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CountryData: Sharing national development indicators
(Starting with national development indicators)
United Nations Statistics Division, New York, USA

Abstract. UNSD are supporting 11 countries in Far-East Asia and across Africa to implement SDMX for their national development indicators. Implementation introduces the key components of SDMX such as DSD, mapping and registry. The aim is to start small and simple working with some basic tools and a small set of indicators to build confidence and understanding within the country, with the vision that at the end of implementation a country will have the knowledge and the means to expand.

1. Introduction

1. The aim of this paper is to describe how UNSD are supporting 11 countries¹ to implement SDMX for their national development indicators; with an overall objective of helping these countries to;
 - Improve visibility of official statistics produced in the country by establishing a widely available central data portal for development indicators at the country level and by bringing these indicators up to the international level;
 - Improve the coherence among such indicators produced in the country, by ensuring a stronger coordination and collaboration among national data producers and by promoting the use of standard definitions, methodologies, data exchange formats and data transfer tools;
 - Enhance knowledge across the official statistics system through the introduction of the latest technology and statistical literacy training, related to topics such as: development indicators, processes of storage, exchange, dissemination, presentation and communication of data
2. The paper explains the rationale for using SDMX to help achieve these objectives, how SDMX fits into the wider dissemination model for development indicators and the issues and challenges faced in implementation.

2. SDMX for development indicators

3. Development indicators provided a useful starting point for introducing SDMX to these countries as these indicators tend to originate from across a national statistical system (i.e. health,

¹ The current countries are Burundi, Cambodia, Ghana, Laos, Liberia, Morocco, Palestine, Rwanda, Thailand, Uganda and Vietnam.

education, finance etc) and are requested by multiple national and international users, effectively multilateral exchange. In this way, SDMX was an ideal solution to help countries package and exchange these data quicker and more efficiently.

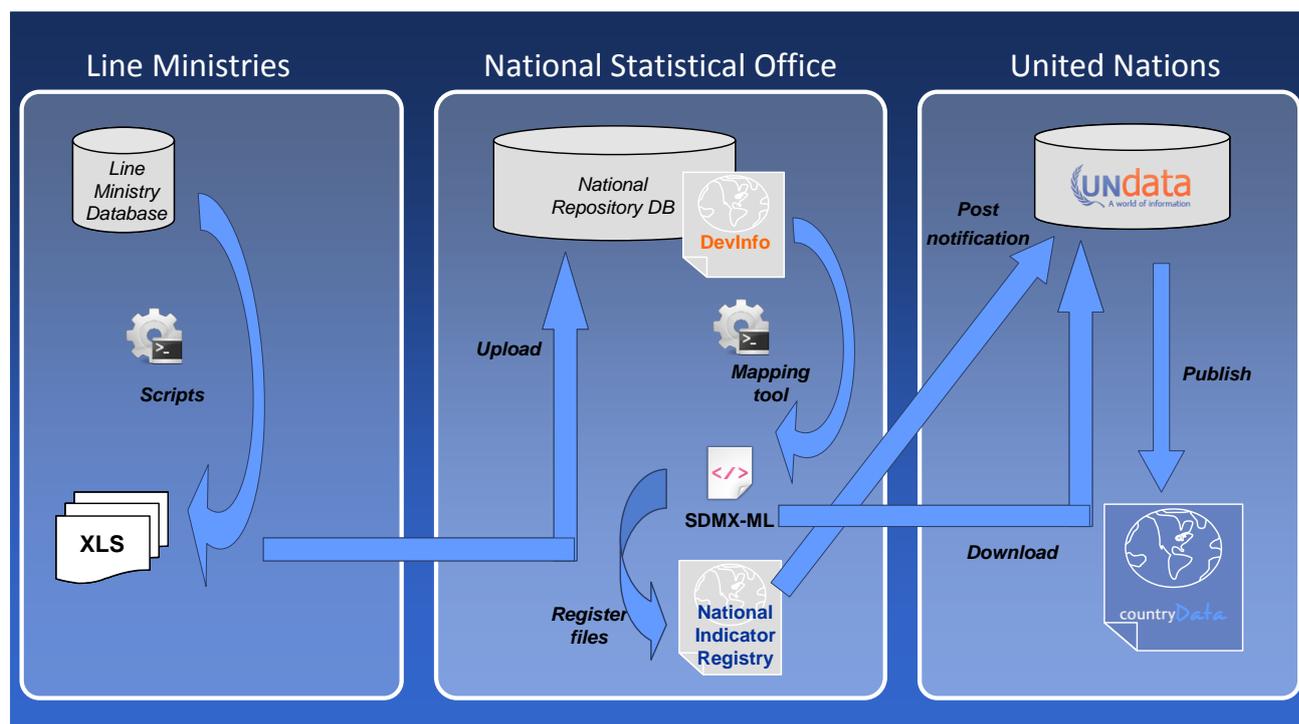
4. Additionally, SDMX provides a useful process to standardize and codify these indicators. In particular, this allows for better comparison with comparable international development indicators, which are now often available in SDMX, making it easier to match indicators together to more easily identify and explain any differences between them. For example, addressing the issue of data discrepancies by presenting national estimates alongside estimates produced by international agencies responsible for monitoring progress against the Millennium Development Goals (MDGs).
5. In some cases the reasons for these discrepancies are legitimate – for some development indicators agencies make adjustments to national data to facilitate valid cross-country comparisons. In other cases, data are not available to international users due to issues with access. These are big concerns for the international and national community, absent or contradictory data is a major cause of confusion among users, they undermine the credibility of national statistical systems and can have serious policy implications.
6. Putting the spotlight of these issues is CountryData², a new data platform developed by the United Nations Statistics Division (UNSD) to showcase national data for development indicators. Driven by SDMX, CountryData directly subscribes to a national registry of development data maintained by the country to retrieve with minimum lag national development indicators to populate and update country profiles. The website gives more visibility to nationally produced data by linking them to UNdata, the UN's global one-stop shop for data dissemination and provides a platform for the analysis and presentation of discrepancies with comparable international MDG series.

3. Dissemination model for development indicators

7. Implementation of SDMX in most countries focus on three main components, see **Figure 1**. They are to develop the **national indicator repository** of national development indicators, an automated electronic system of **national data exchange** between the statistical office and other data producers and a **national indicator registry** for automated sharing of these indicators at the international level and to facilitate their dissemination through UNdata to the CountryData website.

² See <http://data.un.org/countryData>

Figure 1: Example of the data dissemination model for development indicators



8. These components are facilitated through IT support from an international and local consultancy, training, meetings and other support. In this way, each country implementation is customised to the needs of the country. But the three components represent the necessary outputs to align with the objectives of this work mentioned in the introduction. The dissemination of the national development indicators, facilitated by the national indicator registry, to the CountryData application represents the final step in the process.

National Indicator Repository

9. As there is a definite preference to built on existing systems rather than create new ones, the country's central data repository is in most instances based on DevInfo database software, with Thailand and Morocco being the exception. As a result of significant funding from UNICEF, DevInfo database software can be found in over 115 countries across the world. The software has become the main tool for the storage and dissemination of development indicators in many of these countries.
10. Each implementation focuses on a core set of development indicators decided at the country's choosing and makes these as widely available as possible, i.e. through this repository as well as by other means. In particular, putting the repository online through the National Statistics Office (NSO) in instances where the country has the capacity.

National Data exchange

11. The basis for the automated electronic system of data exchange is also dependent on the infrastructure and capacity of the country. Some countries visited have a highly sophisticated system of exchange between national data producers (i.e. the NSO and line ministries) while others rely on the sharing of hard copy reports which are then entered manually into the database. At the minimum the aims is to get countries to move to an electronic process, for example through the exchange of Data Entry Spreadsheets (XLS). Perhaps more importantly there is usually a need

to standardise the process by which this is done. The role of SDMX in intra-national exchange is encouraged but not pursued during implementation. The challenges of SDMX in intra-national exchange are discussed further in the comments and limitations section of this paper.

National Indicator Registry

12. Instead SDMX is introduced to the country around a national indicator registry that specialises in the registration and sharing of national development indicator data and metadata. The national registry registers the location of the SDMX-ML files of these indicators. Any application like CountryData or individual can subscribe to this registry to know when updates are available and when notifications are received then retrieve the SDMX-ML files for publication on the website.
13. The development indicators are first taken from the national repository and put through a mapping process to link their contents to the Data Structure Definition (DSD) in order to produce the required SDMX-ML files. This DSD defines a key family and a set of concepts and code lists which adhere to international standards. Originally the process of mapping was a very manual repetitive process that had to be completed for each and every time series required to be mapped. The mapping process is greatly simplified with a mapping tool developed for this purpose by DevInfo. This will greatly assist countries with selecting any indicator within an DevInfo database to be mapped to the DSD, converted to a SDMX-ML file and then registered on the national registry.

5. Comments and limitations

14. In most implementations, the objective was to keep the SDMX process simple for the country to obtain a good conceptual understanding of the standard and some of its tools before branching out to more complex implementations. Therefore there was a deliberate decision not to insist the national indicator repository implement web services and line ministries were not compelled to register indicators directly to the national registry. Countries may wish to later implement these tools and systems when they have further confidence with SDMX, but implementing them too early would have turned SDMX more into a black box and complicated the functioning of the national statistical system.
15. Following the same simplicity logic, every country implementation promotes the same DSD, called the CountryData DSD. This was adapted from the MDG DSD previously developed and agreed by the Inter-Agency and Expert Group (IAEG) for the sharing of international MDG indicators. The adaptation of this MDG DSD made sense for country produced development indicators as it is the recognised SDMX standard for the packaging of related MDG indicators. It also takes time and resources to agree a DSD, the MDG DSD took over 2 years to agree. The other benefits are the DSD defines the data down to the time series level to simplify matching between comparable international and country data. The main difference between them is the CountryData DSD makes additions to the code lists in order for countries to share indicator beyond MDGs.
16. Like the MDG DSD, any exchange using the CountryData DSD is strictly limited to national level data. While the CountryData DSD could be adapted to exchange sub-national data, such a change would have major implications for the conceptual model and make the possibility of countries eventually managing their own code lists even more difficult. And arguable the only way for sub-national data exchange to work efficiently is if countries are able to manage these classifications within the DSD themselves rather than through a central agency (like the UN).

6. Future vision

17. In the first country implementation the SDMX architecture was more tightly coupled with DevInfo software, now the national registry software is expanded to register sources from other platforms and accept other DSDs. The team is also exploring the more advanced tools advocated by EuroStat and Metadata technology tools on mapping and registry to offer countries not using DevInfo databases and who are more conversant with SDMX.
18. The team has also been in contact with other international agencies; like UNICEF, FAO and AfDB who wish to develop similar solutions with their member countries. And to gauge broader interest in using these tools to satisfy data requests to the country, thereby reducing the data burden. As already described, the current strategy for SDMX implementation in countries gives a solid introduction and a firm foundation to build SDMX into other statistical domains and more detailed statistical disaggregations (i.e. sub-national data, age-specific demographic concepts etc.).

7. Conclusions and conundrums

19. Implementation of SDMX within the countries builds from tools most statistical systems are familiar with, data entry spreadsheets and database repositories to introduce basic SDMX processes like mapping indicators, creating SDMX-ML and registering these at a registry for open consumption. From there, countries will be able to adapt the components of the implementation for their own purposes, like the development of new DSDs, exchange from different data platforms and on different statistical domains.
20. While training will be made available to better understand the building blocks of SDMX, the issue of DSD code list adaptation is extremely significant in this work. There is a tension between maintaining standards by managing any changes to the DSD at the centre and the desire and potentially more efficient approach of letting individual countries maintain the DSD locally. A model to satisfy both aims still needs to be explored.