TWINNING CONTRACT

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Strengthening the capacity of Jordan's Department of Statistics in terms of compilation, analysis and reporting of statistical data in line with International and European best practices

MISSION REPORT

on

Component 1
Roadmap for the development of an integrated administrative data system in Jordan with pilots on Statistical Business registers (SBR) and population statistics

Activity: 1.6.4:
Introduction to best international practices for providing microdata access for decision makers and researchers

Mission carried out by
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دائرة الإحصاءات العامة
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List of Abbreviations

- BC – Beneficiary Country
- DoS – Department of Statistics
- MS – Member State
- PL – Project Leader
- RTA – Resident Twinning Advisor
- STE – Short-term Expert

Executive Summary

The Mission mainly addressed best international practices for providing microdata for decision makers and other advanced users, with examples of practical implementation of these practices at Statistics Denmark and Statistics Finland. The Member State experts' presentations included definitions and types of microdata, the overall framework for providing microdata and in particular examples of how the role of this service is included in the strategies for their respective National Statistical Institutes. Additionally, the experts outlined national legislation governing microdata access as well as security measures taking outset in the" Five safes" – a European framework for ensuring data security and confidentiality. Furthermore, workflows, interactions with data provider and users, organizational structures and required skill of staff members, as well as economic models for providing the services, were also presented.

A key point emphasized by the consultants was the significant potential for the society if the data collected by statistical offices could be made available in microdata format to users outside of the office. However, as microdata contains sensitive unit-level information, it is crucial to implement appropriate processes and structures to ensure data security and restrict access to authorized users.

The experts also emphasized that before establishing such a microdata service, it is critical to identify potential users, and understand their needs as well as defining the products that will be offered. Equally important is ensuring compliance with relevant legislation regarding the sharing of microdata with external users. It is also essential for to have a clear vision of the intended outcome, enabling the creation of a roadmap that outlines the necessary steps to achieve this vision.

Glossary

Microdata: Sets of records containing unit -level information on individuals, households or businesses.

Confidential data for scientific purposes: Data which only allow for indirect identification of the statistical units, taking the form of either secure-use files or scientific-use files;

Secure-use files: Confidential data for scientific purposes to which no further methods of statistical disclosure control have been applied;

Scientific-use files: Confidential data for scientific purposes to which methods of statistical disclosure control have been applied to reduce to an appropriate level and in accordance with current best practice the risk of identification of the statistical unit;

Public use files (PUF): Microdata to which statistical disclosure control has been applied to a level so no risk of identification of individual units

Statistical disclosure control methods: Methods to reduce the risk of disclosing information on the statistical units, usually based on restricting the amount of, or modifying, the data released;

Access facility: Access facilities' means the physical or virtual environment for accessing microdata they can be divided into the following types:

- **On-site** (Very different settings from big rooms to small individual cubes with fingerprinting recognition, camera etc.)
- **Remote Access** (Enables access to microdata from work or home; fingerprinting or password protected)
- **Remote Execution** (Enables users to run codes on remotely. The user does not see data but gets the output).

The Five Safes: The five safe is is a set of intrnational principles which enable data services to provide safe access to data. The framework has become best practice in data protection whilst fulfilling the demands of open science and transparency. The filve safe consis of the following:

- **Safe data:** Data is treated to protect any confidentiality concerns
- **Safe projects:** Projects are approved by data owners for the public good
- **Safe people:** Users are trained and authorized to use data safely
- **Safe settings:** A secure access facility prevents unauthorized use.
- **Safe outputs:** Rules from output are described and outputs are screened or checked to ensure that data are non-disclosive.

1. General comments

This mission report was prepared within the Twinning Project "*Strengthening the capacity of Jordan's Department of Statistics in terms of compilation, analysis and reporting of statistical data in line with International and European best practices".* This Mission related to the following Mandatory Results (MR) and indicators:

"MR 1.6: MR 1.6 A governance roadmap for decisions makers data access and use of a National Data Center (NDC) for model based analyses in Jordan prepared

- **Indicator 1.6.A:** Best international practices for NDC's outlined
- **Indicator 1.6.B:** Stakeholder awareness raised and needs from stakeholder mapped
- **Indicator 1.6.C:** Organizational structure and required skills for staffing the National Data Center outlined.
- **Indicator 1.6.D:** Requirements and standards for data and metadata layer outlined

The purpose of this activity was:

- Introduce best international practices for providing microdata for decision makers and researchers.

The consultants would like to express their sincere thanks to all officials and individuals met for the kind support and valuable information which they received during the sessions which highly facilitated their work. The views and observations stated in this report are those of the consultants and do not necessarily correspond to the views of EU, Statistics Denmark or Statistics Finland.

2. Assessment and results

During the mission, the consultants met with representatives from the Department of Statistics (DoS) and the National Data Center (NDC) over a four-day period from November 25-29, 2024. The meetings were primarily centred on pre-prepared presentations by the consultants, which covered the topics outlined in the Terms of Reference (ToR). These presentations included examples of frameworks, processes, and best practices from Statistics Denmark (SD) and Statistics Finland (SF) thus outlining the best International practices for NCD (Indicator 1.6.A). The participants actively contributed to the discussions, posing questions to the consultants and engaging in discussions among themselves.

A key point emphasized by the consultants was the significant potential for the Jordanian society if the data collected by statistical offices could be made available in microdata format to users outside of the office. However, as microdata contains sensitive unit-level information, it is crucial to implement appropriate processes and structures to ensure data security and restrict access to authorized users only.

Vision and status:

The consultants initiated their presentation by given a short presentation on the strategy of Statistics Denmark and Statistics Finland. The consultants emphasized that in both countries, the enormous amount of data collected for statistical use by surveys and from administrative sources is used to provide also other service products than aggregated statistics. One of the service products provided is access to microdata for authorized decision makers and researcher. The microdata access service allows them to combine data across domains in new and innovative ways, in a safe setting, and thus gain more detailed knowledge about the society based on facts and advanced statistical modelling.

In the Mission this strategy was referred to as the Y-model (Figure 1).

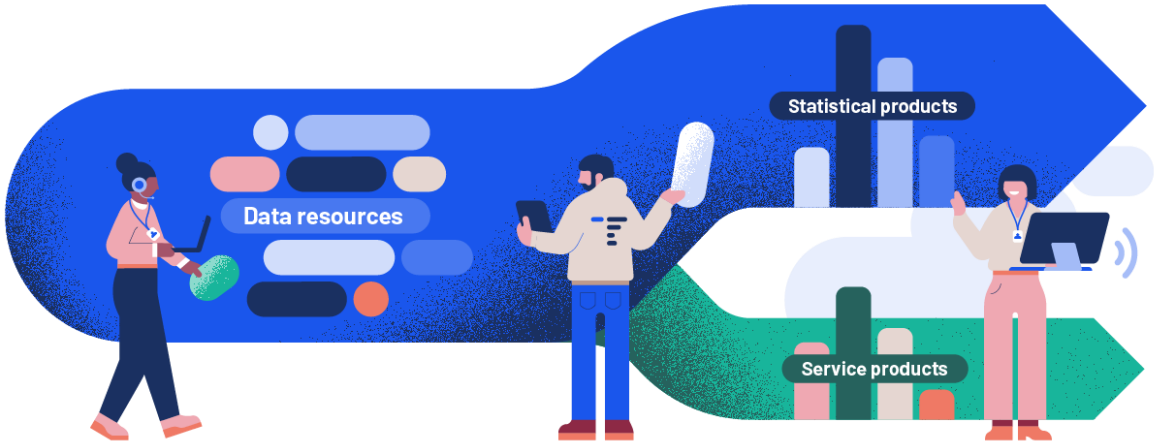

Fig. 1: *The Y-model with data as integrated part of institution purpose; not just statistics*

The current scope and status of the laws governing the use of microdata gathered by the Department of Statistics (DoS) in Jordan was presented and also the vision and structure for the National Data Center (NDC). Also the Danish strategic objective for development towards 2025 of one common entry point for all data on society for researchers, analysts and authorities was presented.

The consultants presented their institutional strategies and stressed the importance of drafting a clear strategy for microdata usage in Jordan. They also emphasized the importance of ensuring senior management involvement in this vision and the follow up on the implementation. With the mission in mind, it would seem that more senior management involvement in the project is needed to ensure direction, coordination and progression in the years to come.

Overall framework

The initial focus of the discussions was to define and categorize microdata, which is described as unit-level data on individuals or enterprises. The EU classification system was employed to outline different types of microdata, which include Public Use Files, Scientific Use Files, and Secure Use Files. Additionally, the terms "anonymized" and "pseudonymized" (also referred to as pseudo-anonymized) data were discussed.

Both SD and SF emphasized that the following discussions would focus on how pseudonymized data, where direct identifiers are replaced with pseudo-identifiers—can be made available. In contrast, data anonymization, which also prevents the indirect identification of units, will be covered in a future mission on Statistical Disclosure Control (SDC).

The various secure settings established for microdata access were also reviewed, including on-site, remote access, and remote execution environments. Both SD and SF rely heavily on remote access systems to create a secure environment for analysing pseudonymized microdata.

SD presented three models for making microdata available: the law model, the authority model, and the microdata access model. The key distinction between these models lies in the amount of data accessible and the security measures implemented, depending on the intended use and the target users. The main focus of the presentation for the mission is on the microdata access model, which applies to approximately 80% of users.

The vision, implementation plan, current usage, and future ambitions for the Danish Data Portal were introduced. The project has been extensive, with significant development work undertaken by both external consultants and SD experts. The new portal has not only improved the experience for those applying for microdata, but has also streamlined the application handling process for SD personnel.

Both SD and SF provided timelines that illustrated how microdata access has evolved over time. These changes are influenced by the evolving legal framework, data availability, technological advancements, and shifting user needs.

Based on the discussions, the consultants advised that DOS and NDC start out by outlining the user groups expected to be included in the microdata service as well as the types of microdata relevant for these users. In this way different models can be set up and prioritized as part of a future road map.

Legislation and security

A central theme in the presentations was the importance of understanding the legal framework governing microdata services at the national level, and ensuring that processes and structures are in place to implement the necessary security measures. The "Five Safes" framework (Safe Projects, Safe People, Safe Settings, Safe Data, and Safe Outputs) was presented, highlighting how the emphasis on one "safe" can alleviate the need for greater emphasis on others (Figure 2).

At SD and SF, the stringent security protocols associated with allowing only remote access for microdata handling (Safe Settings), conducting random output controls (Safe Outputs), and ensuring user and institutional authorization (Safe People) mean that there is less need for

extensive anonymization of the data (Safe Data). These measures collectively ensure the security of the microdata without compromising the detailed level of the data.

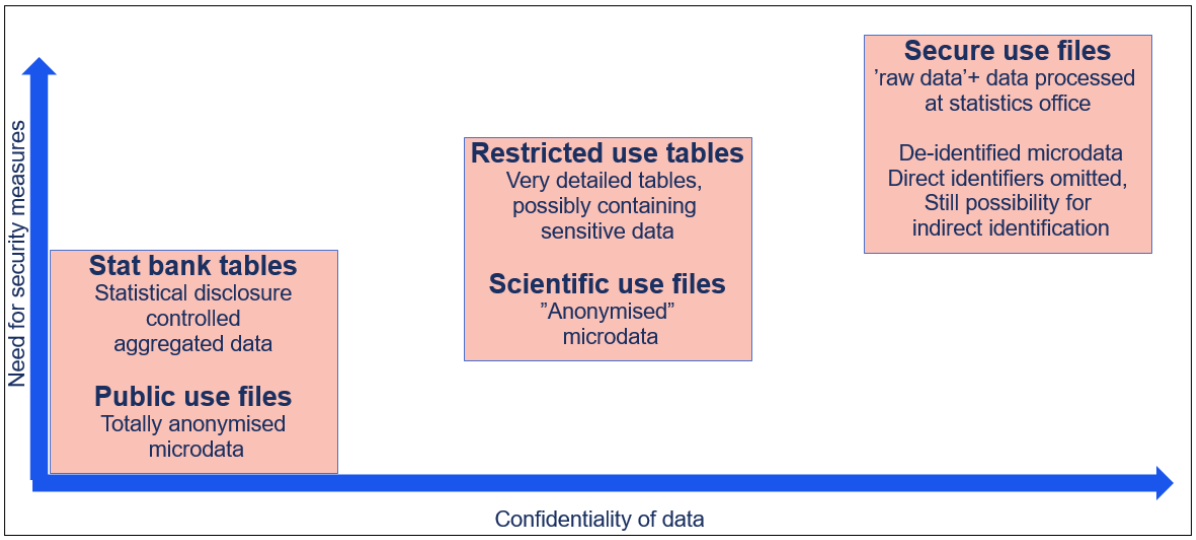

Fig 2: *Relationship between data confidentiality level and need for security measures.*

Baring the discussions in mind, the experts advised DOS and NDC to use the five safes to define the chosen access models in more detail. Furthermore, it is of great importance to get an overview of the national legislation and the limits set by national law, e.g. on business data. This will ensure that all chosen models are in line with legislation from the outset.

Legal framework and data access

The legal frameworks governing SD and SF stipulate that data collected for statistical purposes should also be made accessible for decision making, research and statistical analysis. It is crucial to understand, however, that microdata gathered for statistical purposes cannot be used for administrative purposes concerning individuals or enterprises. The data minimization principle, as outlined in the European General Data Protection Regulation (GDPR), must be adhered to when handling personal data, along with other applicable regulations governing the use and provision of such data.

For SF, a new amendment was passed last year, providing a more detailed framework for granting access to microdata. This amendment clarified, among other things, that administrative data collected for statistical purposes can be provided to users even before official statistics based on that data have been produced.

After presenting the legal framework both countries then presented the overall process for gaining access to microdata, which includes authorization of institutions, certification of users, project approval, and output control (Figure 3)

Fig 3: *The Danish model for data security*

The STE's advice NDC and DoS to consider what process users of microdata must go through in order to get access to data.

Workflow and online services

In this session a detailed workflow chart outlining the processes for the SD Data Portal was presented to the participants. This sparked significant interest, particularly regarding the presentation of tasks at different stages of the process. A demonstration of the Data Portal was also provided, showing how users can find metadata descriptions on available data, select variables to add to their "shopping basket," and submit project-related information, such as user details, the research title, and the societal significance of the project.

SF described their process for producing either ready-made data files, suitable for use in multiple projects, or project-specific, tailored data files. Information about the ready-made data files is available in the metadata catalogue (Taika). Users can apply for access to these files—or a combination of both ready-made and tailored files—via an online permit application system that was demonstrated. At SF, the setup of remote access between organizations and CSC (the government-owned IT Company responsible for maintaining the remote access system, FIONA) is handled separately from the data permit process, as is the user authorization procedure.

At this point, the Jordanian NDC webpages were presented, demonstrating the work done so far to provide and visualize aggregated data. The service includes a button for accessing microdata, which is planned to available to only authorized users. Discussions also focused on the Statbank provided by various statistical offices, with PX-web-based solutions being available in Finland, Denmark and Jordan.

Interaction with providers and users

The main focus was on presenting what kinds of structured interactions with users have been established at SD and SF. Examples include engaging with user groups, organizing targeted meetings, and communicating through newsletters and online platforms. Typically, interaction with data providers is managed by the statistical offices that collect data for statistical production. Microdata service unit then interact with these offices to e.g. obtain better descriptions of the data and understand how it has been processed. Users of the services often interact directly with data providers when wanting to link external data sources that are not part of the NSI data repository or their own surveys to research datasets supplied by SF or SD. SF, however, offers the service of producing ready-made datasets and making them available through the remote access system for data beyond those provided by the statistical offices. This often requires extensive negotiations with the data providers.

Organization and skills required

Both SD's and SF's Research Services teams have grown to include approximately 35–40 experts. Both organizations have back-office teams that support the front-office operations, ensuring smooth service delivery to customers. Back-office tasks include managing rules and sanctions, handling financial matters, maintaining metadata, and overseeing communications. At SF, the division of labour is further refined, with separate teams handling the production of ready-made datasets and the creation of tailored files, as well as managing the application process.

The experts in both offices hold advanced academic degrees, with some possessing PhDs. Their academic backgrounds vary widely, encompassing social sciences, statistics, and engineering. Given the high level of expertise among the users, it is essential that the experts are also proficient in data handling. However, the most sought-after skill is a service-oriented mindset.

Economy and funding

According to the legislation governing SD, users are required to fund the provision of microdata services. In Finland, a specific decree mandates that the costs of making microdata available should be billed to users. However, as governmental agencies, the statistical institutes aim not to generate profit but to cover their operational costs. For SF, a significant portion of the user costs comes from the use of the remote access system. While there have been discussions about funding the remote access system through separate infrastructure funding, this has not yet been realized. SD does receive some state funding to support the service, but as the service grows, this contribution becomes a smaller proportion of the overall funding.

3. Conclusions and recommendations

This mission took place at a rather early stage in the development of services enabling microdata access for decision-makers and other users of the statistical data (surveys, registers) collected by DoS. Several key questions remain regarding the scope of the service to be developed. It could have been advantageous to involve individuals with a deeper understanding of the current processes for making microdata available to external users in the meetings. It is crucial to include DoS employees in the future development work by NDC.

The co-operation would also be of importance in order to find an understanding of the division of labour between the services now depicted on the DoS web pages (Data Bank https://jorinfo.dos.gov.jo/Databank/pxweb/en/ and the service guide https://dosweb.dos.gov.jo/DataBank/Services/Services2017_En.pdf) and the new services through NDC.

During the mission, initial steps were taken to identify potential user groups and available data types and a template of a possible service division according to datatypes was presented (Figure 4). However, further work is needed by the DoS and NDC teams to address these fundamental questions. Once these issues are clarified and a clearer understanding of the tasks at hand is developed, a follow-up meeting could be organized to share practical examples from SD and SF's experience in providing microdata.

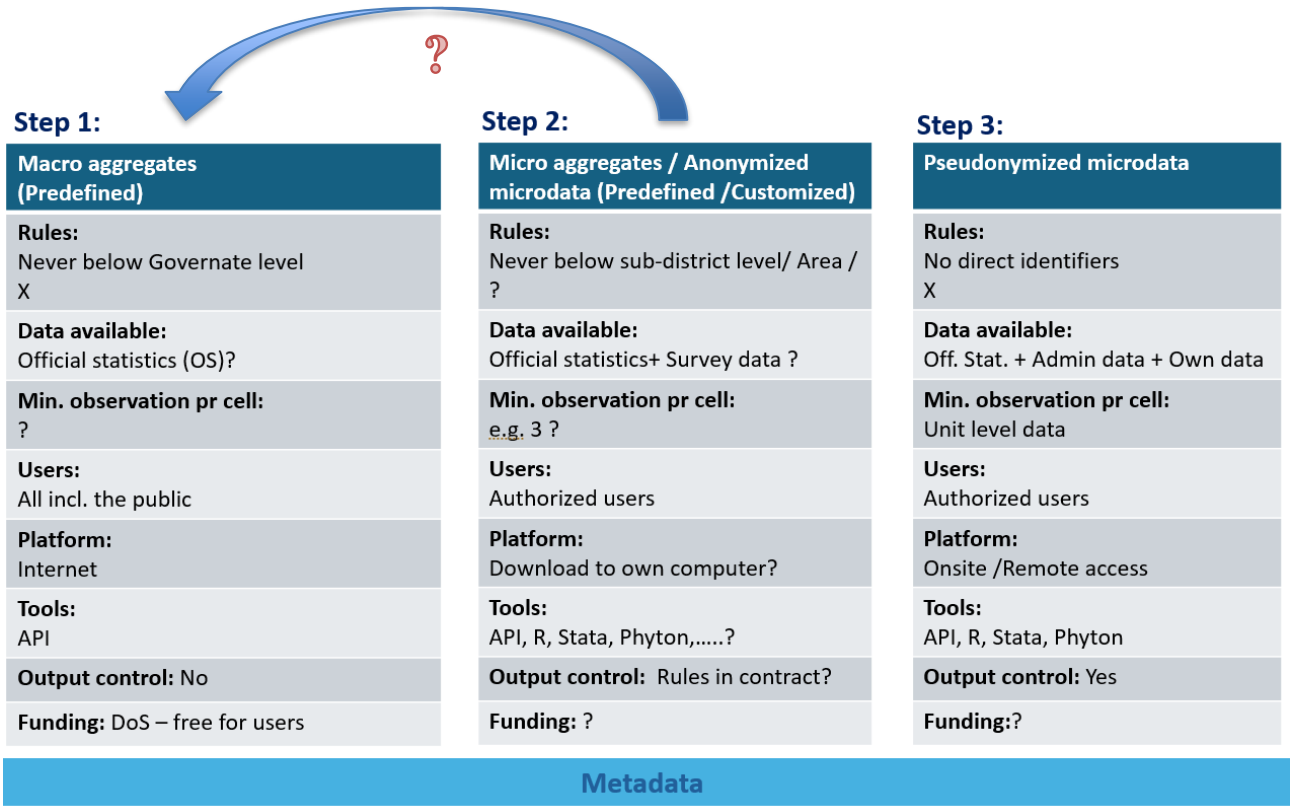

Fig 4: *Potential future NDC data service as presented by the NDC team in Jordan that will be available in three steps over time. They were (1) Macro–aggregates for the public users, (2) Micro–aggregates for authorized selected authorized users and (3) Pseudonymized microdata for authorized decision makers. It has to be noted that for all steps careful analysis and rules and products need to be agreed on and carefully described – based on user needs .At SD and SF both macro and micro-aggregates are provided for the public. It is unclear whether legislation will allow such an option in Jordan. This need to be further explored*

As mentioned in the report above, it is also advised that senior management takes a clearer role in defining the vision of the project and ensuring its implementation and coordination.

Below is a brief list of additional recommendations touched upon during the mission.

Integrate microdata access in the strategy for DOS
Define what microdata the service will handle
Go through legal grounds for giving access to microdata
Set up models to support these needs – no one-size-fits-all
Identify the source of funding for running the service
Plan how the projects and users will be authorized
Define the workflows
Develop systems to enable the processes
Set up structures for co-operation with statistical units, users, data providers
Set up a Data Security Board within DOS
Communicate about the service both internally and externally
Employ service minded people

Annex 1. Terms of Reference

Terms of Reference

EU Twinning Project JO 21 ENI ST 01 22

Component 1:
Roadmap for the development of an integrated administrative data system in Jordan with pilots on Statistical Business registers (SBR) and population statistics

Activity 1.6.4:
Introduction to best international practices for providing microdata access for decision makers and researchers

Dates: 25-28 November 2024

Content

List of abbreviations

BC	Beneficiary Country
DoS	Department of Statistics
ESS	European Statistical System
MS	Member State
RTA	Resident Twinning Advisor
SDMX	Statistical Data and Metadata eXchange
STE	Short Term Expert
ToR	Term of References

1. Objective and Mandatory Results for the sub-component

For governmental planning and for academic research there is a need for access to de-identified micro data. This need is recognized in Jordan and is one of the drivers behind establishing a National Data Center (NDC) that will be headed and managed by the Department of Statistics in Jordan (DoS). In order to facilitate the work in Jordan on establishing the NDC the Twinning project is tasked with providing DoS and the NDC with background knowledge and international experiences for providing decision makers and researchers with microdata in a secure manner. Table 1 lists the Mandatory result and indicators for achievement for the sub-component of relevance for this Mission.

Table 1: *Mandatory result and indicators for achievement for the sub-component of relevance for this Mission*

MR from the Twinning Fiche	Indicator
MR 1.6: A governance roadmap for decisions makers data access outlined	● **Indicator 1.6.A:** Best international practices for NDC's outlined ● **Indicator 1.6.B:** Stakeholder awareness raised and needs from stakeholder mapped; ● **Indicator 1.6.C:** Organizational structure and required skills for staffing the National Data Center outlined; ● **Indicator 1.6.D:** Requirements and standards for data and metadata layer outlined;

2. Purpose of the activity

The purpose of this activity is to introduce best international practices for providing microdata for decision makers and researchers. During the Mission the following topics will be introduced, demonstrated and discussed:

- **Overall framework;**
  - Whom can be granted access to data
  - Type of microdata
    - Secure use files, scientific use files, de-identified data and anonymized data
  - Which data can be accesses;

- **Legislation and security**
  - Legislation – frame work for allowing access
  - Agreements with researchers and decision maker
  - Access facilities and access mode;
  - Security and confidentiality and confidentiality rules
  - Output checking
  - IT-infrastructure

- **Workflows and processes – live demonstrations**
  - Administrative process
  - Metadata and metadata repositories
  - Tools provided for users
  - Output control

- **Interactions with providers and users**
  - Interactions with internal and external actors (subject units, IT, finance and administrative units, data provider)
  - Interactions with users

- **Organizational structure and required skill of staff members providing the services**
  - Organizational set up of unit / division tasked with sharing micro data
  - Required staff competences

- **Economy of the services**
  - Financing models / estimation of costs of NDC unit

3. Expected output of the activity

- Activity report
- Best international practices for providing microdata access for decision makers introduced

4. Participants

4.1 MS Short Term Experts (STE's)

- **Ms. Marianne Johnson**, Senior Statistician at Statistics Finland with more than 20 years of experiences in Statistical Finland in various positions. Throughout Ms. Marianne Johnson professional career her main purpose has been to make data available to those who need them, while at the same time minimizing the risk of disclosure of personal information. Among other this has included compiling research data sets, seeking funding for and developing research infrastructures, improving metadata and seeking legal bases for data deliveries. Much work has been done in co-operation with researchers, other register keepers as well as with Nordic colleagues. Mail address: marianne.johnson@stat.fi

- **Mr. Nikolaj Borg Burmeister,** Director of Research Service Division, Statistics Denmark. Mr. Nikolaj Borg Burmeister has been Director of the Research Service Division, Statistics Denmark since 2021 and has extensive knowldge of National Data center both as Director and user of the services. The the Research Service Division finances are based on revenue-covered business and include 42 employees divided into three service units, a unit for data and IT and a unit for rules and finance. As office manager, Mr. Nikolaj Borg Burmeister is responsible for the entire business, incl. external relations. Addtionally, Mr. Nikolaj Borg Burmeister in several Steering groups. Before the Mr. Nikolaj Borg Burmeister was appointed as Director of Research Service Division, Statistics Denmark he hold a possition as Director of Research Support at Copenhagen Business School. Mail address: nbu@dst.dk

- **Dr. Charlotte Nielsen**, Dr. Charlotte Nielsen currently hold a positions as RTA in the Twinning project in Jordan. Previously Dr. Charlotte Nielsen was senior advisor in the Quality Unit in Statistics Denmark, with special emphasis on metadata and metadata driven production. Before that she worked for eight years in the Division of Research Services in Denmark. Her primary tasks was supervision in study design; data and data confidentiality; Preparing data files; Evaluation of applications for access to 'scientific use files' from Eurostat and preparation of material for national input to access to 'secure use files' via decentralized and remote access (Commission Regulation (EU) 557/2013); Development and implementation of a new framework for microdata access for decision makers; Preparation of high quality documentation of registers. Mail address: cln@dst.dk

4.2 DoS Experts

Data Management Directorate

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- Mr. Mohammad Al-Omari, Administrative Data Division, Data Management Directorate
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- Ms. Safa Abu Aiteh, SBR Division, Data Management Directorate
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National Data Center team

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- Mr. Mohammad Al-Janada, Interactive National Data Center
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4.3 Participants for closing sessions:

- Dr. Ali Al-Shibli, Operational Assistant to the Director General Ali.Shebli@DOS.GOV.JO
- Dr. Tayseer Muqdadi, Technical Assistant to the Director General Tayseer.Megdady@DOS.GOV.JO
- Ms. Ahlam Al Rosan, Director of Electronic of Transformation and Information Technology Ahlam.AlRosan@DOS.GOV.JO

4.4 The Twinning Team

- Eng. Mr. Tamer AlRosan, Head of plant Statistics Division Jordan (RTA Counterpart), Tamer.AlRosan@DOS.GOV.JO
- Dr. Charlotte Nielsen (RTA), cln@dst.dk
- Ms. Zaina Amireh (Language Assistant), zainaamireh3@gmail.com
- Ms. Thekra Altorah (RTA Assistant), thekra.twinning.rtaa@gmail.com

5. Tentative overall agenda

Each day working hours are: 09:30 – 15:00 with a one hour lunch break and coffee breaks when needed. Sequential translation will be provided through all session

- **Day 1:**
  - BC: Welcome and introduction;
  - BC: Vision and current status for the NDC in Jordan;
  - MS: Introduction and overall framework for providing microdata for researcher and decision makers in Finland (Ms. Marianne Jonson), Denmark (Mr. Nikolaj Borg Burmeister) and the Eurostat (Dr. Charlotte Nielsen);

- **Day 2:**
  - MS: Legislation and security measures;
  - MS: Workflow and live demonstrations;

- **Day 3:**
  - MS: Interactions with data provider and users;
  - MS: Organizational structure and required skill of staff members providing the services;
  - MS: Economic models for providing the services;

- **Day 4:**
  - BC and MS: Workshop – Identification of data sets with largest return of investment for researchers / and governmental institutions
  - BC and MS: Workshop – Identification of relevant data users in Jordan based on Danish / Finish / Eurostat experiences
  - BC and MS: Follow up and conclusion

6. Background information

Need for disaggregated statistics and diverse data services for users:
Official statistical producers operate in a rapidly changing landscape, where the pace of change accelerates annually. Increasingly complex societal issues demand more timely, disaggregated statistics and diverse data services. Adoption of new data sources like administrative and big data poses challenges in analysis methods, data access, ethics, and privacy. Amidst competition from other data providers, statistical organizations must enhance product communication and brand advocacy for trustworthiness. To tackle these challenges, statistical organizations must invest in modernization, staff capabilities, and technology. Despite limited resources, efficiency improvements are crucial to ensure adaptability and resilience in the dynamic data ecosystem.

Jordan Economic Modernization Vision 2030:
Recently the Jordan Economic Modernization Vision 2030 was launched and "Smart Jordan" was identified as one of the eight Growth Drivers to implement the Economic Modernization Vision. The 'Smart Jordan Driver' includes seven sectors where data is one of them. This indicates the national interest to ensure constant and reliable data sources, and robust statistical systems that contribute to timely and informed policy making. One of the measures that will be taken is to establish an Interactive National Statistical Center (NSC) that will provide data to all users groups according to their need including microdata to decision makers and researcher in a secure manner that ensure privacy.

Interactive National Statistical Center:

The NDC will be built around the following four pillars

I. **A Data Management Center (DMC)** that will support all internal operations and production of statistics in accordance with best international practices with a high level of security to protect data

II. **Governance tools** e.g. such management, organizational structure, security and confidentiality policies etc.

III. **Data dissemination ecosystem platform (DDC) –** One entrance for all users. User accredenetials will control wich data can be accessed.

IV. **A platform for uploading external data** to the DDC e.g. administrative data owner in Jordan, NSI's from other countries as well as International organizations – the platform will be build around the SDMX standard

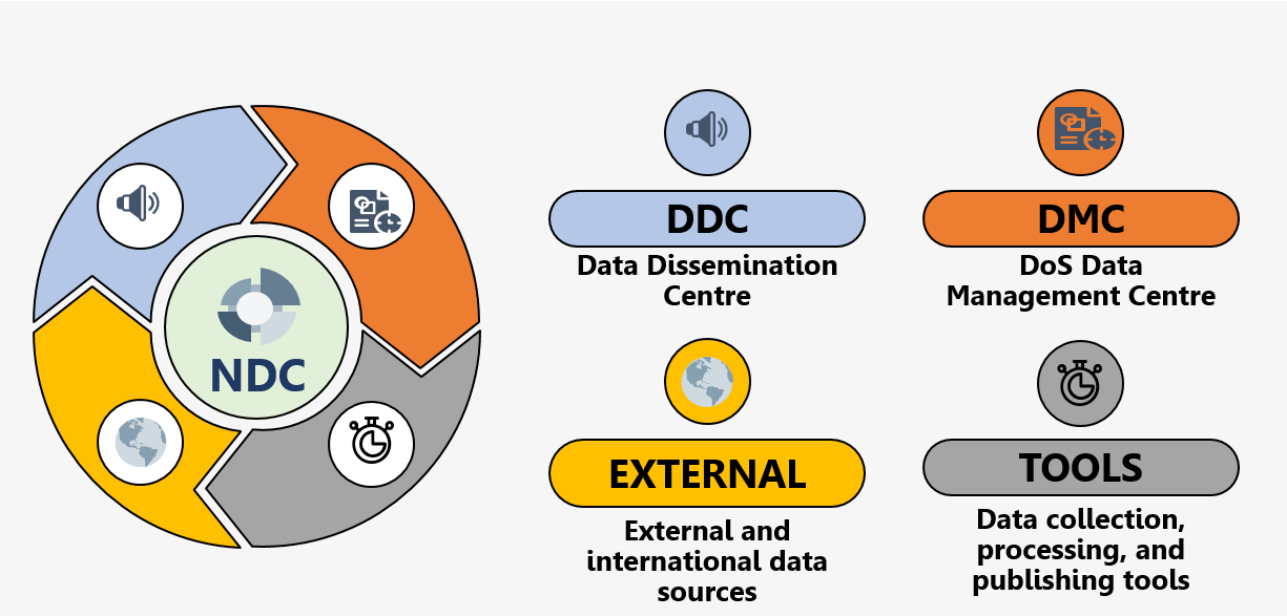

Figure 1: *Illustration of the four pillars of the the future Internaticer National Data Center (NDC). Figure kindly provided by the NDC team in DoS.*

The General Law on Statistics 2024[1]

Dos is currently working on revising their current Genral Law on statistics. The following obligations and tasks are worth highlighting in relation to the current Twinning activity:

- *Article 4, section f* states that that DoS has the obligation to establish an interactive National Data Center to collect, link and analyze data from electronic sources statistically and support production and supply International indicators and comparisons and data dissemination for decision makers and other users.
- *Article 11D* state that National Interactive Data Centre shall take measures to protect data collected and stored in places and media where security and safety conditions are met.
- *Article 14* state that DoS may provide any requesting entity with available raw data for the purposes of the research and scientific analysis, but only under the following conditions:

a. To submit an undertaking committing itself to these purposes
b. The data or tables derived from it must not contain any micro data for confidentiality.

IT infrastructure of the NDC

Currently the PoC of NDC is built around a SQL Database (Azure) in a cloud solution. In a later stage the plan for the NDC is that the technological solution will be built around a Data Lake House. A Data Lake House is a data architecture that blends a data lake and data warehouse together. Data Lake Houses enable machine learning, business intelligence, and predictive analytics, allowing organizations flexible storage for all types of data—structured, unstructured, and semi-structured—while providing data structures and data m

[1] Link to the Law in Arabic.

Annex 2: Programme for the mission

- **Day 1:**
  - BC: Welcome and introduction;
  - BC: Vision and current status for the NDC in Jordan;
  - MS: Introduction and overall framework for providing microdata for researcher and decision makers in Finland (Ms. Marianne Jonson), Denmark (Mr. Nikolaj Borg Burmeister) and the Eurostat (Dr. Charlotte Nielsen);

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  - MS: Legislation and security measures;
  - MS: Workflow and live demonstrations;

- **Day 3:**
  - MS: Interactions with data provider and users;
  - MS: Organizational structure and required skill of staff members providing the services;
  - MS: Economic models for providing the services;

- **Day 4:**
  - BC and MS: Workshop – Identification of data sets with largest return of investment for researchers / and governmental institutions
  - BC and MS: Workshop – Identification of relevant data users in Jordan based on Danish / Finish / Eurostat experiences
  - BC and MS: Follow up and conclusion

Abbreviations:
***MS** = EU Member State (Denmark, Germany, Italy, Lithuania, Finland);*
***DoS** = Department of Statistics, Jordan*

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