Economic Commission for Africa
Statistical Commission for Africa
Ninth session
Addis Ababa, 30 October–1 November 2024

Item 3 of the provisional agenda[*]
Statistical programme of the Economic Commission
for Africa: statutory issues

Strategic toolkit for the transformation and modernization of national statistical systems in Africa

I. Introduction

1. The aim of the strategic toolkit for the transformation and modernization of national statistical systems in Africa is to improve the understanding of the maturity of national statistical systems, with regard to data capability and performance, and offer a guide to setting priorities, scheduling developments, making the right choices for learning and capacity development, identifying the desired state of the systems and their organizational capital, planning for the strategic use of digital technology to galvanize the transformation and modernization process, and developing and deploying solutions to unlock the data potential of countries and help the systems to reach their desired state. In addition, the toolkit is a guide for designing a road map for taking national statistical systems to various maturity levels and for updating or designing a new national strategy for the development of statistics as the main framework for building statistical capacity and driving transformation and modernization.

2. The toolkit should be one of several resources that can help to transform and modernize national statistical systems in Africa and make them more agile, resilient and sustainable. Pan-African institutions and partners that are interested in supporting African countries are encouraged to use it as a framework to transform and modernize official statistics in the continent.

II. Enablers of transformation and modernization

3. At its eighth session, the Statistical Commission for Africa endorsed the principles and priorities for transformation and modernization set out in the "Road map for the transformation and modernization of official statistics in

---

[*] E/ECA/STATCOM/9/2024/1/Rev.1.

24-01045 (E)

Africa, 2023–2030",[1] and called upon African statistical system stakeholders to integrate them into national and regional planning relating to the development of official statistics.[2] In March 2023, the Statistical Commission of the United Nations encouraged States outside Africa to adapt and use the road map to help to modernize and transform their own national statistical systems.[3] In the same month, during the fifty-fifth session of the Economic Commission for Africa (ECA), the Conference of African Ministers of Finance, Planning and Economic Development noted with satisfaction the work of ECA on statistical modernization and called on its members and development partners to support the implementation of the road map.[4]

4.   The road map was built on previous African initiatives for statistical development on the continent and reflects new trends in statistical organization and management. It sets out the principles and priorities for transformation and modernization across a wide range of data systems in the region, including the identification of the appropriate action at the continental level to support the process.

5.   The road map provides for foundational enablers and priority enablers for transformation and modernization that are considered to be core building blocks, without which efforts to transform and modernize statistical systems will have limited impact and which are, therefore, the starting point for achieving and maintaining success. Although foundational enablers are necessary, they are not sufficient to achieve the desired transformation and modernization of statistical systems: they must be complemented by mutually reinforcing priority enablers. Both types of enablers are guard rails for the emerging data environments that include traditional national statistical systems. By focusing on the enablers, national statistical systems can optimize their data maturity and create a solid foundation on which to leverage data as a strategic national asset.

6.   Transformation and modernization are continuous and dynamic processes, and, accordingly, in the strategic toolkit, which is the second iteration of the road map, the enablers have been recast by consolidating four foundational enablers into two and making the priority enablers broader (see figure I).

---

[1] United Nations, Economic Commission for Africa, "Road map for the transformation and modernization of official statistics in Africa, 2023–2030" (Addis Ababa, 2023).

[2] E/ECA/STATCOM/8/2022/13, annex, section II, Modernizing the data ecosystem in Africa.

[3] See decision 54/109 of the Commission, in the report on the fifty-fourth session of the Commission (E/2023/24–E/CN.3/2023/37).

[4] See decision 2023/2 of the Conference of Ministers, in the report of the Conference (E/ECA/CM/55/6).

Figure I
Recast foundational and priority enablers for transformation and modernization
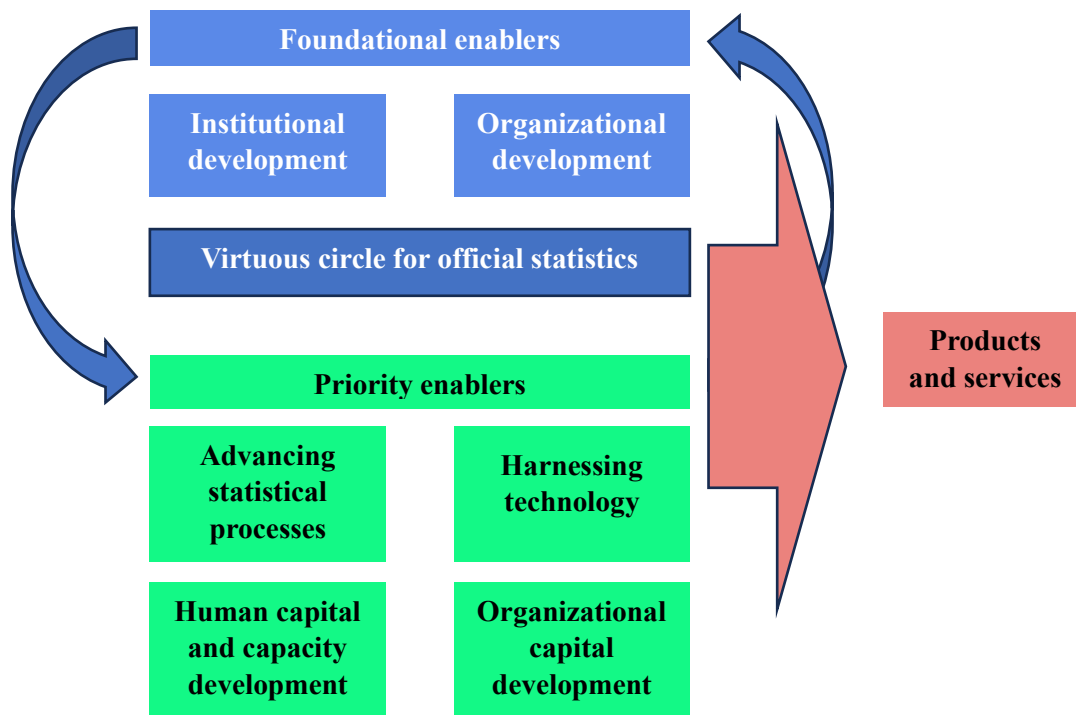
Source: Author.

A. Foundational enablers

7. The foundational enablers are institutional and organizational development. The terms "institution" and "organization" are often used interchangeably, but, in the present context, their important distinction concerns rules and players. Institutional development refers to the development and enforcement characteristics of formal and informal rules and incentives required for a modern and agile statistical system. It relates to the enhancement of the capacity of national statistical system stakeholders to perform their functions effectively, efficiently and sustainably. It concerns addressing the challenges of the political economy or context in which official statistics are funded, produced and used. The challenges usually prevent ongoing data initiatives from fully achieving their goals and often occur as a result of perverse incentives or conflicting objectives that influence the way Governments and development partners fund, collect and use data.

8. Organizational development relates to the enhancement of national statistical system structures and responsibilities, and their interaction with other entities, stakeholders, partners and users, to implement agreed remits. It concerns the way in which statistical system stakeholders come together to respond to users' needs adequately and refers to the management of organizational change, which involves a systematic and planned effort to improve the overall effectiveness, efficiency and well-being of an organization. The primary goal of organizational development is to enhance an organization's ability to adapt to and manage change and fulfill its mission adequately. In the development of statistics in Africa, there has been a tendency in many countries to focus on organizational issues more than on institutional issues. It is crucial

to note, however, that without the facilitative role of institutions, organizational improvements cannot happen.

B. Priority enablers

9. Priority enablers are the principal factors or elements that contribute significantly to the advancement of statistical capabilities and that, if implemented with foundational enablers, are expected to lead to the transformation and modernization of official statistics in Africa. By focusing on the priority enablers, a country or national statistical office can strengthen statistical development, providing a solid foundation for evidence-based decision-making and policy formulation.

10. The priority enablers are:[5]

(a) Advancing statistical processes, which is aimed at making statistical processes more efficient and effective in meeting user needs;

(b) Harnessing technology, which relates to the critical and multifaceted role that technology plays in statistical development throughout the entire production life cycle, from data collection to analysis, security, visualization and communication, and the fact that a continued and accelerating rate of technological change, including advances in artificial intelligence, machine learning, increased computing power, smart data and the Internet of things, is to be expected and, when combined with changing work practices, increased user expectations, competition among data providers and a constant drive for modernization and greater efficiency, provides an ongoing challenge for national statistical systems;

(c) Human capital and capacity development, which relates to the knowledge, skills, abilities, experience and other intangible assets that individuals possess and bring to the workplace and that are crucial to economic and organizational development, underlining the idea that the capabilities and expertise of people are valuable resources, and the fact that statistical capacity deficits and gaps, identified in all assessments of statistical systems in Africa as a major impediment to statistical development, are evidence of the need to develop statistical capacity further on the continent;

(d) Organizational capital development, which is aimed at achieving better performance, innovation and competitiveness by improving and leveraging the intangible assets and capabilities within an organization.

III. Monitoring the transformation and modernization of national statistical systems

### A. Maturity model for national statistical systems

11. The strategic toolkit includes a data maturity model that depicts four progressive levels of maturity, as shown in figure II. Level 1 is basic maturity (low capacity), which is sometimes called the vicious cycle state; level 2 is maturity awareness; level 3 is systematic maturity; and level 4 is optimized maturity (high capacity), sometimes known as the virtuous circle. The differences between the levels are often the degree of sophistication and the

---

[5] More details on the priority enablers are provided in table 3 in the annex.

adoption of data governance practices within the national statistical system. Achieving a higher maturity level is an ongoing process that involves continuous improvement and adaptation to evolving technologies and user needs.

Figure II
Levels of data maturity of national statistical systems
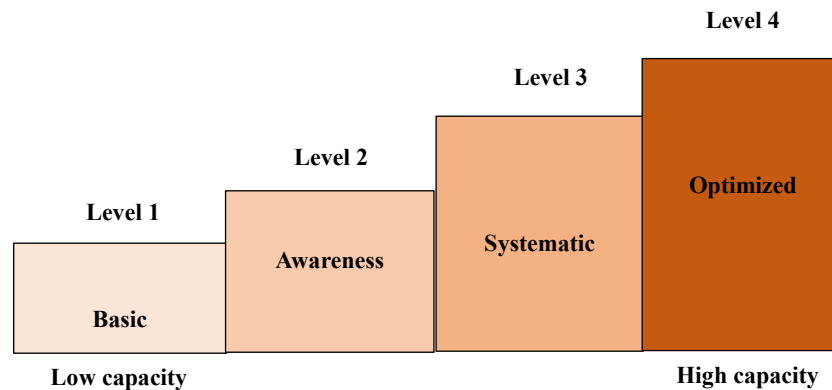
Source: Author.

12.   The basic level reflects the absence of capabilities, or the local management and operation of processes in a spontaneous and reactive manner using whatever existing resources and tools are available without respect to the work of any other element of the national statistical system. At that level, a national statistical system is in a vicious cycle. Most African countries have moved away from that level in varying respects and degrees. Countries at that level should use the data maturity model as an organizing framework to help to determine the strengths and weaknesses of the existing data systems and to identify pathways, including sequential steps, for taking their national statistical system to the next level of maturity.

13.   At the awareness level, stakeholders recognize the shortcomings of their national statistical system and understand that improvements can be made to build and strengthen statistical capacity in various areas of data processes.

14.   The systematic level reflects the maturing of several capabilities, making the national statistical system more measured, controlled and proactive rather than reactive. At that level, standards in data governance, processes and technology are in place and are being strengthened and monitored, and good-quality data are being made available to a host of users.

15.   The optimized level reflects the highest level of capability in terms of data culture, processes and people. The level represents a virtuous circle, in which the national statistical system has a strong data culture, including: a perceived value and use of data; embedded stakeholder engagement; sophisticated, automated, standardized, optimized and agile processes that are constantly being improved and innovated; enabling statistical and information and communications technology (ICT) infrastructure; and a motivated workforce that proudly acquires new knowledge and strategic skills.

16.   The maturity model reflects the level of development, sophistication and proficiency in handling data in a country across the data value chain, from the identification of data requirements to data collection and storage, analysis and analytics, uptake and use, in particular for policymaking, planning and decision-

making. It helps best practices related to a specific domain to be introduced gradually to a national statistical system and specific processes and practices to be continuously improved. It assists in a country's efforts to determine the desired state for its national statistical system, identify actions required to achieve that state and monitor the progress in implementing those actions.

B.   Transformation and modernization data maturity matrix

17.   T&M data maturity matrix (MM) is a self-assessment tool to help an organization determine its level of maturity in managing and leveraging its data assets. It typically consists of six dimensions made of the recast enablers of the roadmap. Each dimension is further broken down into maturity levels, which describe the organization's capabilities and practices within that dimension. For each enabler, indicators have been identified and these are presented in a matrix against each of the four maturity levels. These indicators are used as a check list. They are indicative and not prescriptive.

18.   The data MM will help NSSs and its organizations to understand their levels of data maturity in context of the agenda to T&M official statistics, and to identify their strengths and weaknesses from which a development plan or roadmap may be produced for advancing to the next level. It is a self-assessment tool for NSS. The steps and considerations for conducting a maturity assessment are described in table 4 in the annex and include preparations, data collection, data analysis, making recommendations, developing an action plan, reporting and dissemination. Countries are urged to use a cross-cutting group of officials to ensure a comprehensive assessment. An independent body could be hired to undertake the assessment.

19.   For each enabler, countries may have various levels of maturity. In using the matrix, countries can set separate targets for each enabler, as demonstrated in figure III. That figure shows a national statistical system that has reached the systematic level for organizational development, but not for the other enablers, and that has reached the awareness level for advancing statistical processes. The information can be used to prioritize areas for future work. For instance, efforts could be targeted at moving the remaining enablers to the systematic level or at moving other enablers to different targets in a stated timeframe.

Figure III
Example of a data maturity matrix in use

Enabler	Data maturity level				Target
	Basic	Awareness	Systematic	Optimized	
Institutional development	▨				Systematic
Organizational development	▨	▨	▨		Systematic
Advancing statistical processes	▨	▨			Systematic
Harnessing technology	▨				Systematic
Human capital and capacity development	▨				Systematic
Organizational capital development	▨				Systematic

Source: Author.

C.   Tailored digital transformation to drive the transformation and modernization of national statistical systems

20.   ICT plays a critical role in helping to save time, improving data accuracy and enhancing access to and the use of data products. In most African countries,

the transition from a paper-based to a fully digital environment is ongoing and faces attendant challenges, including:[6]

(a) Weak institutional and organizational leadership, which can become an insurmountable bottleneck (senior management in national statistical offices must provide a clear direction and commitment, and encourage a broad, positive mindset in relation to change in order to break old habits and end ways of working, with a view to overcoming individual and organizational inertia and embracing digital transformation);

(b) Lack of specific legal frameworks, in particular regarding data protection, security, sharing and access, which, for example, can become significant barriers for national statistical offices seeking to harness new data sources;
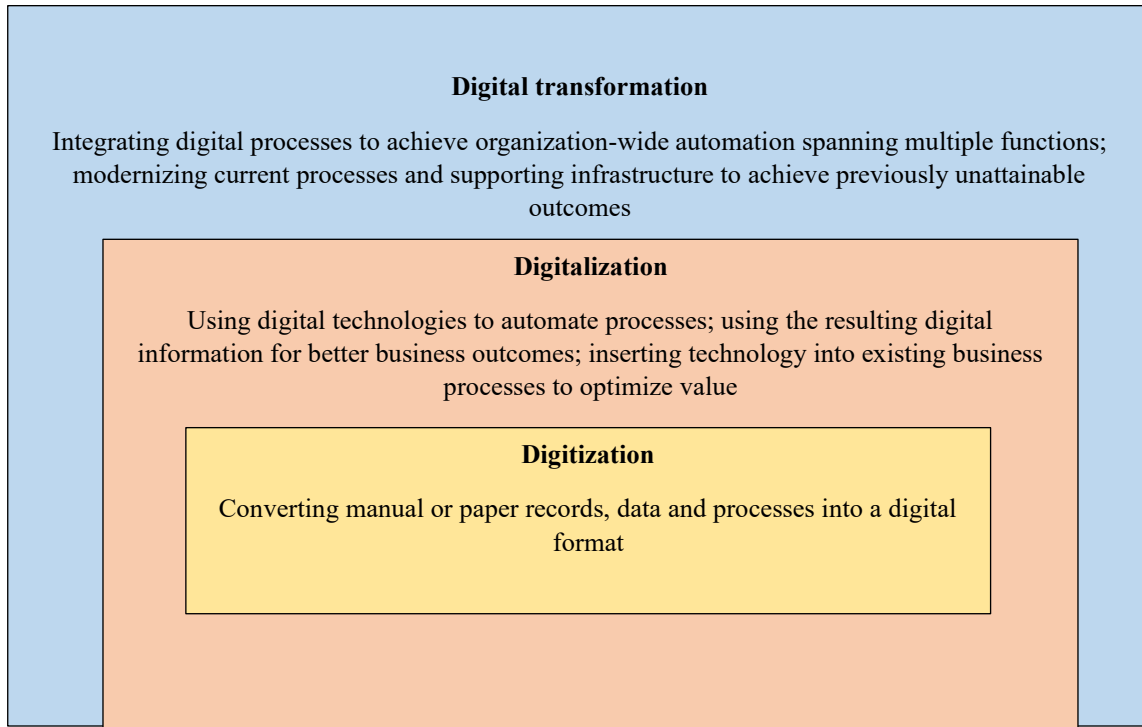
(c) Insufficient financial and human resources, which hinders the ability to acquire and maintain the digital technologies and infrastructure that are required for a coherent digital transformation and which can lead to inadequate infrastructure or unplanned technological development, often as a consequence of externally driven projects, tending to result in a very disparate technological stack, such as overlapping technologies running in parallel and limited reusability and maintainability, and often occurring when technological approaches are designed specifically to meet a short-term need and are not framed within a long-term and overarching digital strategy;

(d) Fragmented or insufficient capacities to harness the opportunities offered by digital and technological evolutions, incorporate them into official statistics and address the new challenges that they bring.

21. Digital transformation is a fundamental change across the processes and infrastructure of an organization that is intended to achieve previously unattainable outcomes in the way that statistics are produced, managed and disseminated to users. Digital transformation, therefore, is more than just introducing and using digital technologies. Rather, it should be seen as a deep reassessment, supported by technology, of the core work of an organization. It is a step beyond digitalization and digitization, as illustrated in figure IV.

---

[6] Partnership in Statistics for Development in the 21st Century (PARIS21), *Digital Transformation of National Statistical Offices* (Organisation for Economic Co-operation and Development Publishing, Paris, 2022).

Figure IV
Digital transformation, digitalization and digitization

Digital transformation

Integrating digital processes to achieve organization-wide automation spanning multiple functions; modernizing current processes and supporting infrastructure to achieve previously unattainable outcomes

Digitalization

Using digital technologies to automate processes; using the resulting digital information for better business outcomes; inserting technology into existing business processes to optimize value

Digitization

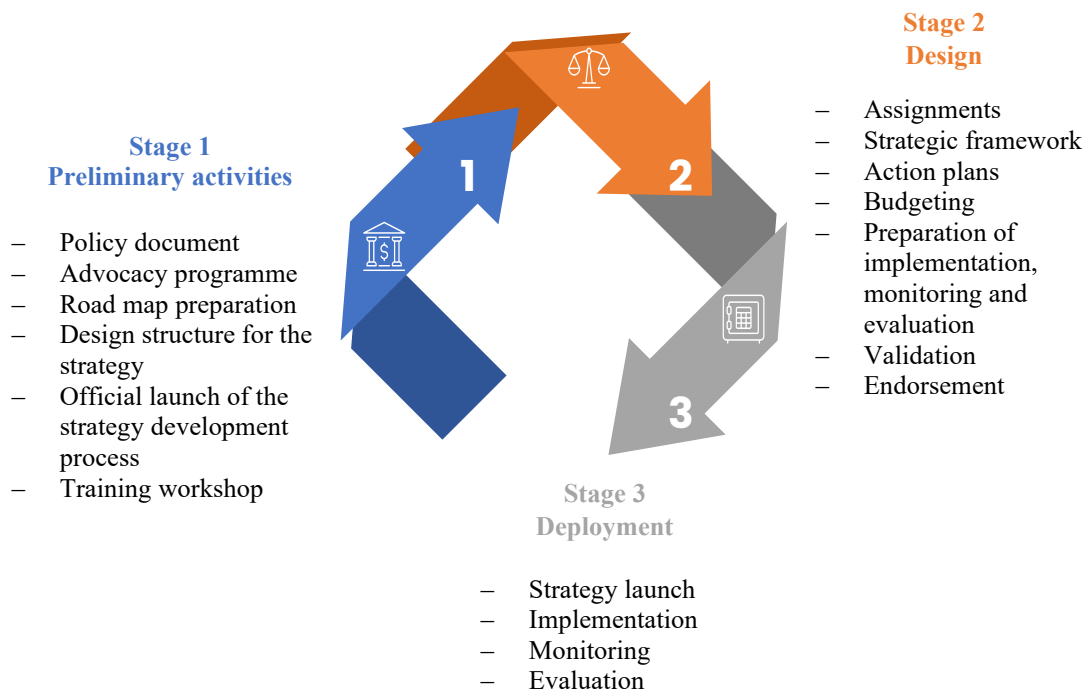Converting manual or paper records, data and processes into a digital format

Source: Adapted from Partnership in Statistics for Development in the 21st Century (PARIS21), *Digital Transformation of National Statistical Offices* (Organisation for Economic Co-operation and Development Publishing, Paris, 2022).

22. Digital transformation is driven by various factors that collectively reshape the way organizations operate and deliver value to their customers. By addressing the drivers, organizations can successfully navigate the complexities of digital transformation, leading to enhanced competitiveness, efficiency and growth. Table 5 in the annex includes the main considerations for a tailored digitalization.

D. Integrating the enablers of transformation and modernization into national strategies for the development of statistics

23. The strategic toolkit reflects the fact that a national strategy for the development of statistics is the main framework for building statistical capacity to move from one data maturity level to the next and achieve overall national statistical development. Most countries in Africa have designed such a strategy, which is a second-generation statistical plan that covers the whole of the national statistical system, as opposed to the first-generation plans that covered only national statistical offices. There are opportunities to integrate the African road map into each of the three stages of the life cycle of a national strategy.

Figure V
Life cycle of a national strategy for the development of statistics

Stage 2
Design

– Assignments
– Strategic framework
– Action plans
– Budgeting
– Preparation of implementation, monitoring and evaluation
– Validation
– Endorsement

Stage 1
Preliminary activities

– Policy document
– Advocacy programme
– Road map preparation
– Design structure for the strategy
– Official launch of the strategy development process
– Training workshop

Stage 3
Deployment

– Strategy launch
– Implementation
– Monitoring
– Evaluation

Source: Adapted from PARIS21, *Digital Transformation of National Statistical Offices* (Organisation for Economic Co-operation and Development Publishing, Paris, 2022).

24.   Integrating the road map at the preliminary activities stage can be done in the following four areas:

25.   **Policy document**. The document provides the justification for designing a national strategy for the development of statistics. It is usually prepared by the national statistical office and is submitted for government approval. The transformation and modernization of official statistics must be part of the justification. Integrating the road map into the strategy should, therefore, start with this document.

26.   **Advocacy programme**. The programme should be prepared with the aim of building statistical literacy by increasing a basic understanding of the ways to interpret and use data, including the ability to derive meaningful insight, campaigning to promote a mindset in which data is valued and seen as a valuable asset, and making the case for incentivizing the use of data, recognizing and rewarding individuals or teams for their data-driven contributions to leveraging data in decision-making processes. The programme should serve to raise the profile of statistics in Government and in society and should involve:

        (a)   Identification of crucial advocacy targets;

        (b)   Development of specific advocacy materials and means of delivery, and messages for specific advocacy targets;

(c)   Training for the strategy design team on the importance of statistical advocacy and its implementation.

27.   **Design structure for the strategy.** The design structure usually cascades from the policy level – the ministry responsible for statistics – to the inter-agency statistics committee that comprises senior leaders of organizations who make policies and take decisions on the strategy process, to the strategy design team and to sectoral statistics committees in ministries, departments and agencies. The terms of reference for each tier of the structure should include the integration of the enablers in the road map. Training workshops are usually conducted for the members of the strategy design team and the sectoral statistics committee. The road map and its enablers and the maturity assessment model must be covered during those workshops.

28.   **Official launch of the strategy development process**. The launch is usually a high-level event officiated by a senior government official, such as a minister or the president of the country. Various stakeholders attend, including members of the government, parliament, private sector, civil society, research institutions, academic community, press and development partners, and they must be made aware of the enablers and the way in which they will be integrated into national statistical development strategies to transform and modernize official statistics in the country and bring the statistical system to a higher level of maturity.

29.   The following elements of the design stage are entry points for the road map enablers:

30.   **Assessment**. In order to identify the ways in which to improve, an assessment must be made of the current state of the national statistical system. The assessment is the basis on which the national strategy for the development of statistics is designed. That strategy will address the current data issues and challenges and will, therefore, be pivotal in taking the national statistical system to a higher level. The road map should be integrated into the assessment by using predetermined maturity indicators linked with the foundational and priority enablers of the road map.

31.   **Strategic framework**. The strategic framework for a national strategy for the development of statistics comprises strategic foundations (the vision, mission and core values), and strategic directions (the goals, objectives and initiatives or actions). The vision must reflect the agenda for transforming and modernizing official statistics in line with the African road map. The goals and strategic objectives should be selected in such a way that they are aligned with the foundational and priority enablers of the road map.

32.   **Preparation of implementation, monitoring and evaluation**. Implementation should leverage the enablers in order to move to a higher level of data maturity. It is best practice to monitor the implementation of the national strategy closely, in particular its deadlines and deliverables, which involves annual and midterm reviews that provide opportunities to make changes to the implementation, including through budget reviews and alterations. The reviews are a good opportunity to introduce the road map enablers if they have not already been integrated into the strategy. The monitoring and evaluation of the strategy should involve using the maturity model indicators linked with the road map enablers as much as possible.

33.   The deployment stage involves the launch of the final strategy document and its implementation, monitoring and evaluation. The launch, which is usually a high-profile event officiated by a senior government official, should be used to inform the country about the agenda to transform and modernize statistics. That agenda should resonate throughout the implementation, monitoring and evaluation of the strategy.

IV.   Conclusion

34.   The Commission is requested:

(a)   To approve the strategic toolkit for the transformation and modernization of official statistics;

(b)   To call upon the members of ECA to use the toolkit in support of the modernization of their national statistical systems;

(c)   To call upon partners supporting statistical development to promote and use the toolkit in guiding their support to African countries.

_____

Annex

Table 1

First and second iterations of the enablers of the road map

Enablers	First iteration	Second iteration
Foundational enablers	1. Leadership and advocacy	1. Institutional development
	2. Balanced autonomy	2. Organizational development
	3. National statistical systems	
	4. Financial resources	
Priority enablers	1. Strategic toolkit	1. Advancing statistical processes
	2. Learning and capacity development	2. Harnessing technology
	3. Organizational capital	3. Human capital and capacity development
	4. Digitalization	4. Organizational capital development

Table 2

Actions associated with foundational enablers

Foundational enabler	Action
Institutional development	• Promoting a culture in which data is valued and used across society
	• Strengthening stakeholder engagements
	• Creating enabling legal framework for statistics
	• Ensuring data relevance
	• Increasing investment in statistical production and development
Organizational development	• Promoting the reputation and brand of national statistical offices
	• Developing innovative and transformational leadership and thinking creatively to take national statistical systems to a higher level
	• Building an organizational culture, including shared values, beliefs, attitudes and behaviours
	• Engaging many new stakeholders entering the new data environment
	• Ensuring good data governance
	• Enhancing statistical coordination, collaboration and partnerships
	• Improving the management, alignment and execution of projects
	• Scaling up the communication, innovation, research and methodological functions concerning statistics

Table 3

Actions associated with priority enablers

Priority enabler	Action
Advancing statistical processes	• Adopting the General Statistical Business Process Model as the organizing framework for official statistics
	• Promoting data governance by developing and implementing policies, processes and standards to ensure that data is managed effectively throughout its life cycle
	• Strengthening physical, technical and ICT infrastructure for statistical production
	• Undertaking process automation and standardization
	• Undertaking data innovation, including digital data and other new data sources

Priority enabler	Action
Harnessing technology	• Integrating data from various sources into a single, unified data set • Promoting data interoperability • Undertaking data analytics to extract actionable insights from integrated data sets • Developing and implementing ICT standards and policies • Establishing a digital culture and ensuring that statistical production becomes ICT-intensive and ICT-driven • Establishing enabling ICT infrastructure aligned to the overall national ICT infrastructure • Using stable Internet access, functioning computers and well-maintained servers for file-sharing and storage • Establishing data science centres at national statistical offices to harness new methods and data sources • Accelerating the development of mobile applications for field data collection • Implementing real-time analytics to process and analyse data as it is generated, enabling quicker responses to emerging trends or issues • Leveraging cloud computing services for the scalable and cost-effective storage and processing of large data sets • Supporting open data initiatives by creating platforms for sharing statistical data • Leveraging the enabling capabilities of geospatial information technologies in statistical processes • Harnessing the emerging technologies of geospatial artificial intelligence and geospatial big data for the seamless integration of statistical and geospatial information to improve census workflows and facilitate a multidisciplinary approach to data collection and processing • Using dashboard tools to create interactive and visually appealing representations of statistical data • Establishing partnerships, including with the African regional hub for big data of the United Nations
Human capital and capacity development	*Human capital* • Mobilizing human resources as a driver of strategic success to enhance organizational performance • Balancing human capital • Building a performance culture in which performance, results and achievement are prioritized and valued • Improving career management for personnel • Undertaking change management *Capacity development* • Investing in leadership development programmes • Increasing users' understanding of the value of official statistics • Creating greater understanding of the need for data confidentiality and security, given new data sources and interoperability • Building talent pipeline for statistics • Training statisticians to analyse and present data to facilitate their understanding and use • Increasing the capability of the workforce to operate in a digital environment

Priority enabler	Action
	• Acquiring new knowledge, capabilities and strategic skills, for example in relation to artificial intelligence and machine learning
	• Establishing a training and research centre within the national statistical office to provide basic training and equip the workforce with new skills
	• Using new approaches to learning and capacity development to enhance effectiveness, efficiency and performance
	• Establishing partnerships for statistical training, including with universities and regional statistical training institutions
Organizational capital development	• Developing a positive and inclusive organizational culture that aligns with the organization's values and goals
	• Investing in employee development, motivation and talent management
	• Building a learning culture that embraces learning, experimentation and adaptation and fosters innovation by promoting creativity and risk-taking
	• Implementing succession planning to ensure a smooth transition of knowledge and skills
	• Reviewing and optimizing organizational processes for efficiency continuously
	• Implementing technological solutions to streamline workflows and improve productivity
	• Building strong relationships with stakeholders to understand their needs and expectations
	• Forming strong and strategic multisectoral partnerships
	• Monitoring and evaluating progress regularly using key performance indicators

Table 4
Steps in conducting a maturity assessment

Step	Activity
Preparations	
1	Articulate the goals and objectives of the assessment, being sure to understand the purpose of conducting the assessment
2	Set the criteria for assessing the maturity of the national statistical system, including the road map enablers
3	Determine a manageable number of stakeholder organizations for the assessment among ministries, departments and agencies; parliament; the private sector; civil society; research and training institutions; and international organizations
Data collection	
4	Data about the national statistical system on the implementation enablers of transformation and modernization should be collected from the stakeholders identified in step 3 using surveys, interviews, document reviews and consultations
Data analysis	
5	An assessment should be carried out to establish the maturity level of the statistical system by: • Identifying the current status of the statistical system in relation to the African road map enablers (an analysis of strengths, weaknesses, opportunities and threats could be used) • Benchmarking the performance of the national statistical system against international standards and best practices, thus helping to identify the areas in which the system is at par with or lagging behind peers • Identifying the strategic initiatives that are required to overcome the identified challenges and take the system to the next maturity level, including prioritizing the actions to be taken
Make recommendations	

Step	Activity
6	Make recommendations for improving the system and taking it to the next maturity level (the recommendations should be actionable, indicate the critical issues to be addressed first and identify the ways to incorporate the enablers into the national strategy for the development of statistics)

Develop an action plan

7	Develop an action plan for continuous improvement and taking the system to a higher maturity level that should:

- Include a focus on the capacity-building that is needed to improve the system

- Outline the steps to be taken, responsible parties, timelines and resources required to implement the action plan

- Take account of the fact that the maturity assessment is not a one-time exercise and will need to be repeated periodically to monitor progress

- Provide for monitoring and reviewing of the impact of the action plan

Reporting and dissemination

8	Prepare a comprehensive assessment report, including a summary of the process, main findings, recommendations and action plan, share it with important stakeholders and make it publicly available

Table 5

Considerations for tailoring digital transformation

Consideration	Details
Define objectives and priorities	A digital transformation should not be undertaken for its own sake. It is important to:
	• Define clearly the objectives, which could include better data quality, quicker response times, enhanced accessibility and support for evidence-based policymaking.
	• Prioritize areas for digital intervention on the basis of their impact and the feasibility of intervening successfully, and, in the early stages, avoid focusing exclusively on purely technological aspects.
Assessment of the current system	• Assess the national statistical system in order to understand and describe clearly its current status and to identify the specific barriers and drivers for its transformation and modernization, covering the infrastructure, processes and human resources.
	• Be aware from the outset of any legal restrictions that could affect the digital transformation (such as national laws that prohibit some national statistical offices from obtaining administrative data from government ministries, departments or agencies even when they are digitally accessible or data security and privacy issues raised by new data sources that national data protection laws and regulations often do not sufficiently address) and identify and address gaps in the current legislation alongside the relevant national institutions.[7]
Stakeholder engagement	• Involve major stakeholders, including government agencies, the private sector, the academic community and civil society, in the planning and implementation process and gather input and feedback to ensure that digitalization efforts are aligned with the needs of users.
Position the national statistical office as a national data steward	• Embrace data stewardship at all levels. "Stewardship" comprises all the tasks and responsibilities that are aimed at coordinating and facilitating good-quality data production and smooth data flows within the national statistical system. The digital future of a national statistical office will involve the acquisition, processing and integration of data from a wide array of sources, which requires not only very specific skill sets but also the guarantee of a high level of compatibility and standardization, for example with regard to data models, quality, methodologies and processing. National statistical offices should, therefore, take a proactive role by engaging with other stakeholders, including academics, to train future statisticians

---

[7] PARIS21, *Digital Transformation of National Statistical Offices*.

Consideration	Details
	and develop and implement the standards related to data collection, processing and dissemination.[8]
	• Strengthen the capacity of national statistical offices by regularly training staff members on the latest developments in the field of data and statistics and revising the organizational structure to include the skills that are needed in addition to statisticians, such as experts in ICT and data science, in order to assume a functional role of a data steward.
Capacity-building	• Provide training and capacity-building programmes for personnel involved in the data value chain.
	• Equip staff with the necessary skills to leverage new digital tools and technologies.
Standardization and interoperability	• Establish standardized data formats, protocols and methodologies to ensure interoperability across various systems.
	• Facilitate data sharing and integration among ministries, departments and agencies.
Modernize data collection	• Implement digital data collection methods and electronic reporting to improve efficiency and reduce errors.
	• Explore the use of advanced technologies, such as machine learning and artificial intelligence, for data validation and cleaning.
Data security and privacy	• Develop robust data security protocols to safeguard sensitive information and ensure compliance with privacy regulations, and build trust among respondents by clearly communicating data protection measures.
Data dissemination	• Create data portals that provide data in a fully digital format.[9]
	• Consolidate multiple data portals into a single, publicly accessible portal.
Data analysis and visualization	• Adopt advanced analytics tools to analyse large data sets and derive meaningful insights.
	• Invest in data visualization techniques to make statistical information more accessible and understandable for a broader audience.
Open data initiatives	• Embrace open data principles by making statistical data publicly available in accessible formats and encourage the development of third-party applications and services that can use and build upon the provided data.
Monitoring and evaluation	• Implement a robust monitoring and evaluation framework to assess the impact of digitalization efforts, and continuously gather feedback from users and stakeholders to make iterative improvements.
Adaptability and scalability	• Build a flexible and scalable infrastructure that can adapt to evolving technologies and changing data needs.
	• Plan for future developments, such as the Internet of things and advancements in data analytics.
International collaboration	• Collaborate with international organizations and other countries to share best practices and standards in data digitalization.
	• Participate in initiatives that promote global interoperability and the harmonization of statistical systems.

_____

---

[8] Ibid.

[9] While national statistical offices increasingly use data portals to combine and structure complex information from multiple sources into a single platform, often the data portals rely on hybrid (paper and digital) systems. Platform hosts either digitally scan documents to PDF format or copy data from paper publications; that process has clear limitations, as machines cannot always read the data therein and the process is not scalable.