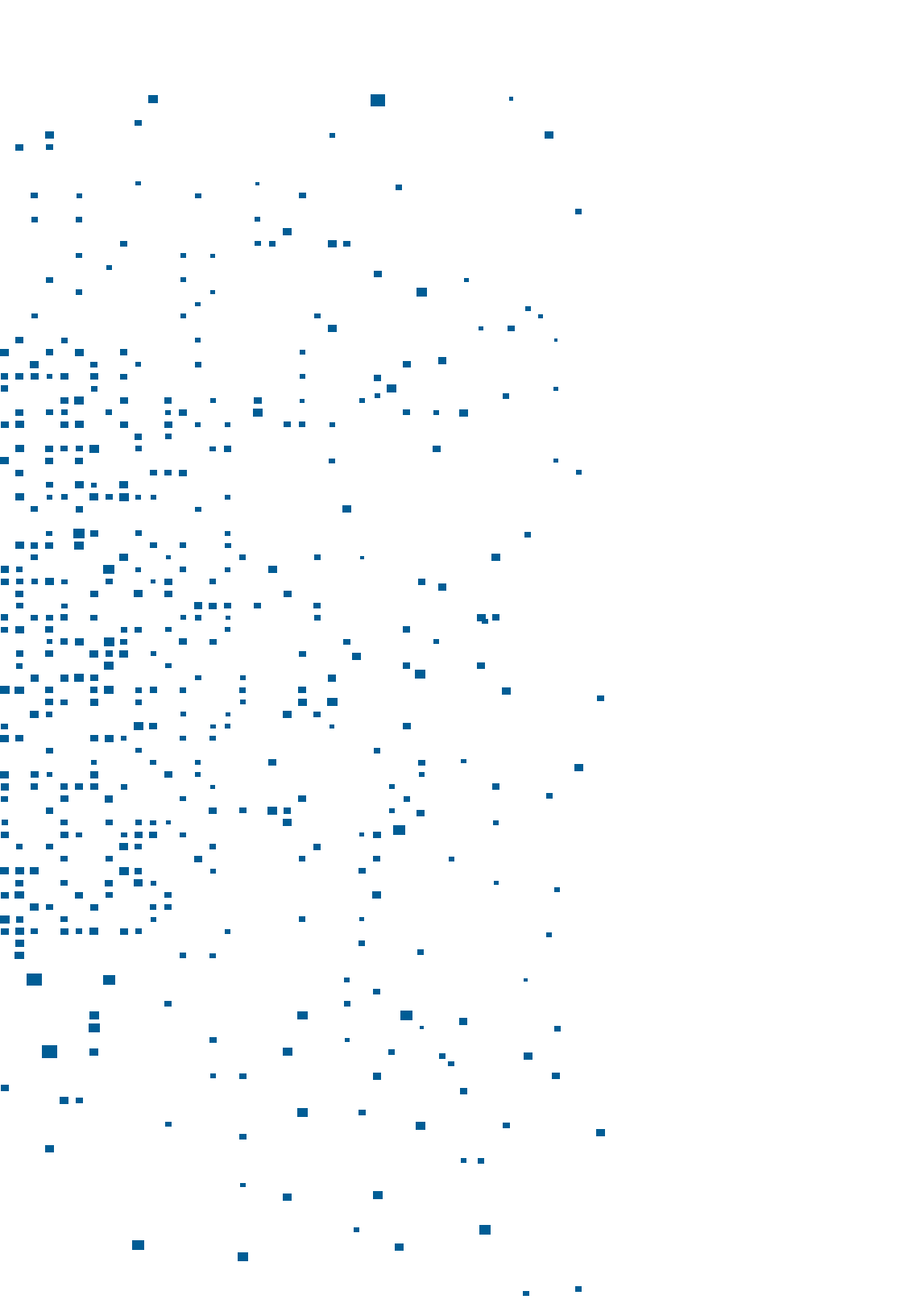




This project is funded
by the European Union



STRENGTHENING STATISTICAL SYSTEM OF SERBIA
BY UPGRADING METHODOLOGIES AND STANDARDS,
AND APPLICATION OF GOOD PRACTICE



REVIEW OF MAIN ACHIEVEMENTS AND RESULTS

Serbian official statistics - a path from the science of uncertainty to a modern statistical system

Demand from decision-makers for data on which to base and prioritise policy interventions is growing. Timely and relevant, statistics are recognised as fundamental economic and social measures of an economy's performance. The function of a National Statistical Institute (NSI) in a modern society is no longer limited to the production and dissemination of high quality data. The NSI follows statistical principles and applies thorough statistical quality assurance procedures to support policy development. The most important task of official statistics is to present a realistic picture of social trends in the country and to offer a reliable basis for analyses and decision-making at various levels of society, from the government and other institutions to businesses and interested citizens.

The European Statistical System (ESS) is already actively involved in the process to respond to the challenges of society's growing need for information and to effectively comply with the European Code of Practice which sets the standard for developing, producing and disseminating European statistics. The modernisation of the ESS is based on the integrated approach of statistics. Consequently, the data collected both from statistical surveys and administrative sources managed by various institutions are to be used for statistical purposes in order to compile statistical indicators and thus increase data effectiveness.

Recognising the need and significance of official statistics, the Republic of Serbia, supported by the European Union endeavours to harmonise the Serbian statistical system with international standards.

The Statistical Office of the Republic of Serbia (SORS) is facing an increased demand to provide better access to official statistics for the main users and the general public.

Harmonisation of official statistics with international statistical standards, classifications and methodologies, as well as the adoption of other countries' good statistical practice are an integral part of the Republic of Serbia's intensive undertakings in the process of accession to the European Union. The role of SORS, as a national statistical focal point and official data producer is becoming increasingly important.

SORS' modernisation process is a response to the new trends in statistical production (wide usage of administrative sources and Big Data) and the new quality requirements for statistical information, especially imposed by the Serbian Government and its ministries, as well as the adoption of the European statistical system (ESS) strategy that is elaborated in the ESS Vision 2020.



THE PROJECT AT A GLANCE

The project **“Strengthening the Serbian statistics system by upgrading methodologies and standards, and application of good practice”** (18/03/2016 – 17/12/2017) significantly supported the enhancement and modernisation of SORS' work. The project aimed to improve the availability and quality of statistical data and to upgrade and strengthen the Serbian statistical system. Both are essential for developing and implementing European policies and for building the confidence of users in official statistics produced by SORS.

The activities implemented were oriented in three main directions:

- further development of the information and communication system of SORS;
- improvement of the system of national accounts in connection with the preparation of supply and use tables;
- improvement of the existing and development of new sustainable development indicators.

Emphasis has been placed on improving the availability, quality and comparability of statistics in a timely manner, especially in those areas that are indispensable for the accession process and in relation to accession negotiations. SORS' capacity to produce good coverage statistical information in a comparable way and based on high quality standards has been increased. However, the further development of the national statistical system to a level comparable to that of the current EU Member States and the integration into the European Statistical System (ESS) remains the ultimate objective as a necessary element in the accession process.

In order for a statistical process to be efficient and sustainable, the necessary organisational framework must be in place. This involves not only the legal framework, but also the support of and cooperation with other actors, such as central banks, line ministries, holders of administrative information, business federations and key enterprises, key statistical users, and so forth. The project promoted inter-institutional cooperation, in particular with the activities related to interoperability. Building networks, sharing experience and learning from each other support SORS to multiply the direct results of the project by strengthening national and regional capacities in the long term. The exchange of best practices and the transfer of know-how reinforce staff expertise, which optimise the efficiency of their work, their professional development and the use of their talents and skills.

MAIN ACHIEVEMENTS

Component 1

Upgrade the ICT system

The constant demand by end-users for updated and complete statistics, coupled with recent advancements in ICT has resulted in a steady growth in the volume of information processed by NSIs and the services they provide. In order to respond to the challenges of harmonisation to the ESS, SORS has embarked on a process of upgrading its ICT system. The project focused on building on achievements to date and provided a targeted and tailored support to SORS across different fields and steps of ICT upgrading efforts.

Implementation of data migration

In the past, 5 years before the commencement of the project, SORS had data production on two platforms, mainframe and PC. SORS did the data integration and put all the data on one platform, PC. The project completed the migration of the mainframe archived-data stored on cartridges into XML format by introducing suitable migration software tools and in cooperation with skilled SORS staff.

Information technology information library (ITIL)

The ITIL defines a holistic process framework that recasts IT from a product developer to a service provider. In this way, IT aligns with the needs of the business by proactively managing all aspects of the production environment. The ITIL Foundation Certificate in IT Service Management provides IT professionals and managers with the essential skills needed to deliver customer-centric, cost-justified and business-driven IT services.

The ITIL qualifications scheme provides a modular approach to the ITIL framework, and is comprised of a series of qualifications, focused on different aspects of ITIL best practice, to various degrees of depth and detail.

The ITIL related activities included the following:

- ITIL training planning;
- ITIL training content development;
- ITIL training delivery;
- Post-training follow-ups.

Statistical data and metadata eXchange (SDMX-RI)

Information consists of data and related metadata (data that provides information about other data). The SDMX standards are designed for exchange or sharing of statistical information between organisations on the national and the international level.

For supporting the development of SDMX in different statistical domains, Eurostat promotes and maintains the SDMX as the mechanisms and processes for the exchange of statistical data and metadata. SDMX-RI is a generalised service infrastructure that can be re-used partially or completely by any organisation involved in SDMX projects for data exchange.

Based on the above considerations, the project mapped and upgraded the data dissemination environment, particularly the dissemination data base for joint operation with SDMX-RI tools. More specifically, the project:

- Analysed the existing data dissemination environment, prepared all necessary activities and design for the SDMX-RI implementation. Special attention was placed on the enhancement of the features of the dissemination database on the basis of an overview on all inherent aspects particularly in the domain of additional metadata, the harmonisation of used codes, nomenclature and classifications.
- Implemented preparatory actions to map/adjust the dissemination environment to SDMX-RI on a pilot system basis.
- Tested the pilot system workability.
- Assisted in implementing SDMX-RI at SORS.

WEB design

The reengineering of the existing SORS's webpage was a crucial activity of the project. Introduction of web data collection, SDMX-RI, ensuring interconnectivity and interoperability required significantly expanded web page functionalities for static as well as for dynamic parts (interactive data processing from statistical databases). At the same time, a major consideration is that the web site must communicate data clearly and effectively. The visual aspects are as important as the content. Navigation should become easier via a reduction of the number of pages and the establishment of better connections with statistical databases as part of a common data warehouse system and, least but not the last, the use of an elaborated and innovative Content Management System was promoted.

Metadata System

The project increased the quality of the statistical information produced by further developing the metadata system through the following steps:

- Established general metadata pillar
- Made mapping and connection between all 3 pillars of metadata: general, active and reference metadata
- Proved compliancy of existing SORS active metadata system with standards (GSBPM, GSIM, GAMS0 etc.)
- Implemented additional modular tools to integrate with the statistical data production system with the aim of further improving data collection and processing

Interoperability

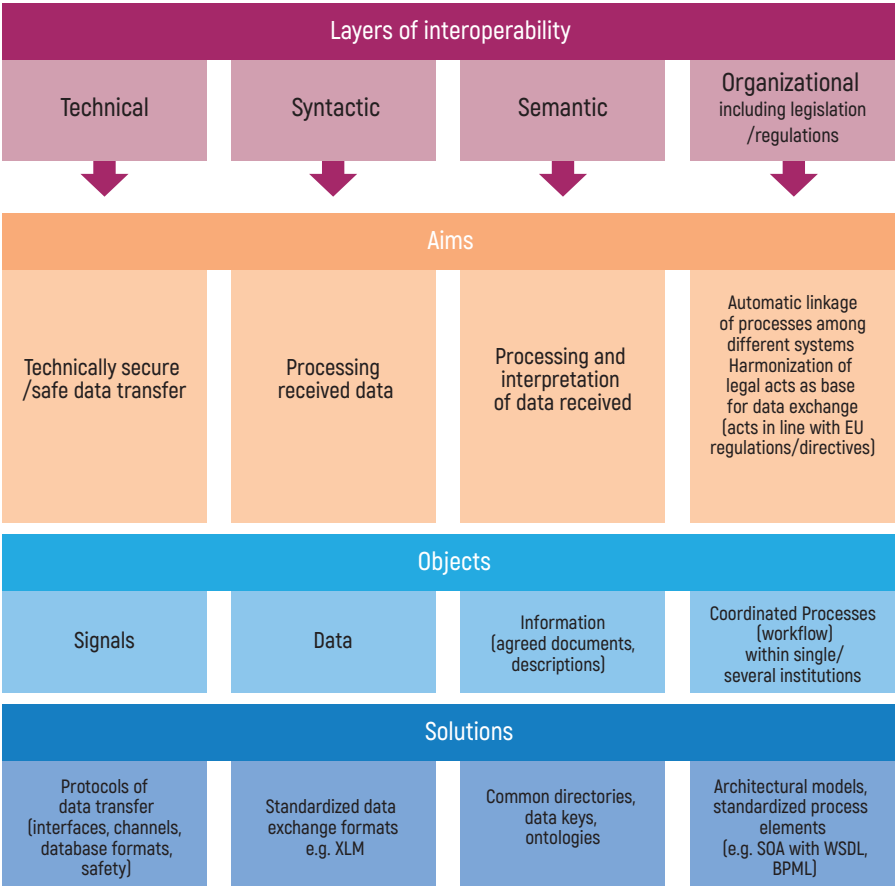
In modern data exchange scenarios, organisations at the EU and international level (such as EU member states, OECD, IMF, ECB, etc.), business and citizens may equally act either as data providers or as users of statistical information. The need is to automatically extract statistical figures which are described using the data that accompany the data during collection and transmission processes.

The objective is to provide maximum level of privacy and security of data and contents of registers, as well as communication between the registers, stability and availability of public services, and also contribute to raising the capacity of public administration authorities through establishing necessary strategic, legal and technical framework in accordance with the highest European and global standards.

In close cooperation with SORS, the project prepared a methodology for interoperability. The document consists of guidelines for the establishment of interoperability with key governmental institutions for the introduction of interoperability as an element of the regular business flow and data exchange between relevant institutions in the statistical system.

The project facilitated organisation of a workshop on interoperability involving a number of Serbian governmental authorities. SORS used this workshop as an opportunity to demonstrate its capacity and readiness for cooperation across the governmental sphere.

Two pilot projects were successfully implemented by the project for the purpose of enhancing data exchange with other governmental bodies.



COA - Customer Oriented Architecture, WSDL - Web Service Description Language, BPML - Business Process Modeling Language

Component 2

Improve the National Accounts system

2

The national accounts system represents the significant information base for managing the economic policy and taking decisions at all levels since they measure the level of economic development, economic growth rate, changes in production, consumption, savings, investments in basic funds, exports and imports, and wealth, not only for the economy as a whole, but also at the level of its institutional sectors. They may also be used to forecast future trends and assess the potential for long-term development and economic growth, as well as to assess and study impact that economic policy measures have on the trends of macroeconomic, structural and regional indicators.

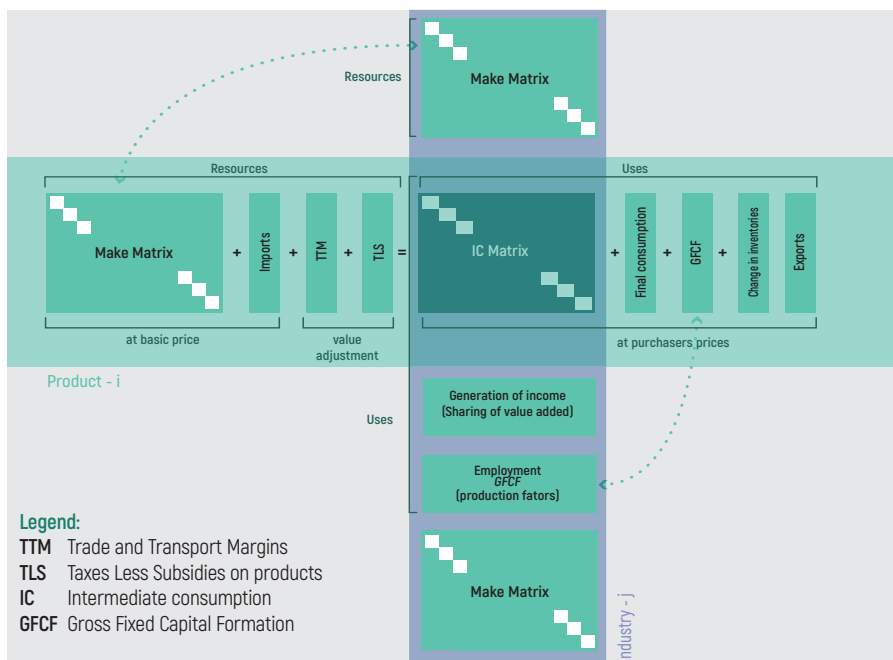
The national accounts system shows how production creates new and transforms the already existing properties and services, while at the same time generates revenues that are later allocated, reallocated and used for final consumption and savings that will enable an increase in production and spending in the future.

The European System of Accounts – ESA, cover two main subsystems:

- National accounts (annual, quartal and regional) with the main indicators: gross added value and gross domestic product, net income of property, gross national income, gross savings, final consumption, net loans;
- Input/output system in the form of connected matrix presents detailed structure of the national economy, relation and interdependence of producers and consumers in the national economy. Input system covers the Supply and Use Tables and Input/Output tables.

The project supported SORS in the improvement of the overall system of producing national accounts, thereby promoting compliance with Eurostat requirements and methodologies. In recent years, Serbia has made considerable progress in applying the relevant methodologies (European system of accounts (ESA 2010)) and in harmonising classifications and improvement data sources. SORS received assistance in the specific areas, compilation of the complete set of Supply and Use tables (SUT) for specific years and their experimental transformation into Input/Output tables.

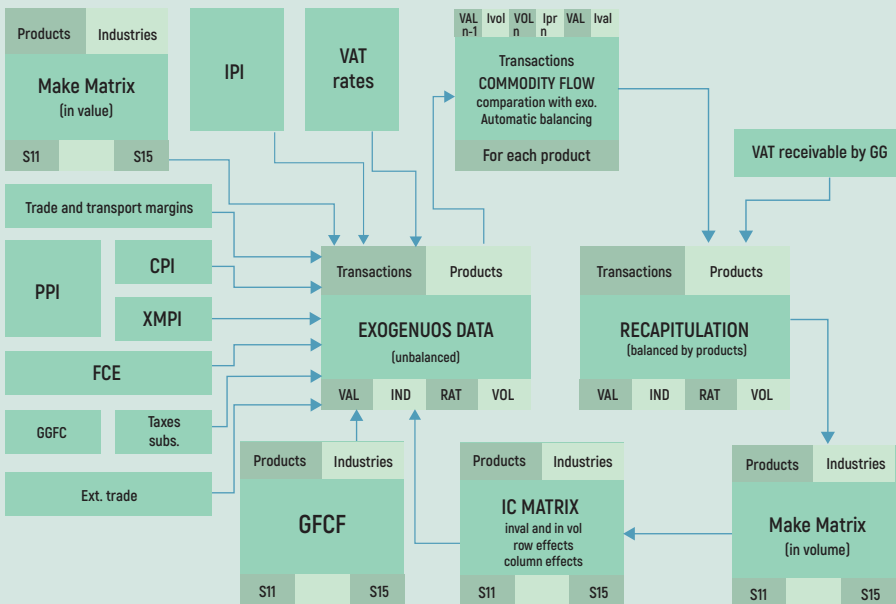




Supply and use tables, as well as input output tables can be read horizontally (by products, with expenditures approach broken down according to this dimension) and vertically (by institutional sector and by industry, with production approach broken down according to this dimension). The generation of income accounts allows a third approach to GDP: the income approach (by institutional sector and by industry). The make matrix, intermediate consumption matrix and gross fixed capital formation (GFCF) matrix have to be compiled by product and (by institutional sector and) by industry.

The preparation of exogenous data took a long time, as they not only had to be derived from present annual accounts and/or Input-Output Survey and converted into a new product classification, but also had to include some System of National Accounts (SNA 2008) innovations, such as treatment of software and research and development in GFCF, or treatment of goods sent abroad for processing as external trade of services.

Since summer 2017, three "rounds" of commodity flows have taken place, as the most efficient system of SUT is basically an iterative process. Each round ideally reaches a new achievement: production after round 1, gross fixed capital formation after round 2, then intermediate consumption by product and by industry and final consumption by product after some more rounds.



The balancing of a Supply and Use Table is an iterative process. Once exogenous data have been compiled independently, either from institutional sectors' side or from products' side, they are confronted and reconciled iteratively in "Commodity flows rounds", with the first step consists of introducing institutional sectors data in products commodity flows, and the second step of introducing conversely products data into institutional sectors accounts.

Thanks to the complete framework of commodity flows, the transformation of supply and use tables into input-output tables, which are very helpful for macroeconomic models and analysis, is fully automated (with a product technology assumption and an automated correction phase that avoids negatives after inverse matrix calculation), as well as the production of Excel tables for the ESA dissemination programme.

Component 3

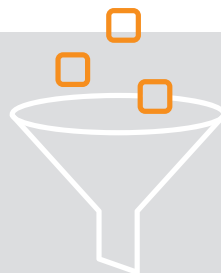
Development of a set of Sustainable Development Indicators

3

The European Union's Sustainable Development Strategy defines the goals and planned results related to the continuous improvement of the quality and well-being of its citizens, both for the present and future generations, by bringing together economic efficiency, social solidarity and ecological responsibility. Progressing towards the goals and results of the EU SDS is monitored by using a set of Sustainable Development Indicators.

The Statistical Office of the Republic of Serbia is one of the institutions in Serbia responsible for producing EU sustainable development indicators, some of which already exist within the statistics system. In addition to SORS, the Ministry of Finance, the Ministry of Justice, the Environmental Protection Agency, etc. are also responsible for producing the indicators.

A detailed analysis concerning the division of responsibilities for the production of the indicators in Serbia shows that SORS is in charge of approximately 50% of the indicators, while the other half falls under the responsibility of the other institutions. SORS is also responsible for coordinating the set of the indicators.



WHAT ARE INDICATORS? WHY ARE WE USING THEM

An indicator is a summary measure which refers to the key characteristics of a phenomenon derived from the series of observed data. Indicators can be used to indicate relative relations, positive or negative changes in the observed phenomenon. Indicators are often used directly as an argument for changes in national or global policies. In the area of strategic policies, indicators are important for defining objectives and monitoring their implementation. In governmental practice, a visible shift towards evidence-based policies and the definition of target values of the observed goals can be seen, which are measured and monitored by selected indicators.

Indicators are fundamental elements of the official statistical information structure. They are calculated from raw data or accounts, and the quality is of the utmost importance whether we are collecting data or producing/calculating indicators. The indicators are accompanied by quality reports and metadata, as official statistics operate within a predefined methodological framework, which ensures consistency in time and geography. Indicators by their characteristics enable a synthesis which makes their messages simpler and easier to understand and facilitates communication with a larger number of users. The synthesis and assessment of available information is a step towards sending clear messages to the policy-makers, participants in policy-making processes and citizens on economic and social developments. Analyses based on indicators are essential tools for measuring progress or trends.

How we developed SDIs?

SORS is the institution responsible for the production of the set of EU's SDIs, and some of them already exist in the statistical system. In addition to SORS, there are 10 governmental institutions and agencies (Ministry of Finance, Ministry of Economy, and the Environmental Protection Agency, etc.) that are SDI producers. A prudent assessment concerning the division of responsibilities for the production of SDIs in Serbia indicates that SORS is responsible for approximately 50% of the indicators, while the other half is the responsibility of other bodies. SORS has the responsibility to coordinate the collection and publication of the SDIs.

SORS'S AND THE PROJECT'S STARTING POINTS

	available indicators(number)	Partially available	Total:	%
beginning of the project (October 2016)	49	4	135	39%
At the end of the project total number (November 2017)	100	4	135	77,0%
At the end of the project (November 2017)	99**	4	134*	76,9%

* In 2017, Eurostat ceased to calculate one of the indicators produced by SORS.

** Thus the decrease in number of indicators from 100 to 99.

Only **39%** of the total number of the SDIs has been calculated for Serbia at the beginning of the Project and **77%** of total SDIs at the end.



SDI INVENTORY AND GAP ANALYSES

The SDI production was carried out by SORS and independent SDI producers such as ministries, agencies and other relevant institutions. It was not implemented as a joint action between government institutions, and the entire process of SDI production and dissemination was not managed in a collaborative and cooperative manner. Quality assessment and assurance was only carried out within SORS and sporadically by other producers. No metadata has been registered, except for those produced by SORS. A similar situation occurred with indicators dissemination, when each institution published its indicators.

The implementation of the project's SDI component has been the first attempt to tackle SDI mapping in Serbia in an organized manner. The ultimate goal of the project was to establish a continuous SDI production and root it as a regular government activity with defined producers and responsibilities and an established system of the follow-up of the entire process from data collection, data processing and dissemination. An organised interoperability with a number of SORS's SDI partners was an objective that was successfully implemented. SORS is recognized as the coordinator of the SDI processes and the key institution responsible for SDI quality assurance.

The inventory and mapping were implemented in a two-step process. The first step focused on the fact that SORS is the institution responsible for the organisation and coordination of the national statistical system and that SORS was ready to take on this role. The second step focused on gathering external SDI producers and SORS's experts. The logic behind the sequencing was that SORS had to map what was already produced internally, assess the quality and identify missing SDIs. Furthermore, it had to assess the ability to produce new SDIs and the actions necessary to achieve that goal. In parallel, SORS identified governmental institutions and agencies that produce and publish certain SDIs. SORS, in close cooperation with the SDI producers, encouraged them to present their work and explain data management and dissemination.

The first step of the inventory of SDIs and gap analyses was conducted in mid-May 2016. An application was developed and used as a database and SORS's various departments started to add data, for example: is the individual indicator produced or not (Yes/No), responsible person/unit/organization, is the indicator disseminated in Eurostat 's SDI set (Yes/No), compliance level, availability of methodology, metadata, quality reports. This algorithm was a very useful tool for collecting uniform data, either from SORS departments or other SDI producers.

At the end of the gap identification phase, indicators were identified:

- ▶ That have already been produced, and, among them, those requiring an improvement in quality or compliance with Eurostat standards.
- ▶ That can be produced out of existing data.
- ▶ That have to be produced from scratch.
- ▶ That will not be produced –not a priority, no legal basis for data collection and indicator production, and no measurement equipment.
- ▶ That are not applicable to Serbia as an EU candidate country.

Over the course of the project, a number of tools and guidelines have been developed that are in compliance with the statistical standards to achieve quality, integrity and data transparency of the SDI.



We succeeded in producing 104 SDIs out of 134

Nowadays, Serbia has 80% of the indicators and is able to follow sustainable development. This is an excellent basis that has been established in a very short period of time. The experience acquired during this project will facilitate the forthcoming work on SDG implementation.

Now, Serbia has its own portal, which is able to present different indicators and follow a number of new arising indicators, data and big data, if necessary, and demographic groups.

Acquired knowledge and technical infrastructure are important Serbian assets.



Few indicators requested external assistance in gaining improvement and consistency, while the following **5 indicators** were developed through pilot surveys:

- Investments by institutional sectors -Entrepreneurship and Agricultural holdings sector –
- Generation of waste excluding major mineral waste
- Growth and logging of forests
- Projected expenditures for pensions in % of GDP

WHY “ONE-STOP SHOP” PORTAL

The portal is designed to be user-friendly. It displays data graphics, numerical data, and different functionalities that allow an individual choice of the time period and calculation, adapted to the individual user’s needs. At present, the portal provides sustainable development indicators as defined in the EU’s sustainable strategy.

The one-stop shop principle is chosen because it allows users to access quality reports/metadata, definitions of indicators, basic data disaggregation or comparison of Serbian indicators with EU Member States. In this way, the users get easily relevant data. For more complex analyses, access to the data dissemination base is permitted and users can carry out “tailor made” analyses.



SORS – A WAY FORWARD

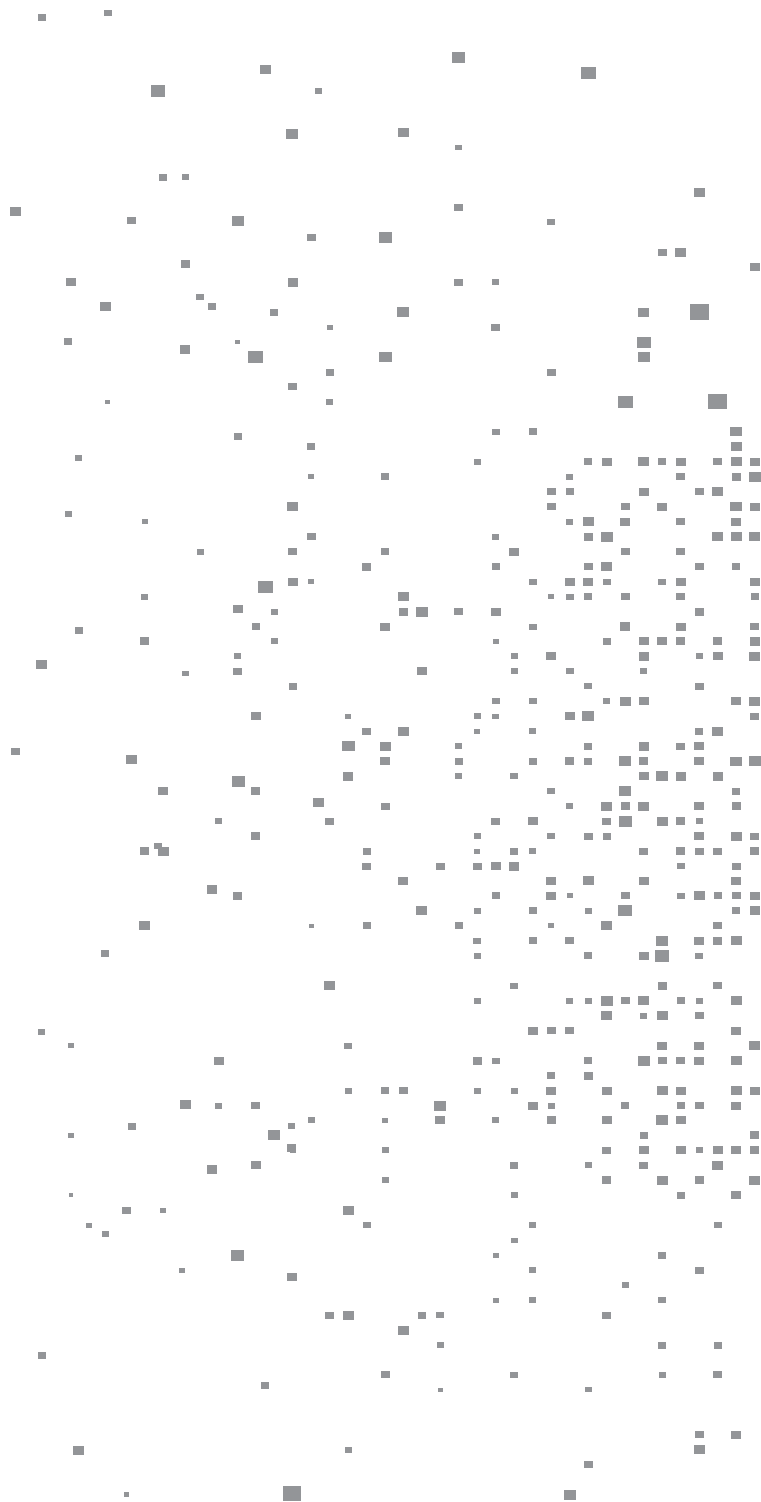
Over the last two decades, official statistical production has been undergoing an internationally driven process of modernisation. In this regard, the most distinguishable initiative is constituted by the activities of the UNECE High-Level Group of Modernisation of Official Statistics (HLG-MOS) in all its committees. In line with the international agenda, SORS is developing a service-oriented statistical architecture with carefully designed, built and implemented statistical production processes, taking into account the limited budget and staff resources. The modernisation strategies formulated respond to the new ICT environment with its fast pace of technological development and the availability of non-traditional “real time” data generated by satellite imaging, social media, mobile phone use, sensory devices, etc. In addition, SORS understands the user needs as a motivation for the definition of new products or the improvement of current ones.

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The project is implemented by a consortium led by GOPA in cooperation with: Atos, Expertise France, Istat, Statistics Netherlands i Eurolink consultants.



This publication has been produced with the assistance from the European Union. The contents of this publication are the sole responsibility of the project *Strengthening the Serbian statistical system by upgrading methodologies and standards and by appliance of good practice* and do not necessarily reflect the views of the European Union.