the keys (grouping the various dimensions for a particular set of data); the code list (defining the possible values for a dimension). All this information is comprised in a specific **Data Structure Definition** (DSD, or "key family"), which specifies a set of concepts (eg dimensions, attributes, code lists) to describe and identify a set of data. Additional explanatory information is referred to as **metadata**, which describes the content, methodology and quality of the data. In SDMX terminology, the so-called Data and Metadata Structure Definitions – DSDs and MSDs – are made available in the SDMX Global Registry.

The development of the SDMX information model has required important work on the technical specifications, as well as the provision of IT tools for data validation, conversion and dissemination. The related **technical standard** is available in an XML implementation format that allows an automated exchange and processing of statistical data.[6] In 2013, SDMX was also published as an **ISO International Standard** (IS) 17369) to encourage and enable the widest possible use of the standard by organisations and companies involved with statistical data exchange.[7]

This IT technical work has gone hand in hand with **statistical work**, ie the creation of internationally agreed structures and codelists for reporting/exchanging statistical data in a number of domains, eg national accounts, balance of payments and government finance.

SDMX now supports a wide range of international data exchange activities and is widely used around the world. Many national and international modernisation initiatives use SDMX to improve and standardise data and metadata exchange and dissemination, to make data usage easier, to maintain statistical quality and to save production and dissemination costs. This progress has been acknowledged by the international community, for instance by the Data Gaps Initiative endorsed by the G20. In particular, the second phase of this initiative initiated in 2016 comprises a recommendation on International Data Cooperation and Communication which asks the Inter-Agency Group on Economic and Financial Statistics (which comprises the seven SDMX sponsor organisations) to "foster improved

[5] See the official site for the SDMX community on sdmx.org.

[6] Further aspects have been addressed if and when required, eg a JSON-format for the key artefacts of SDMX has been added as well as a specification for a RESTful webservice (ie machine-to-machine communication via the internet, which requires the transfer of machine-readable file formats such as XML and JSON).

[7] For a detailed user guide see sdmx.org/wp-content/uploads/sdmx-userguide-version2009-1-71.pdf; for an introduction to SDMX see also the ECB SDMX tutorial on www.ecb.europa.eu/stats/services/sdmx/html/tutorial.en.html.

international data cooperation among international organisations and support timely standardized transmission of data through internationally agreed formats (eg, SDMX), to reduce the burden on reporting economies, and promote outreach to users".[8]

In this context, the SDMX sponsors outline a series of strategic objectives in a SDMX Roadmap for 2020 (see Annex C), which are:

- strengthening the implementation of SDMX;
- making data usage easier via SDMX (especially for policy use);
- using SDMX to modernise statistical processes, as well as continuously improving the standards and IT infrastructure; and
- improving communication in general, including a better interaction between international partners.

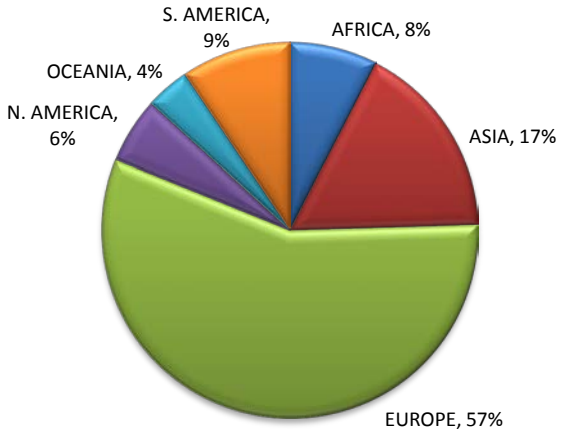
[8] See www.imf.org/external/np/g20/pdf/2015/6thprogressrep.pdf.

3. Survey findings

3.1 Geographical distribution

More than half of the respondent central banks were in Europe, accounting for 57% of the total geographical distribution. Europe is followed by Asia (17%), South America (9%), Africa (8%), North America (6%) and Oceania (4%), respectively (see Graph 1).

Respondent central banks by regions — Graph 1

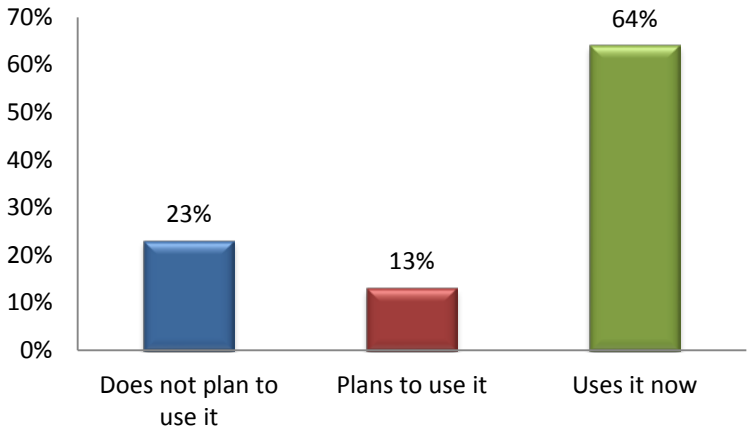


3.2 There is a significant interest in using SDMX

The use of SDMX is fairly common amongst central banks. Some 64% of the respondents are already implementing and using SDMX, and 13% of the group was planning to use it in the next 12 months. The remaining 23%, on the other hand, does not plan to use it in the near future (see Graph 2).

Interestingly, the current usage of SDMX seems to be somewhat higher for the responding central banks compared with the results of the broader SDMX survey of the international community official statistics.

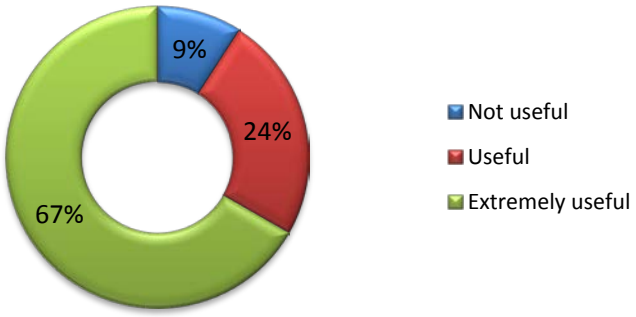
Does your organisation use SDMX in its current work, or plan to use it in the next 12 months? Graph 2



3.3 There is substantial satisfaction regarding the usefulness of SDMX

The vast majority of central banks using SDMX state that the implementation is useful (and it is even considered to be extremely useful for 67% of the respondents). But a small minority (approximately 9% of the group) does not share this view (see Graph 3).

How useful would you consider that the use of SDMX would be for your organisation? Graph 3

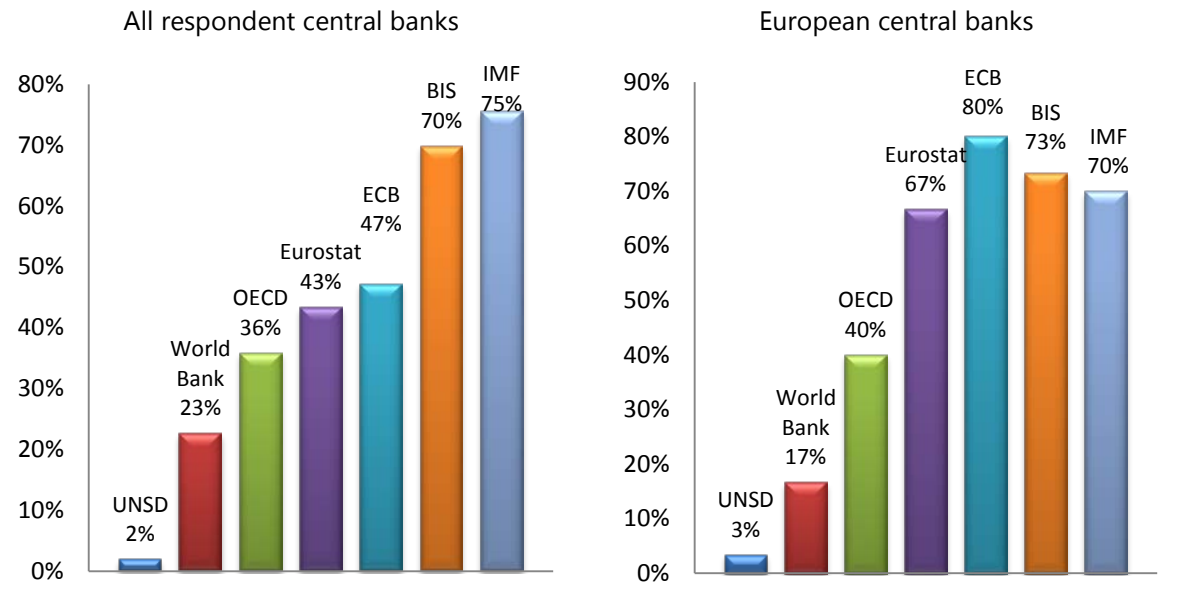


3.4 Data exchange or sharing

According to the survey, central banks worldwide mostly exchange or share data with the IMF and the BIS. To a lesser extent, the responding institutions are also working in association with the OECD, the World Bank and the United Nations (UNSD) in terms of data exchange (Graph 4).

Not surprisingly, European central banks share data primarily with the ECB and Eurostat, in addition to other international organisations.

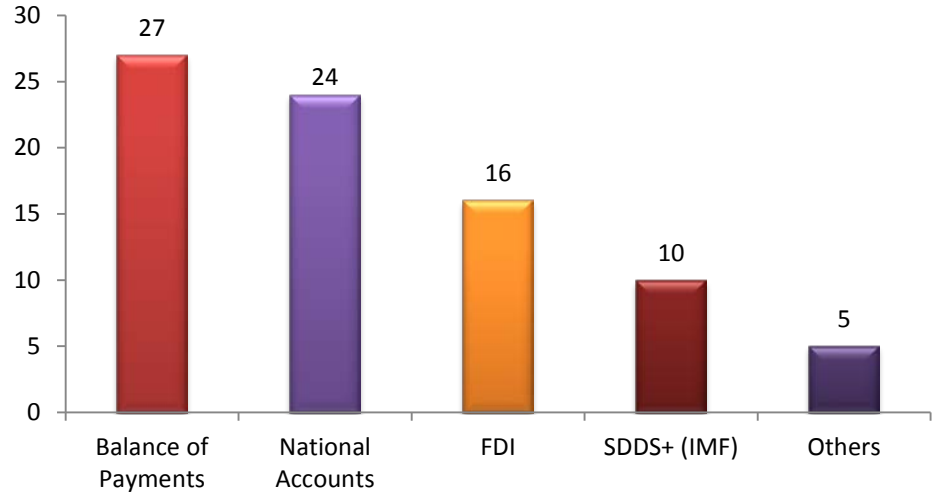
Please identify the organisation(s), if any, with which you have the **closest** working relationship in data exchange or sharing organisation?[9] Graph 4



3.5 Use of SDMX by statistical domain

In terms of statistical content, central banks most intensively use SDMX to share data related to Balance of Payments, National Accounts, FDI and SDDS+ (Graph 5). This can be partly explained by the availability of internationally agreed data structure definitions (see 3.8 below).

Number of central banks using SDMX in production (by domain) Graph 5

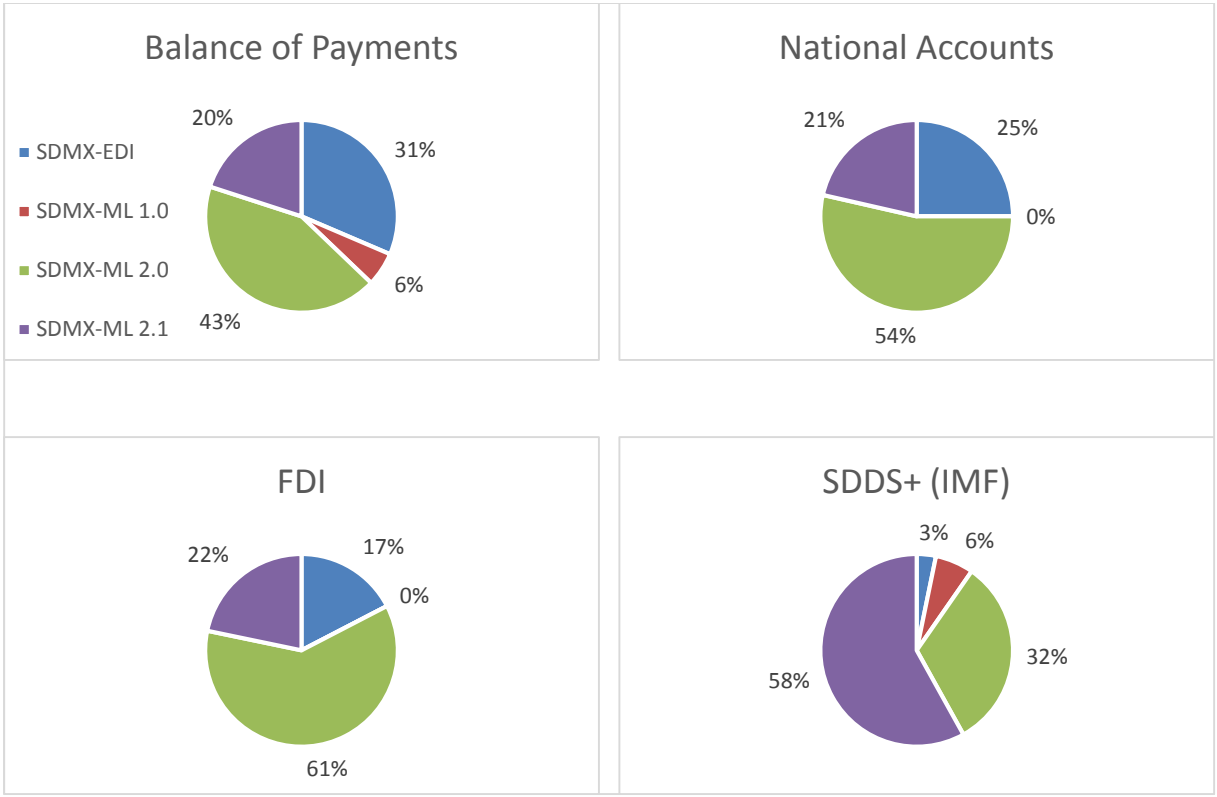


[9] Multiple answers possible.

3.6 SDMX variants in production

In terms of technical formats, SDMX-ML 2.0 and SDMX-ML 2.1 are the most widely used by central banks (Graph 6). In particular, the SDMX-ML 2.0 variant is used by almost half of the respondents implementing SDMX (this version provides for the exchange of reference metadata and includes a registry interface specification). Other formats are relatively less used (SDMX-ML EDI, which has a hierarchical structure and relies on a more specialised syntax than the XML syntax, and SDMX-ML 1.0, the first version of the SDMX standard).

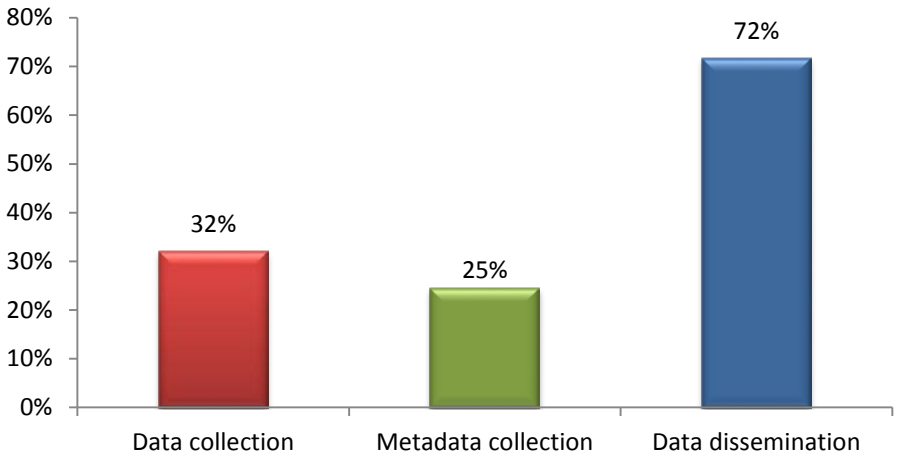
SDMX formats in production status — Graph 6



3.7 Reasons for use of SDMX

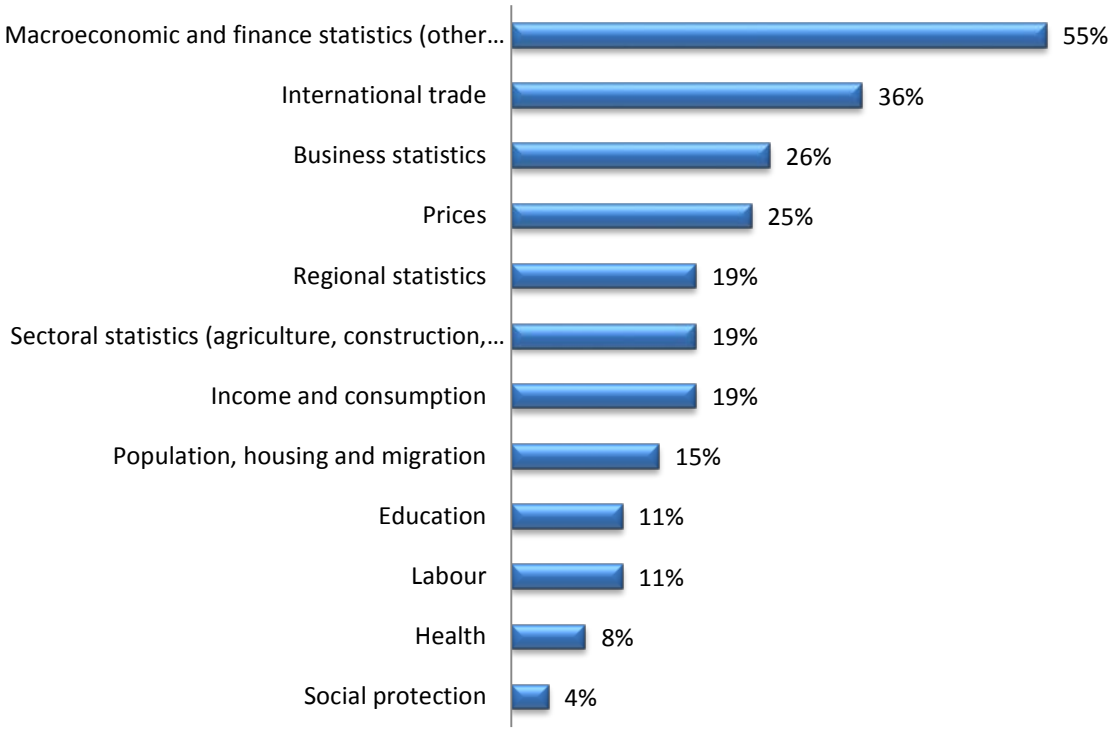
The vast majority of central banks implement SDMX in order to support data dissemination (this is reported to be the case for 72% of the respondents). Both data collection and metadata collection are less important from this perspective, at 32% and 25% respectively (Graph 7).

Please indicate whether your implementation(s) are directed towards[10] Graph 7



3.8 Potential domains that SDMX data structures should be developed for

In which domain do you think SDMX data structures should be developed further and made available as a priority[11] Graph 8



[10] Multiple answers possible.

[11] Multiple answers possible.

Macroeconomic and finance statistics (other than SNA/BOP existing DSDs), international trade statistics, business statistics and prices represent the top four domains for which central banks consider that SDMX data structures should be developed further (Graph 8).

3.9 Main benefits from SDMX implementation

SDMX provides great convenience to its users. The main benefit of implementing SDMX is to ease the reporting burden to international organisations such as the IMF, the BIS and the ECB.

Other important advantages mentioned by respondent central banks include enhancing data dissemination to external users, standardisation of statistical business processes based on the SDMX model and improving internal data organisation including metadata management (Table 1).

What benefits does your organisation see in implementing SDMX[12] Table 1

- Easing reporting burden to international organisations
- Enhancing data dissemination to external users
- Standardisation of statistical business processes based on the SDMX model
- Improving internal data organisation
- Improving metadata management
- Having access to SDMX structures from other organisations
- Easing the data collection burden from other organisations
- Using SDMX IT tools
- Sharing know-how with other organisations
- Enhancing data dissemination to internal users

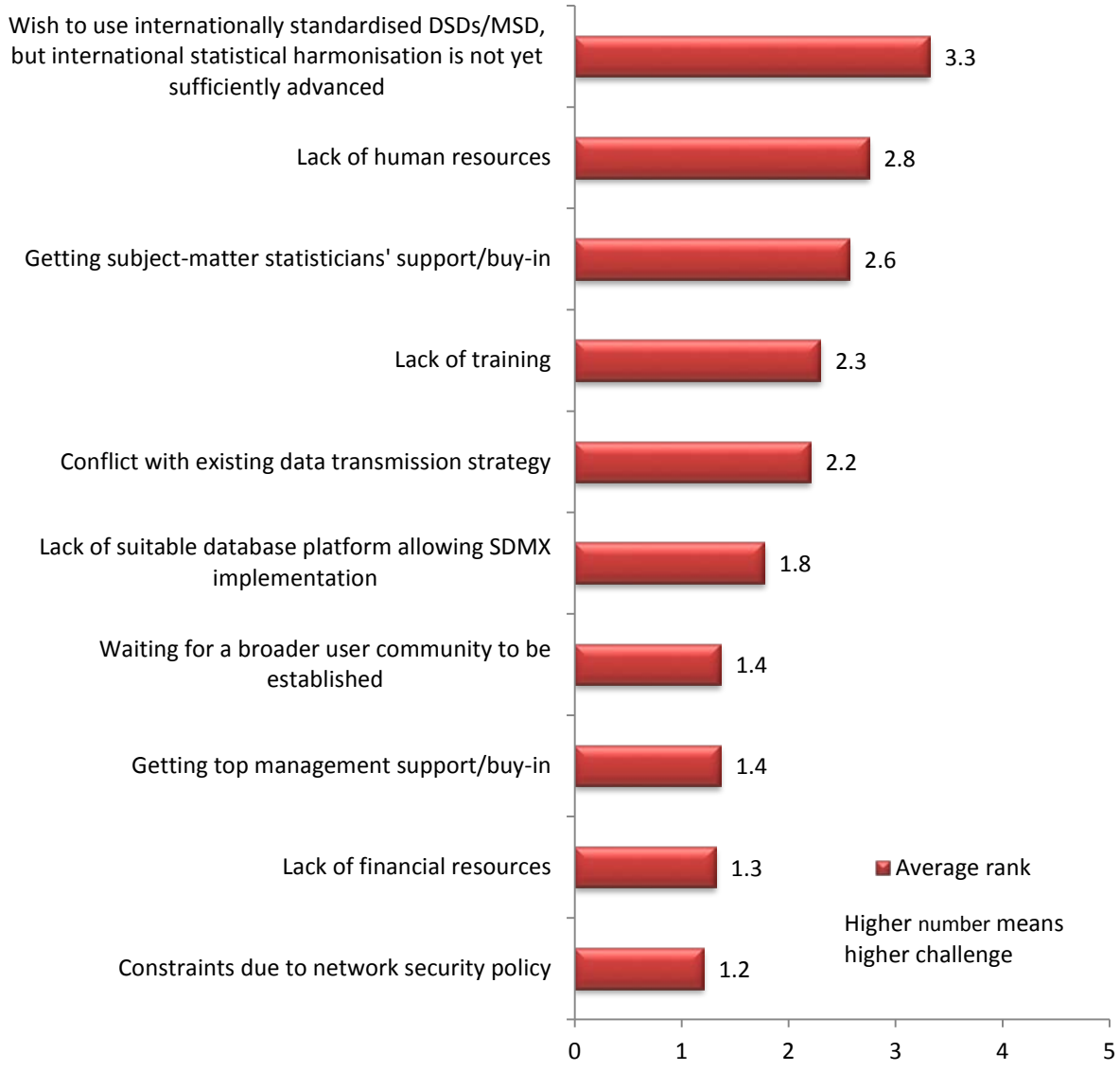
3.10 Main challenges to implementing SDMX

The survey highlighted important remaining challenges to the implementation of the SDMX standard. The vast majority of central banks would like to see more internationally agreed and standardised DSDs/MSDs made available. But this much-needed harmonisation is still lacking for a variety of statistical domains and will take time to be established.

The other most-reported difficulties include the need for adequate (IT) skills among staff to implement the standards, as well as problems in getting subject-matter statisticians' support and lack of training facilities (Graph 9). In contrast, the lack of financial resources does not seem to be a major issue for central banks (while it is reported to be the case in the broader SDMX survey of the international community official statistics).

[12] The list is sorted in descending order, ie the top entry is seen as the one providing the greatest benefit.

What challenges does your organisation face in implementing SDMX[13] Graph 9



[13] Multiple answers possible. The survey asks respondents to rank the given set of options in order from least (1) to most challenging (8).

Annex A: List of participating central banks and respondents

Country	Organisation & department
Angola	National Bank of Angola, Statistics Department
Argentina	Central Bank of Argentina, Monetary Statistics Department
Armenia	Central Bank of Armenia, Statistics Department, Data Processing Division
Australia	Reserve Bank of Australia
Austria	Central Bank of the Republic of Austria, External Statistics, Financial Accounts and Monetary and Financial Statistics Division
Belarus	National Bank of Republic of Belarus, Consolidated Statistical Information Department
Belgium	National Bank of Belgium, Department of General Statistics
Brazil	Central Bank of Brazil, Department of Economics
Bulgaria	Bulgarian National Bank, Statistics Directorate
Canada	Bank of Canada, Infrastructure Technology Services
Chile	Central Bank of Chile
Croatia	Croatian National Bank, Statistics Area
Cyprus	Central Bank of Cyprus/Statistics Department
Estonia	Bank of Estonia, Statistics Department
Finland	Bank of Finland
France	Bank of France, Directorate General Statistics
Germany	Deutsche Bundesbank, Statistical Department
Hong Kong SAR	Hong Kong Monetary Authority
Hungary	Central Bank of Hungary, Directorate Statistics,
Indonesia	Bank Indonesia, Statistics Department
Ireland	Central Bank of Ireland, Statistics Division
Israel	Bank of Israel, Information and Statistics Department
Italy	Bank of Italy
Japan	Bank of Japan, Research and Statistics Department
Latvia	Bank of Latvia, Statistics Department
Lithuania	Bank of Lithuania, Statistics department
Luxembourg	Central Bank of Luxembourg
Macedonia FYR	National Bank of the Republic of Macedonia, Statistics Department
Malaysia	Central Bank of Malaysia, Statistical Services Department
Malta	Central Bank of Malta, Statistics Department
Morocco	Bank of Morocco
Mauritius	Bank of Mauritius, Research & Economic Analysis Department
Mexico	Bank of Mexico, Financial System Information Division, External Sector Analysis Subdivision

Country	Organisation & department
Netherlands	Netherlands Bank, Statistics
New Zealand	Reserve Bank of New Zealand
Norway	Central Bank of Norway, Data Management
Peru	Central Reserve Bank of Peru
Poland	Ministry of Finance, Poland, Macroeconomic Policy Department
Portugal	Bank of Portugal, Statistics Department
Romania	National Bank of Romania, Statistics Department
Russia	Central Bank of the Russian Federation, Statistics Department
San Marino	Central Bank of the Republic of San Marino, Supervisory Reporting and Methodologies Service
Saudi Arabia	Saudi Arabian Monetary Agency
Serbia	Directorate for Economic Research and Statistics
Slovenia	Bank of Slovenia, Financial Statistics Department
Spain	Banco of Spain, Statistics Department
Suriname	Central Bank of Suriname, Statistics Department
Sweden	Sveriges Riksbank
Thailand	Bank of Thailand, Statistics and Information Systems Department
Tunisia	Central Bank of Tunisia, Statistics Department
Turkey	Central Bank of the Republic of Turkey
United Kingdom	Bank of England, Statistics and Regulatory Data Division
United States	Board of Governors of the Federal Reserve Board System, Flow of Funds Section

Annex B: IFC Questionnaire on central banks' use of SDMX standard

SDMX Global Survey 2015

The aim of this survey is to measure the acceptance and implementation of SDMX in the international community of official statistics. One correspondent in each organisation is appointed to fill in this questionnaire. Findings of the Survey will be discussed at the SDMX Global Conference 2015 in Bangkok.

1. *Name:

2. *Organisation & department:

3. *E-mail address:

4. Please identify the organisation(s), if any, with which you have the closest working relation in data exchange or sharing. More than one organisation could be identified.

- [x] BIS
- [ ] ECB
- [ ] Eurostat
- [ ] IMF
- [ ] OECD
- [ ] UNSD
- [ ] World Bank
- [ ] None
- [ ] Other, specify:

5. *Does your organization use SDMX in its current work, or plan to use it in the next 12 months?

- (•) Use it now
- ( ) Plan to use it
- ( ) Don't plan to use it

6. What is the status of your SDMX implementation in the following domains/collections?

	Status			SDMX Format				
	Planned	Pilot	In Production	SDMX-EDI	SDMX-ML 1.0	SDMX-ML 2.0	SDMX-ML 2.1	SDMX-JSON
National Accounts	☐	☐	☐	☐	☐	☐	☐	☐
Balance of Payments	☐	☐	☐	☐	☐	☐	☐	☐
FDI	☐	☐	☐	☐	☐	☐	☐	☐
Census (Eurostat)	☐	☐	☐	☐	☐	☐	☐	☐
SDDS+ (IMF)	☐	☐	☐	☐	☐	☐	☐	☐
STES (OECD)	☐	☐	☐	☐	☐	☐	☐	☐
Development Indicators (UNSD)	☐	☐	☐	☐	☐	☐	☐	☐
International Merchandise Trade Statistics (UNSD)	☐	☐	☐	☐	☐	☐	☐	☐
BIS	☐	☐	☐	☐	☐	☐	☐	☐

7. Please indicate whether your implementation(s) are directed towards (more than one category is possible).

- ☐ Data collection
- ☐ Metadata collection
- ☐ Data dissemination
- ☐ Other, specify:

8. Please select all domains for which you think SDMX data structures should be further developed and made available as a priority.

- ☐ Population, housing and migration
- ☐ Labour
- ☐ Education
- ☐ Health
- ☐ Income and consumption
- ☐ Social protection
- ☐ Justice and crime
- ☐ Culture
- ☐ Political and other community activities

- [ ] Time use
- [ ] Macroeconomic and finance statistics (other than SNA/ESA/BOP existing DSD)
- [ ] Business statistics
- [ ] Sectoral statistics (Agriculture, Construction, Tourism, etc.)
- [ ] International trade
- [ ] Science, Innovation, Technology
- [ ] Prices
- [ ] Environment
- [ ] Regional statistics
- [ ] Other, specify:

9. What benefits does your organization see in implementing SDMX?
Please select as many options as apply, and then rank them in order from most (1) to least (10) of benefit. Non-applicable items may be left blank.

	Ranking
Improving internal data organisation	
Improving metadata management	
Enhancing data dissemination to internal users	
Enhancing data dissemination to external users	
Standardisation of statistical business processes based on the SDMX model	
Easing reporting burden to international organisations	
Easing data collection burden from other organisations	
Having access to SDMX structures from other organisations	
Sharing know-how with other organisations	
Using SDMX IT tools	
Other, specify	

10. What challenges does your organization face in implementing SDMX?
Please select as many options as apply, and then rank them in order from least (1) to most (8) challenging. Non-applicable items may be left blank.

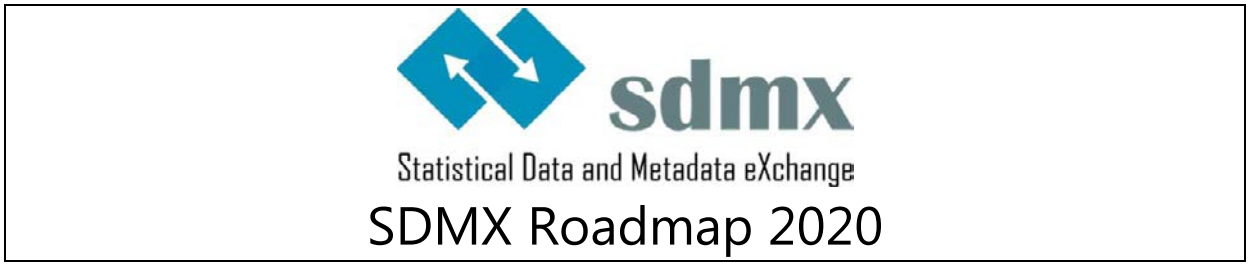
	Ranking
Getting top management support/buy-in	
Getting subject-matter statisticians support/buy-in	
Wish to use internationally standardised DSDs/MSD, but international statistical harmonisation is not yet sufficiently advanced	
Waiting first a broader user community to be established	
No obvious benefits	
Conflict with existing data transmission strategy	
Constraints due to Network Security Policy	
Lack of suitable database platform allowing SDMX implementation	
Lack of resources:	
--- financial	
--- human	
--- other	
Lack of training	
Other	

11. How useful would you consider that the use of SDMX would be for your organisation?

Extremely useful		Useful		Not useful
○	○	◉	○	○
5	4	3	2	1

12. Please enter any other comments:

Annex C: SDMX Roadmap 2020



SDMX is the leading standard for exchanging and sharing data and metadata in official statistics. SDMX is sponsored by seven International Organisations and is recognised by many international bodies, such as the United Nations' Statistical Commission, the Interagency Group on Economic and Financial Statistics coordinating and monitoring the G20 Data Gap Initiative, the UN regional Economic Commissions, the European System of Central Banks (ESCB) and the European Statistical System (ESS).

1. Why is there a need for an SDMX Roadmap?

In 2011, the SDMX sponsors published an action plan for the years 2011 to 2015. This plan was instrumental in channelling development efforts and providing SDMX users with a clear view of how the standard was developing. Key strands of the action plan included setting up a Global SDMX Registry to share metadata assets, implementing Data Structure Definitions (DSD) for local and global use in macroeconomic statistics, improving Content-Oriented Guidelines, producing a new generation of IT tools, and rolling out new training services.

SDMX has already achieved an optimal level of maturity and it is widely recognised as a global standard for data exchange. Building on the positive experience of the previous action plan and in response to the needs expressed by users, the SDMX sponsors have decided to develop a "Roadmap 2020" presenting a vision of where SDMX is heading in the next few years.

In this Roadmap 2020, the SDMX sponsors outline a series of strategic objectives:

1. Strengthening the implementation of SDMX;
2. Making data usage easier via SDMX (especially for policy use);
3. Using SDMX to modernise statistical processes, as well as continuously improving the standards and IT infrastructure;
4. Improving communication in general, including a better interaction between international partners.

These priorities will be developed in an action plan covering the period 2016 to 2020. For each action, this plan will identify the organisations responsible, timelines and deliverables. The SDMX Sponsors will monitor the progress of these actions on an annual basis.

SDMX: some background

In 2001, the Bank for International Settlements (BIS), the European Central Bank (ECB), Eurostat, the International Monetary Fund (IMF), the Organisation for Economic Cooperation and Development (OECD), the World Bank and the United Nations Statistics Division (UNSD) joined forces to develop more efficient processes for the exchange and sharing of data and metadata. The seven sponsor organisations called their initiative Statistical Data and Metadata eXchange (SDMX).

The sponsors' main goal has been to develop and maintain 'common open standards' (this was the title of the first report presented to the United Nations Statistical Commission in March 2002) for data and metadata that are accepted worldwide for exchanging and sharing statistical information as well as for providing a modern basis for statistical data modelling. In their first joint statement, the sponsor organisations declared their intention to join forces "to focus on business practices in statistical information that would allow more efficient processes for exchange and sharing of data and metadata within the current scope of our collective activities. The goal is to explore common e-standards and on-going standardisation activities that could allow us to gain efficiency and avoid duplication of effort in our own work and possibly for the work of others in the field of statistical information".

The first work programme was approved in June 2002. The SDMX sponsors released the first version of the SDMX specifications in 2004, and the XML-based version 2.0 in December 2005. The technical standards were typically used first in data exchanges between the sponsor organisations and their constituencies, which helped the technical standards to mature and the technical infrastructure to develop. In 2007, the first Memorandum of Understanding between the seven sponsoring organisations was signed, formalising the commitment of the sponsor organisations and the governance of the SDMX initiative. Since then, the implementation of SDMX across statistical domains (such as Balance of Payments, National Accounts and Government Finance in the economic statistics domain) has increased steadily, supporting the global exchange of statistical information.

SDMX (ISO IS-17369) addresses a number of strategic and operational challenges, such as:

- *responding to the 'open data' challenge;*
- *helping statistical systems to harness the benefits of the 'data revolution';*
- *supporting data processing, analysis and dissemination, particularly for key indicators, such as those in the 2030 Agenda for Sustainable Development;*
- *producing more with less resources;*
- *getting data faster and in a more standardised form to users;*
- *getting the same data across International Organisations at the same moment;*
- *improving the overall quality of official statistics.*

SDMX now supports a wide range of international data exchange activities and is widely used around the world. Many national and international modernisation initiatives use SDMX to improve and standardise data and metadata exchange and dissemination, to make data usage easier, to maintain data quality and to save production and dissemination costs. This progress has been acknowledged by the international community, for instance by the Data Gaps Initiative endorsed by the G20.

2. SDMX 2020: Vision and strategic goals for the next years

The main objective of the SDMX initiative is a stronger and more global information system that can provide open and real-time access to official statistics. To achieve this, national and international statistical authorities will make available timely and comparable statistics using globally agreed data structures supported by good-quality metadata. SDMX has already shown that it has the potential to achieve this through a number of initiatives, such as the data sharing initiative of the Interagency Group on Economic and Financial Statistics, the IMF SDDS Plus, the UN Millennium Development Goals, the Joint ESCB Dissemination Standard between the ECB and national central banks, and the 'Census Hub' used in the European Statistical System.

SDMX is one of the bedrocks of a modern and industrialised statistical process. If each partner system were to use SDMX data structures and common IT building blocks, international information systems would be able to communicate 'machine-to-machine' as in industrial production processes. SDMX would make it possible to interconnect remote dissemination databases in a 'virtual data warehouse'. This would cut transmission delays, save resources, and improve the data quality in making global data more comparable.

National statistical offices and central banks have to guarantee the overall quality of statistics, using international standards. Similarly, International Organisations are ultimately responsible for the overall quality of internationally comparable statistics as well as their global aggregates. In this context, more SDMX would make it easier to disseminate open, timely, high-quality and comparable data.

By enabling national statistical authorities to use harmonised reporting structures for data and metadata, SDMX 2020 will reduce their reporting burden to International Organisations. In parallel, SDMX 2020 will ensure that International Organisations receive more timely and comparable statistics. It will also help analysts, policy-makers and users by making the same data available across organisations.

The use of SDMX could even extend beyond the current communities responsible for official statistics by reaching out to communities using standards and technologies for statistical processing, in particular those supporting data discovery, query and visualisation. SDMX provides the basis for sharing data with others: shared data can then be used to populate websites or can be presented dynamically. SDMX also offers harmonised statistical concepts and codes for data sets. All these features make SDMX particularly useful for a wide variety of statistics used in public administrations, in research or in the private sector. Promoting the use of SDMX assets (the Information Model, content guidelines and software tools) could be particularly beneficial to those agencies that need to respond to the so-called "open data" initiatives.

Why has SDMX had so much success in recent years?

- *Its sponsor organisations, which account for a major proportion of the world's official statistical data and metadata exchange operations, are committed to SDMX and its implementation.*
- *The SDMX governance structure is well-defined and transparent, but also quite light and flexible. This is also true for its ownership groups, which deal with specific implementing actions in statistical domains.*
- *Like many national statistical organisations, each sponsor organisation has dedicated activities for modernising statistical production, exchange and dissemination. These have been set up in response to resource constraints, the need for better user orientation and data quality and for integrating statistical processes. Many organisations see SDMX as a valuable toolbox that can help them to progress with their modernisation agenda.*
- *Major statistical domains decided to use the SDMX standards for data and metadata exchange and international data sharing. This is a big step towards harmonised global data dissemination and data consumption (i.e. the same data values being disseminated globally according to a mutually agreed structure).*
- *Expert knowledge and SDMX experience is growing in many statistical organisations. Many organisations have made the initial investment necessary and can now use SDMX for a greater number of statistical domains.*
- *SDMX has been integrated as a key element into the statistical modernisation policy led by the UNECE High-Level Group.*

In order to achieve our vision for where SDMX should be in 2020, the sponsors have identified the following main priority areas:

1. Strengthening the implementation of SDMX;
2. Making data usage easier via SDMX (especially for policy use);
3. Using SDMX to modernise statistical processes, as well as continuously improving the standards and IT infrastructure;
4. Improving communication on SDMX in general and the capacity building, including a better interaction between international partners.

Strategic goals and expected results are described more in detail in the following table.

3. SDMX strategic goals

	Strategic goals	Expected results
1. **Strengthening the implementation of SDMX**	1.1 Implement SDMX in more statistical domains and promote its use through a coordinated action plan among SDMX Sponsor organisations. 1.2 Develop additional SDMX Data Structure Definitions and make them available for global uses.	Greater global use of SDMX.
	1.3 Encourage more data sharing agreements using SDMX standards and IT infrastructure.	More efficient data sharing and dissemination between national and international organisations, reducing reporting burden and validation costs.
	1.4 Improve data sharing processes with a better coverage of reference (textual) metadata.	SDMX Metadata Structure Definitions for global use made available to complement data structures.
2. Making data usage easier	2.1 Encourage the use of SDMX for data dissemination (especially for policy purposes) and for more interactive data visualisation.	More data and metadata disseminated to users in SDMX formats.
	2.2 Encourage more compatibility of SDMX with other standards used for micro-data, such as DDI (Data Documentation Initiative) and XBRL (eXtensible Business Reporting Language).	Mappings to DDI and XBRL provided. Guidelines to the use of SDMX for micro-data released.
	2.3 Develop closer collaboration with Linked Open Data communities and their initiatives, actively promoting SDMX in open data initiatives.	Web dissemination channels based on SDMX fully supporting open data initiatives.
	2.4 Provide easier access to SDMX for national organisations through more SDMX-compatible exchange formats, based on the SDMX Information Model, and better IT tools.	'Easy-to-use' SDMX-compatible formats, more harmonised SDMX implementations, and better IT infrastructure and tools available.

3. **Modernising statistical processes and improving standards**	3.1 Develop further the SDMX IT infrastructure and software tools, providing services that can be shared internationally. 3.2 Improve technical standards and statistical guidelines for a better coverage of user needs.	Upgraded SDMX IT infrastructure and software tools. Enhanced version of SDMX technical specifications and statistical guidelines.
	3.3 Integrate data validation within the SDMX standard, based on the Validation and Transformation Language (VTL) developed and maintained as an implementation of the SDMX Information Model.	SDMX-based data validation available, completing the technical specifications.
4. **Better communication and capacity-building**	4.1 Improve communication about SDMX with senior managers, policy-makers, users and bodies that implement SDMX.	SDMX website constantly improved, promoting SDMX to a wider audience.
	4.2 Review of the lessons learned from more than 10 years of Global SDMX Conferences and expert group meetings.	New set-up for SDMX conferences and expert groups.
	4.3 Explore new avenues to communicate and advertise SDMX products.	Plan for SDMX media communication drawn up.
	4.4 Better communication and interaction with other modernisation initiatives, such as the ESS Vision 2020 and the UNECE High-Level Group for the Modernisation of Official Statistics. This involves collaboration over international models and activities such as GSBPM, GSIM and CSPA [(14)].	Cooperation proposals will be worked out and announced.
	4.5 Improve SDMX training. 4.6 Strong efforts to build SDMX capacity, in countries where a better awareness is needed.	Common policy on training and capacity building in place. Release of a list of SDMX experts and trainers.

[(14)] GSBPM: Generic Statistical Business Process Model; GSIM: Generic Statistical Information Model; CSPA: Common Statistical Production Architecture.

As a result of these actions, Sponsors envisage that SDMX will be characterised – in 2020 – by:

- its broad use in data exchanges and dissemination by sponsor organisations and their respective constituencies;
- comprehensive data sharing in the main statistical domains, based on SDMX DSDs for global use;
- the broad use of international SDMX MSDs;
- greater SDMX-based dissemination and usage, in part by linking SDMX to other standards used for those purposes, being a standard well suited to supporting open data initiatives;
- the broad use of SDMX-based data validation (using VTL) in statistical processes;
- the availability of an upgraded and more integrated SDMX IT infrastructure and IT tools;
- a better SDMX communication 'package' that reaches out to relevant stakeholders;
- better collaboration with other institutions aiming to modernise official statistics;
- being a standard that is applicable to both public and private sectors.

4. Moving forward

The Sponsors will mobilise their resources to the strategic directions described above. These priorities will be laid down in more detail in a medium-term action plan covering the period 2016 to 2020, with particular focus initially on the first two years. For each action, this plan will identify the organisations responsible, timelines and deliverables. The SDMX Sponsors will monitor the progress of these actions on an annual basis and will update the work plan on the basis of a rolling calendar.

The Sponsors have set out the above-described strategy. They also recognise that the growing community of SDMX implementers and users is a rich source of ideas. Therefore, the Sponsors Group is keen to take into account ideas coming from this broad community, by organising dedicated conferences and using various communication channels, e.g. in the context of the G20 Data Gaps Initiative progress reports.

(February 2016)

Comments or questions regarding the SDMX Roadmap 2020 can be sent to contact@sdmx.org

Annex

Key SDMX milestones (2001-2015)

2001	May: First common statement of the Sponsoring Organisations
	September 6-7, Washington D.C.: initial workshop
2002	March: First report to UNSC (Common Open standards for the Exchange and Sharing of Socio-economic Data and Metadata: the SDMX Initiative)
	June: Approval of the first work programme
2003	Launch of Joint External Debt statistics Hub project (JEDH)
2004	December: SDMX version 1.0 published on the web
	SDMX 1.0 published as ISO Technical Specification (TS) 17369
2005	December: SDMX version 2.0 published on the web
2006	Launch of Joint External Debt statistics Hub on the web
2007	January 9-11, Washington D.C.: First SDMX Global Conference
	March: Memorandum of Understanding on the establishment and operation of SDMX
2009	January 19-21, Paris: Second SDMX Global Conference
	First set of content-oriented guidelines published on the web
2011	April: SDMX Version 2.1 published on the web
	May 2-4, Washington D.C.: Third SDMX Global Conference
	Setup of the SDMX Statistical Working Group (SWG) and Technical Working Group (TWG)
2013	SDMX published as ISO International Standard (IS) 17369
	September 11-13, Paris: Fourth SDMX Global Conference
	Establishment of task-force on international data cooperation (TFIDC) by the Inter-Agency Group on Economic and Financial Statistics (IAG)
	First release of global Data Structure Definitions for National Accounts, Balance of Payments and Foreign Direct Investment
2014	Setup of the Ownership Group for SDMX in Macro-Economic Statistics (SDMX-MES OG).
2015	Publication of the Validation and Transformation Language 1.0, implementing a new part of the SDMX 2.1 Information Model
	Launch of the SDMX Global Registry; revision and enhancement of SDMX guidelines
	Go-live of the international data cooperation pilot on GDP and population
	September 28-30, Bangkok: Fifth SDMX Global Conference