



Road map for the transformation and modernization of official statistics in Africa, 2023–2030



United Nations
Economic Commission for Africa

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First printing January 2023

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Designed and printed by the ECA Printing and Publishing Unit. ISO 14001:2015 certified.

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Foreword

The present road map for the transformation and modernization of official statistics in Africa has been prepared by the Economic Commission for Africa in the context of activities undertaken by the African group on transformation and modernization of official statistics. All subregional institutions and regional members of the African statistical system were invited to participate in the preparation of the road map. Its aim is to guide national statistical systems¹ and their partners in sustainably and efficiently meeting the needs of statistical users and in planning for resilience, innovation and agility. Optimizing the process of transforming and modernizing national statistical systems is essential to supporting the overall sustainable development of Africa and to meeting the goals established under the 2030 Agenda for Sustainable Development, Agenda 2063: The Africa We Want, of the African Union, and national development plans.

The road map was developed in close collaboration with a number of African national statistical offices, the African group on transformation and modernization of official statistics, the African Union, the African

Development Bank, the East African Community, the Common Market for Eastern and Southern Africa, the Eastern Africa Statistical Training Centre, the World Bank, the Partnership in Statistics for Development in the 21st Century, a range of global United Nations bodies, including the Statistics Division of the United Nations and the United Nations Population Fund, and development partners outside Africa, including the Office for National Statistics of the United Kingdom of Great Britain and Northern Ireland, Statistics Norway, Statistics Sweden and Eurostat. Moreover, the road map builds on and integrates the knowledge, lessons and existing strategies already developed by such partners for the improvement of official statistics across Africa and the globe.

The road map will be implemented through national strategies for the development of statistics, among other means. Other strategies and supporting actions taken by national statistical offices, Governments and a wide range of stakeholders across the continent will also be needed.

¹A national statistical system is the ensemble of statistical organizations and units within a country that jointly collect, process and disseminate official statistics on behalf of a Government (<https://stats.oecd.org/glossary/detail.asp?ID=1726>).

Acknowledgements

The present road map for the transformation and modernization of official statistics in Africa was prepared under the supervision of the Director of the African Centre for Statistics of the Economic Commission for Africa, Oliver Chinganya, and under the coordination of the Chief of the Statistical Development, Data Innovation and Outreach Section of the African Centre, Joseph Ilboudo Tinfissi.

The development of the road map was coordinated by a statistician of the African Centre, Léandre Ngogang Wandji, who also reviewed all written outputs from the consultants, namely, Matthew Shearing, during the final phase of preparation, and Zachary Chege, during the initial phase.

Executive summary

Introduction

Official statistics are essential to policymaking and wider decision-making efforts to achieve sustainable development across Africa. The road map is a first step towards supporting African countries in better planning for and carrying out the transformation and modernization of official statistics in the face of common challenges and opportunities. In the road map, principles and priorities for transformation and modernization across a wide range of data ecosystems in modern Africa are defined and actions at the continental level to support this process are identified.

Targeted actions need to be further developed and implemented to make the road map fully effective. The implementation of international standards, the harmonization of outputs and the provision of mutual support for the development of official statistics will continue to be essential. That said, each African country needs to develop its own road map on the basis of the present road map, in accordance with national circumstances and development priorities.

Current state of official statistics and drivers of transformation and modernization

Most countries in Africa have had some success in transforming and modernizing official statistics to meet national development needs, in particular through the application of digital technology. In addition, emerging factors will further drive transformation and modernization in terms of both demand- and supply-side issues, including data ecosystems that are increasingly characterized by new opportunities and expectations to use digital data and technology and the increasing number of relevant stakeholders involved in providing efficient solutions to meet the needs of statistical users.

Moreover, many countries face similar fundamental challenges in maintaining or sustaining a virtuous cycle for official statistics. In a virtuous cycle, official statistics are produced well with available resources and are considered reliable and highly valuable in national contexts because of their importance in attaining national development priorities. That in turn leads to sustainable investment in official statistics by Governments, which results in improved or higher-quality statistics and related services for statistical users, which further sustains investment.

Designing the desired state of official statistics

Generic blueprints for the desired state of transformed and modernized national statistical systems are already well set out at the subregional, regional and international levels. The present road map is focused on recent lessons learned about the transformation and modernization process across Africa and is aimed at supporting nationally determined pathways for the transformation and modernization of official statistics that support national development priorities, including through the design of national strategies for the development of statistics.

Relevant goals for most national statistical systems include enhancing the use of Government-held administrative data and new forms of digital data, while optimizing survey and census methodologies when such approaches are the most efficient solutions for meeting user needs. There are also expectations in many African countries that public services will be increasingly digitalized, and official statistics must respond appropriately to those expectations. The coronavirus disease (COVID-19) pandemic in particular has also highlighted the need for and benefits of using digital data and technology. Therefore, national statistical systems need to be, and can be, innovative, resilient, efficient

and agile with the use of digital technology and other tools. However, countries are lacking comprehensive tools to map out and take the steps necessary to reach these goals in the most efficient way possible.

Next steps

A number of priorities are identified in the road map to guide the transformation and modernization of official statistics in Africa.

Moreover, in order to efficiently and effectively support these priorities and the development of road maps at the national level, it is recommended that members of the African statistical system, which consists of all national statistical systems and the subregional and regional bodies to which they belong, develop an action plan for the implementation of the road map. Organizations that make up the national statistical systems of African countries and Governments are invited to support and benefit from this process.

I. Introduction

The fundamental importance of official statistics for national and global development agendas has been acknowledged by States Members of the United Nations through the Fundamental Principles of Official Statistics.² The present road map for the transformation and modernization of official statistics in Africa provides an updated and consolidated framework to guide members of the African statistical system³ in supporting the development of national road maps for transforming and modernizing official statistics. However, each country must determine its own timeline for transformation and modernization according to national circumstances.

While all national statistical systems should operate and evolve in accordance with international standards, there is considerable diversity in the levels of and contexts for the development of national statistical systems in Africa. This means that each country will require nationally tailored road maps for transformation and modernization. At the same time, members of the African statistical system have the capability and the need to support the transformation and modernization of national statistical systems in all African countries, as well as the scope necessary to improve the process, in particular by facilitating mutually supportive learning and providing support for the international comparability of official statistics in cases where this supports national policymaking. It is therefore recognized that the successful transformation and modernization of all national statistical systems in Africa should benefit all countries and all users of official statistics in Africa. No national statistical system should be left behind in the implementation of the road map and the adoption of its principles.

1.1 Building on successes and lessons learned across the continent and beyond

In recent years, organizations in the African national statistical systems and the African statistical system have made considerable achievements in transforming and modernizing official statistics, particularly given the limited resources. There also continues to be a considerable wealth of strategic guidance and technical support available at the national, subregional, regional and international levels. Multilateral support has included many initiatives at the sectoral level, such as electronic censuses, the International Comparison Programme and electronic civil registration and vital statistics systems. There has also been some success in terms of cross-cutting initiatives, such as the establishment of the African group on transformation and modernization of official statistics, the Pan-African Statistics Programme and many programmes providing technical support at the subregional level. The road map is aimed at reviewing lessons learned from progress made and guiding stakeholders in ensuring that the planning for transformation and modernization is coherent, coordinated and focused on efficiently meeting national development priorities.

The road map is grounded in the principles of the Cape Town Global Action Plan for Sustainable Development Data⁴ and other important frames of reference for transformation and modernization (see section 3.3), which set out a vision and generic blueprints for official statistics across Africa and the globe in the modern era. The road map is aimed at maintaining and reinvigorating momentum for transformation and modernization. Significant challenges have emerged in adapting to the latest opportunities and emerging data ecosystems, in learning

² Endorsed by the Economic and Social Council in its resolution 2013/21 and by the General Assembly in its resolution 68/261.

³ Defined in the African Charter on Statistics as the partnership composed of national statistical systems (including data providers, producers and users, statistics research and training institutes and statistics coordination bodies), statistics units in the regional economic communities, regional statistics organizations, regional training centres, statistics units of continental organizations and coordination bodies at the continental level.

⁴ See <https://unstats.un.org/sdgs/hlg/cape-town-global-action-plan/>.

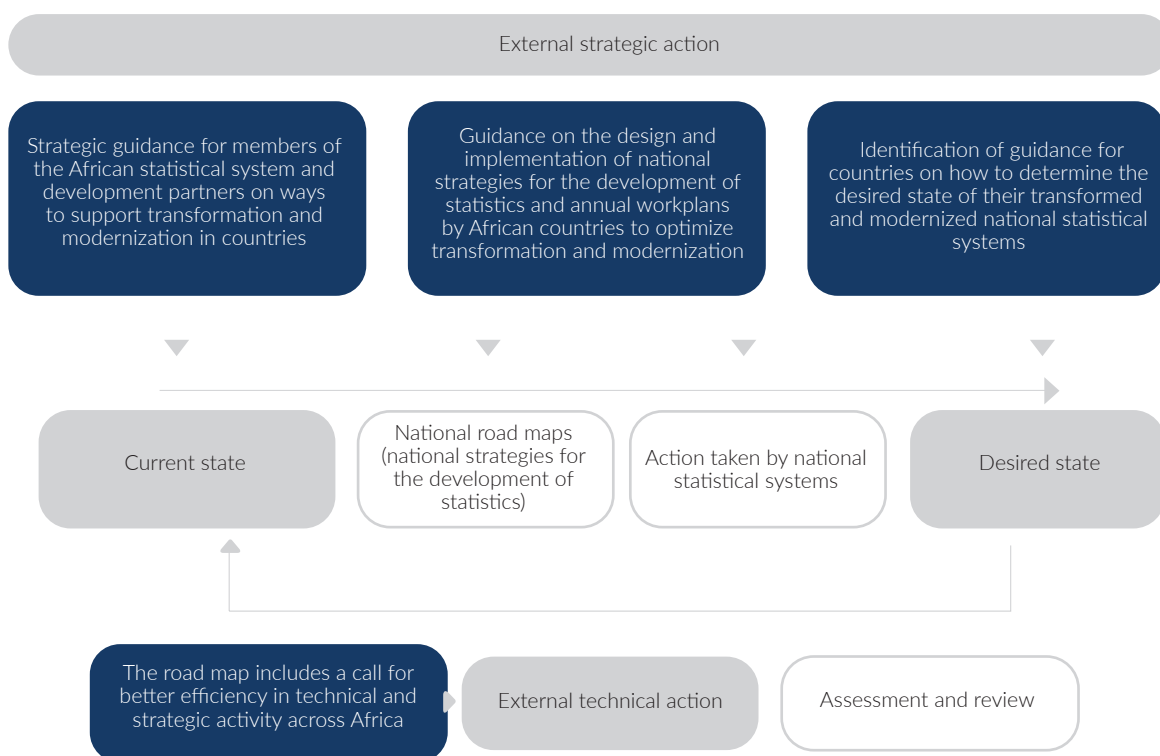
from the impact of the COVID-19 pandemic on official statistics, in producing statistics to achieve the Sustainable Development Goals and Agenda 2063 and in meeting other emerging priority needs of users at the national level. This recent experience has underlined the need to adapt existing strategies.

Moreover, the road map contains a high-level examination of the current situation of national statistical systems in Africa and progress made towards previous objectives and strategies agreed at the continental level, including a review of the latest opportunities, challenges, contexts, strategic thinking and lessons learned in Africa and globally. It sets out recommended priorities and concepts that could lead to improved timeliness, efficiency and effectiveness in planning for transformation and modernization in Africa until 2030, including through the development of national strategies for the development of statistics and better coordination of the support available among national statistical systems and from external

partners at the national and international levels. Over many years, the African statistical system has developed its own distinct responses to the strategic challenges it faces, including to the data revolution,⁵ not least via the Addis Ababa Plan of Action for Statistical Development in Africa in the 1990s, and the Reference Regional Strategic Framework for Statistical Capacity Building in Africa: Better Statistics for Improved Development Outcomes, issued in 2006. Section 3.4 of the road map sets out some of the other plans and strategies that have been developed over time. The road map draws together lessons learned from implementing such previous strategies to inform continued improvements at national and regional levels. This includes ensuring that national needs are at the forefront of new developments and underlining the ongoing requirement that national statistical systems respond well to the data revolution in nationally relevant ways.

The ways in which the road map can be used are described in figure I.

Figure I: Uses of the road map



⁵ Defined by the Independent Expert Advisory Group on the Data Revolution for Sustainable Development as “the transformative actions needed to respond to the demands of a complex development agenda, improvements in how data is produced and used; closing data gaps to prevent discrimination; building capacity and data literacy in ‘small data’ and big data analytics; modernizing systems of data collection; liberating data to promote transparency and accountability; and developing new targets and indicators” (see <https://www.undatarevolution.org/data-revolution/>).

1.2 Ownership and delivery of the road map

The development of the road map is considered as a first step, which will be followed by the development and delivery of a more detailed action plan for the implementation of the road map across Africa. The implementation strategy provided in the present road map is an indicative framework for action planning, which should lead to an agreed set of specific tasks that support transformation and modernization, mapped to a timeline, identifying whom among the members of the African statistical system will own and carry out which actions, in partnership with development partners, where appropriate.

All members of the African statistical system are responsible for overseeing the delivery of the road map and its implementation strategy, in collaboration with the Statistical Commission for Africa. The implementation of the road map should be shaped and steered by a partnership between Governments and national statistical offices. An overview of the next steps to be taken in the implementation of the road map is provided in figure II.

The road map was approved by the Statistical Commission for Africa in October 2022 and is scheduled to be endorsed by the Conference of African Ministers of Finance, Planning and Economic Development in March 2023. A proposed general description of the next steps are set out in table 1.⁶ It should be possible to

Figure II: Overview of the next steps to be taken in the implementation of the road map



Table 1: Overview of proposed next steps in the development and implementation of the road map

Step	Description
Outreach and advocacy	Outreach and advocacy will be carried out by all partners in the African statistical system, in particular as a means to engage with national partners on a national consensus on official statistics. This should drive the development of transformation and modernization strategies, such as national strategies for the development of statistics and annual workplans. Such efforts can also help to ensure that the needs of stakeholders and opportunities for collaboration are incorporated in the action plan for the implementation of the road map.
Development of an action plan for the implementation of the road map	The development of the action plan could be supported by the African group on transformation and modernization of official statistics, with input from members of the African statistical system and development partners, including through a review of ongoing organizational strategies and workplans.
Monitoring of the action plan	Monitoring will be conducted by the Bureau of the Statistical Commission for Africa.
Review and adaptation of the road map and implementation strategy	The review and adaptation could be conducted by the African group on transformation and modernization of official statistics, with input from members of the African statistical system and development partners. Resulting amendments will need approval from the Statistical Commission for Africa.

⁶ Specific guidance on how to use the road map in designing a national strategy for the development of statistics is set out in annex II.

use the present road map to guide the design of detailed national strategies for the development of statistics and their implementation through annual and multi-year national workplans

and other planning activities at the national, subregional, regional and international levels. Detailed planning for the implementation of the road map is a crucial immediate next step.

II. Definitions

While the primary focus of the road map is to support strategic planning for transformation and modernization at the national level, it also provides guidance for and helps to facilitate coordination among all stakeholders in the African statistical system in supporting this process. Moreover, the road map may also provide inspiration and points of alignment for organizations in the African statistical system that are not part of a national statistical system in designing their own pathways for transformation and modernization.

Transformation and modernization are processes by which national statistical systems move from a current state to a desired state or sustain a desired state. This results in demand, that is to say, a need for official statistics and related services, being met through more optimal approaches to managing supply issues. Supply issues are related to the resources involved in producing official statistics, such as potential data sources, technology, methodologies, finances and human capital. Within the road map, four key concepts are highly relevant to such a process. They are defined as follows:

a) Transformation is the process of moving from a current state to a fundamentally different desired state. It involves significant and systematic changes to the national statistical system, and it often involves interrelated changes made across statistical business processes and their institutional environments in order to ensure that basic and improved services are provided at increasing levels of efficiency. Transformation is normally expressed as a means to leverage sustained or increased resources and is set out in a cross-organizational long-term strategy for the efficient use of available

resources, such as a national strategy for the development of statistics;

- b) Modernization is also a process of moving from a current to a desired state. More specifically, it refers to adapting, enhancing, and in some cases moving away from, traditional approaches to official statistics. It is the process by which national statistical offices or other entities in national statistical systems tactically aim to adopt the latest available approaches for specific statistical processes and systems. A key distinction from transformation is that modernization may not always be appropriate for all parts of a statistical system or in all countries. Rather, as part of a transformation strategy, modernization goals should be identified, prioritized or excluded, depending on their relevance and cost-benefit ratio in national contexts. This may be of particular importance to many African countries;
- c) Digitalization refers to the use of digital technology to change all or parts of a statistical business model, including using new forms of digital data and digitalized versions of data obtained from traditional sources, such as surveys and administrative data. Digitalization can be undertaken as part of both the transformation and the modernization processes. However, it needs to be considered carefully in view of national priorities and the long-term availability of relevant resources. In initiatives that have a high level of ambition, such as the regional hub described in box 1.7 digitalization is a crucial part of strategies for achieving a fully integrated statistical system⁸ or for moving towards an integrated national data system.⁹ That said, digital modernization is often

⁷ Under the governance of the Committee of Experts on Big Data and Data Science for Official Statistics of the United Nations, a global platform has been built providing a cloud-service system: (1) to support international collaboration in the development of official statistics using new data sources and innovative methods; and (2) to help countries to measure the Sustainable Development Goals. Rwanda is one of four regional hubs around the globe that support the platform.

⁸ An overview of the concept of an integrated statistical system can be found in the brief entitled "Integrated statistics: a journey worthwhile" of the Economic and Social Commission for Asia and the Pacific. Available at www.unescap.org/sites/default/files/Stats_Brief_Issue19_Jul2019_Integrated_Statistics.pdf.

⁹ An "integrated national data system" is a term used in the World Development Report 2021: Data for Better Lives of the World Bank to refer to a desired modernized state in which national statistical systems play a transformed and systematic role in sophisticated national and international digital data ecosystems.

more likely to result in tactical piecemeal gains in most countries, in particular when it can lead to high returns in terms of meeting user needs at low levels of investment. The example in box 2 illustrates how digital modernization can be used tactically to enhance the impact of official statistics, including through the types of partnerships necessary for national statistical systems to effectively modernize;¹⁰

- d) Continuous improvement is both part of a desired state and a means to help to achieve and maintain desired states. It refers to organizational and staff learning activities focused on meeting user needs. The process is systematic and culture-specific and influences the design and delivery of business processes, which is particularly important in contexts with limited resources. Through this process, organizations and staff

are empowered to challenge themselves, avoid complacency and seek resilience and agility in responding to user needs and the changing contexts of their work. Continuous improvement is both supported by and supports transformation or modernization processes, but it can be undertaken without them.

In the road map, the concept of a data ecosystem, which is also set out in the Cape Town Global Action Plan for Sustainable Development Data, is of central importance. The term refers to the full range of evolving potential data sources, processes and stakeholders with which entities in national statistical systems need to interact. Such entities need to situate well-coordinated plans for transformation and modernization and continuous improvement firmly within such national and international data ecosystems.

Box 1: A national statistical office working with Pulse Lab Jakarta on innovative approaches to using commuting statistics

The college of official statistics of the national statistical office of Indonesia worked with Pulse Lab Jakarta to understand whether location information from social media on mobile devices could reveal commuting patterns in the greater Jakarta area. The study showed how partnerships with organizations outside the national statistical system could bring benefits to the transformation and modernization process through the tactical use of digital technology at a low cost. The Lab produced origin and destination statistics for the 10 cities in the greater Jakarta area from geolocated tweets by identifying a subset of people who commuted between those areas. The initial results were then calibrated based on the population distribution and Twitter user distribution. The results were verified against the official commuting statistics produced by the national statistical office. The results confirmed that geolocated tweets have the potential to fill information gaps in official commuting statistics.

¹⁰ See Pramana, Setia, and others, "Inferring commuting statistics in Greater Jakarta from social media locational information from mobile devices", paper prepared for the NetMob 2017 conference, Milan, Italy, April 2017.

III. Drivers of transformation and modernization

Assessing the current state and contexts of national statistical systems in Africa has been firmly established as the starting point for the development of strategies for transformation and modernization.

Much work has already been carried out in Africa to assess the strengths, weaknesses and contexts of individual national statistical systems. Notwithstanding the considerable diversity among national statistical systems across Africa, there are some common issues that are driving the development and implementation of road maps for transformation and modernization, most of which are described in the present section.

User needs and expectations with regard to official statistics are evolving rapidly, in particular owing to the emergence of other sources of data and analysis that are being made available to users by other data suppliers. According to the Handbook on Management and Organization of National Statistical Systems of the United Nations, national statistical systems are expected

to adapt to such a changing environment. It is therefore imperative that such systems transform and modernize and take advantage of innovative technologies in a rapidly changing data ecosystem. This calls for an emphasis on leadership, coordination and communication with a wide range of stakeholders in the data ecosystem to an extent that goes well beyond the normal boundaries of a national statistical system. Institutional and organizational reforms are required that enable dynamic adaptations to the modern world.

The experience of delivering official statistics across Africa during the COVID-19 pandemic underlined the need for national statistical systems to be both agile and resilient, in particular through innovative uses of digital technology and a widening range of data sources to provide solutions for users. This is particularly important given the vulnerability of traditional surveys to external shocks, potential variations in funding and the increasing expectation that digital technology will minimize the burden of responding to surveys. The significant gaps in

Box 2: A regional hub for data science in Rwanda

The National Institute of Statistics of Rwanda and the Economic Commission for Africa support a campus that is dedicated to data science and located within the Institute. It functions as an African regional training centre for big data analytics and their applications and provides a convenient environment for data access and exploration. Multistakeholder engagement and collaboration are at the heart of the hub's strategy and will determine its success.

Placing the regional hub within the National Institute of Statistics was an opportune strategy, given that the Institute has adopted a high-intensity but measured national approach for the integration of digitalization into transformation and modernization processes. The Institute also plays a central role in the development of the national data ecosystem. The national consensus on official statistics (see section 3.2.2) in Rwanda was nurtured by the Institute's tremendous efforts to engage stakeholders. The hub places the Institute at the forefront of the development of digital data solutions for national development. In 2017, the Government of Rwanda approved a data revolution policy for all of Rwanda, to be implemented under the coordination of the Institute. Many areas were identified in which big data analytics will be used in evidence-based decision-making, including the analysis of satellite imagery to monitor crop production and the analysis of mobile phone data to understand the population's mobility. All these initiatives require specific skills and tools and a supporting infrastructure.

The aim of the regional hub is to enable Rwanda to share lessons learned from these initiatives with entities in other national statistical systems across Africa and beyond. However, this goal will be feasible only if planning is undertaken for the development of relevant organizational capital. This means that success will be based on continued political engagement and close collaboration with national universities, other government institutions, private companies and regional and international organizations. Moreover, the use of the hub by other countries will need to be undertaken using a toolkit for strategic decision-making and enhanced learning processes envisaged in the present road map (see sections 4.2 and 5.3).

the data available to support national policy priorities have also been highlighted in the 2030 Agenda, in particular in terms of support for the goal of leaving no one behind. These gaps have also underlined the need for official statisticians to find innovative solutions for users.

3.1 Measurements of overall performance

Internationally comparable indicators of statistical capacity and performance have indicated that African countries have been successful in putting in place national strategies for the development of statistics, but that they have been less successful in having them be fully funded. African countries have also been successful in attracting international financial assistance for capacity development and statistical production. However, this also indicates a lack of sustainability, as financing should ideally be increasingly provided through domestic sources and matched to the goals set out in national strategies for the development of statistics.

Overall, persistent gaps are known to exist in public data for monitoring the 2030 Agenda and Agenda 2063. According to the dashboard for measuring progress towards the Sustainable Development Goals in Africa,¹¹ data are insufficient for almost 120 indicators, with the most significant gaps reported for Goals 5 (gender equality), 11 (sustainable cities and communities), 12 (responsible consumption and production), 14 (life below water), 16 (peace, justice and strong institutions) and 17 (partnerships for the goals).¹² Moreover, despite continual improvements over time, Africa has been scoring low on a data openness index¹³ and a statistical performance index.¹⁴ This indicates that a road map for transformation and modernization in Africa is required to accelerate

successes in capacity development and address some structural and long-standing challenges.

A United Nations survey of national statistical offices was carried out in 2020.¹⁵ While the survey related to the readiness of national statistical offices to use big data, it has a broader application for understanding the overall capability to use new technology and digital data sources. The results of the survey highlighted that there were some significant challenges to be addressed by African countries in using digitalization to transform and modernize their national statistical systems across four categories: strategic coordination, legal frameworks, information technology and human resources.

However, while internationally comparable assessments of national statistical capacity are essential for shaping priorities for transformation and modernization, such frameworks require further development. There are significant gaps in methodology and data availability. Different frameworks have been used in different countries at different times. Therefore, priority needs to be placed on the development of more sophisticated strategic decision-making tools for assessing, planning, coordinating and monitoring transformation and modernization at the national, subregional and regional levels. These tools can be used throughout the life cycle of national strategies for the development of statistics.¹⁶ The tools should be focused on African priorities and allow for consistent cross-country assessments and identification of peer groups to benefit from shared learning paths.

3.2 Demand-side drivers: putting user needs first

The primary goal of any organization in a national statistical system should be to meet the

11 Hosted by the Africa United Nations Data for Development Platform. See <https://ecastats.uneca.org/unsdgsafrica/>.

12 International Institute for Sustainable Development, "UNECA launches Africa SDGs progress dashboard", 12 July 2022.

13 See <https://statisticalcapacitymonitor.org/indicator/86>.

14 See <https://statisticalcapacitymonitor.org/indicator/203>.

15 United Nations, Statistical Commission, "Global assessment of institutional readiness for the use of big data in official statistics", background document for the Note by the Secretary-General transmitting the report of the Global Working Group on Big Data for Official Statistics (E/CN.3/2020/24).

16 For more information, see <https://new.nsdsguidelines.paris21.org/en/nsds-lifecycle>. See annex II for guidance on using the road map in the life cycle of these strategies.

needs of users of official statistics as efficiently as possible. Such organizations need to manage and deliver to the expectations of stakeholders, both in terms of the integrity of their services and adherence to various dimensions of data quality.¹⁷ This is particularly important in many African countries as they seek to break cycles of low levels of trust and statistical literacy that lead to low national interest and limited investment in official statistics.

3.2.1 Maintaining a virtuous cycle for official statistics

Formerly, official statistics producers were not far from having a monopoly in the provision of data related to key economic and social indicators, which were funded as essential public goods to support policymaking and accountability. However, in all African countries, as a result of the advent of digital technology, and in some countries (depending on the extent of development of national statistical systems), current data services provided by official statisticians carry the risk of becoming increasingly irrelevant to users, and, therefore, of losing appeal as a target of investment. This can be for a number of reasons, including because users tend to be aware of the timely and abundant nature of many new digital data sources, while they may not be aware of the quality of the data and the potential efficiency gains from investment in official statistics. Official statistics producers will struggle to maintain relevance to users without proper engagement with users and collaboration with a wide range of stakeholders and adequate resources.

This situation presents an existential threat to official statistics and to their value in supporting national development and well-functioning societies. Fortunately, all national statistical systems have great potential to enrich evidence-based decision-making in increasingly digital national data ecosystems, including by providing services and skills that support the effective use

and production of a range of data with varying data-quality dimensions. For example, they could support statistical literacy across a wider expanse of society and steward the use of new digital data, given their implications for data quality and ethical matters.

However, many African countries are stuck in a vicious cycle of low interest and demand for official statistics for evidence-based decision-making or are at risk of falling into such cycles if they do not adapt their national statistical systems to modern data ecosystems through transformation and modernization. Such cycles often result in:

- a) Weak statistical institutions that have poor governance structures;
- b) Inadequate staffing levels, infrastructure and tools;
- c) Limited human capacity in terms of both data producers and users;
- d) Insufficient funding;
- e) A lack of coordination and collaboration within modern data ecosystems.

These challenges, in turn, result in low-quality data, which then reinforces the initial lack of interest and demand, in particular at the policy level. The road map sets out strategies and actions that are required to either break such vicious cycles or maintain a virtuous cycle, and highlights the advantages of engaging with a broad coalition of data stakeholders across society in doing so. Virtuous cycles lead to satisfaction among users both nationally and internationally, resulting in support for and investment in official statistics.

Progress in establishing more virtuous cycles has been demonstrated recently in Africa, in particular through the identification of

¹⁷ In the United Nations National Quality Assurance Frameworks Manual for Official Statistics, four levels consisting of various principles for data quality are proposed, and specific dimensions of data quality in the African context are referred to in the African Charter on Statistics. However, there is no globally consistent set of dimensions for data quality. Dimensions commonly include concepts such as relevance, accuracy, coherence, comparability, timeliness, frequency, reliability and accessibility. That said, it is best to agree upon the importance, priority and precise definition of dimensions with data users at the national level, in particular in relation to emerging digital data ecosystems and specific sets of statistics.

opportunities presented in the Sustainable Development Goals and Agenda 2063. Such progress has provided a framework for extended dialogue between stakeholders of national statistical systems and users. It has underlined the importance of having national statistical systems that are focused on delivering data that fulfil national development priorities and respond to user needs. Some examples are provided in box 3.

Further opportunities need to be identified. National planning for the use of government resources could be better linked to planning for official statistics. Most African countries

are committed to results-based management and integrated national financing frameworks. However, it is not clear whether official statisticians are adequately involved in the development of such frameworks. The needs for the transformation and modernization of official statistics are often not directly integrated into broader government planning and reporting mechanisms¹⁸. Such needs should be integrated into the life cycle of major policies, including policies that are common among African countries and directly related to efficiency in official statistics, such as those that are aimed at digitalizing government administration and the delivery of public services. These

Box 3: Supporting a virtuous cycle in Cameroon

The National Institute of Statistics of Cameroon collaborated with the Ministry of Economy, Planning and Regional Development on the development of the national development plan, also known as the national development strategy 2020–2030, in particular on the support to be provided by bodies in the national statistical system for monitoring and evaluation. The collaboration has continued, with a view to specifying a coherent framework for measuring results through operational performance indicators.

A plan for the financing of statistical projects is being drawn up with a view to ensuring that such projects meet the needs of the Government. The plan includes strategies for enhanced appropriation of results-based management and procedures for budget preparation.

The national strategy for the development of statistics, covering the period from 2021 to 2030, is oriented towards a demand-side approach, which includes:

- a. An operational guide for defining performance indicators for activities undertaken by the Government to standardize what can be a very complex exercise. (The guide has already been developed);
- b. Plans for the development of a user dialogue strategy and a user guide for official statistics in Cameroon;
- c. The delivery of a statistical release calendar;
- d. The development of a master plan for local statistics, with a focus on government decentralization and local development needs. Generic indicators for the development of regions and municipalities have been specified. Work is ongoing on the design of local statistical systems and their integration into local governments.

Supporting a virtuous cycle in Ghana

In a 2018 report by the Partnership in Statistics for Development in the 21st Century, entitled “Good practices for sustained financing of national statistics”, it was found that in countries in which no specific government office stressed the long-term importance of a robust national statistical system, there was less funding for such systems. For example, the Vice-President of Ghana, Mahamudu Bawumia, championed a robust national statistical system for monitoring and achieving the Sustainable Development Goals. He actively and passionately spoke about the importance of data for evidence-based policymaking, and his campaign prompted civil society organizations and other government organizations to use the 2030 Agenda framework to monitor development outcomes. The high level of political engagement also resulted in the Statistical Service Act, 2019. As political will and stakeholder engagement increased, the Government decided to increase funding to the Ghana Statistical Service and re-established the Service as the official statistical governing body. Such examples reinforce the catalysing role of political will in the development of the data ecosystem.

¹⁸ In a 2022 article by the Partnership in Statistics for Development in the 21st Century, entitled “Raising domestic resources for statistics: three strategic moves”, national statistical offices were called upon to plan for the future and align data with national development policy, keep an eye on the impact, not only on the production, of official statistics, and make efforts to understand users and encourage the use of data.

opportunities need to be more clearly targeted in national planning for the transformation and modernization of official statistics. An example of positive developments in this regard is provided in box 3. At the international level, support for the transformation and modernization of official statistics in Africa needs to be better coordinated with support for overall improvement in governance and administration.

3.2.2 Managing a national consensus on official statistics

The development of a national statistical system should not be based on the assumed inherent value of official statistics to a particular society; nor should it be based on a set of standard characteristics and intended outcomes identified on the basis of bilateral, static or infrequent engagement between users and producers. There needs to be a specific national consensus on the appropriate role, relevance and value of official statistics within the wider national data ecosystem. Those involved should consider the costs and benefits of different solutions for meeting the needs of statistical users that are available in a particular country. Such a consensus will determine the level of government funding and other resources provided to the national statistical system.

National and local governments and national statistical offices should remain central to the development of such a national consensus. The national statistical office should play a key role in data stewardship¹⁹ and in leading advocacy efforts for official statistics and statistical literacy. However, current contexts require engagement with a much wider group of stakeholders outside Government, including other users, potential producers of and collaborators on data and services and other potential partners that can support evidence-based decision-making.²⁰ The wide range of national contexts in Africa

should result in agreement on the roles and desired states in national statistical systems, leading to a variety of strategies being chosen for transformation and modernization.

Such a national consensus on the long-term role and value of official statistics should be expressed in legal frameworks and national strategies for the development of statistics or other such strategies. This is particularly important given that the transformation and modernization process often requires long implementation periods and because agreeing on a national strategy for the development of statistics can kick-start enhanced approaches to stakeholder engagement. However, other approaches need to be developed that allow for optimal flexibility in the adaptation and reinterpretation of the national strategy during its implementation. The processes for generating and managing a wider national consensus should be agile, regular and continuous. They should allow national statistical systems to prove their value in taking advantage of new opportunities and to adapt to changing national needs, such as changing government policies and approaches to administration, natural shocks and economic needs. The national consensus on official statistics should therefore be implied rather than written. It should be dynamically managed and based on sound multilateral relationships and regular communication.²¹

It should therefore be noted that engagement with users and a wide range of stakeholders at the national level is the primary and essential pivot upon which effective transformation and modernization can be carried out. This “soft power” for national statistical systems represents the sum of perceptions of official statistics across societies, the levels of statistical literacy, the trust in official statistics and their impact. It drives the funding, strategies and level of ambition ascribed to the development of the

¹⁹ The World Development Report 2021: Data for Better Lives is an example of a key frame of reference for the role played by national statistical offices in data stewardship and other potential roles in emerging data ecosystems.

²⁰ The make-up of the national data stakeholder community should be determined through a national stakeholder mapping exercise. In many countries, this community will include national data-mapping agencies, academia, professional societies, private-sector data holders and technological innovators.

²¹ In the World Development Report 2021: Data for Better Lives, reference is made to a new “social contract” for data based on value, trust and equity. This is a recommended reference point for implementing the road map. The proactive “soft power” required to manage such a contract is underlined in the present road map, along with the need to focus on national stakeholders while using international support and references, the highly dynamic nature of such a contract and the need to enhance consensus and understanding among stakeholders on what such a contract entails for each country.

human and technological infrastructure that will drive transformation and modernization. It influences the extent to which an organization in a national statistical system can flexibly respond to user needs and implement statistical legal frameworks and strategies. Organizations in the African statistical system therefore need to focus on strategic actions that strengthen and sustain skills and processes for agile engagement with national users and other stakeholders in data ecosystems.

3.2.3 Meeting the needs of national users through international coordination

Planning a transformation and modernization process that supports the international harmonization of official statistics is also a highly important driver across Africa. This is needed to support national development priorities, through internationally comparable statistics produced in accordance with international standards, and to support the shared development priorities of African countries at the subregional and regional levels.

Consistent and high scientific standards and comparability should therefore be ensured during the transformation and modernization process. This will ensure that statistics from national sectors that relate to shared national policy priorities are produced and disseminated as much as possible according to internationally adopted standards and methodologies.²² This underlines the need for continued and enhanced partnerships among organizations in the national statistical systems and members of the African statistical system.

International development initiatives can often be strategically used within national statistical systems as an opportunity to engage with key government users. The Sustainable Development Goals and the process of refining national indicators have been used by many countries to establish greater recognition and influence with

key government users of statistics. Moreover, useful tools for engagement with policymakers that have been developed at the international level can be used and adapted by African countries.²³ However, these tools can be further enhanced to optimize their practicality and applicability to African contexts, in particular in anticipation of the need to engage with broader national data communities.

There are also significant opportunities for coordination with potential international partners outside traditional official statistics communities. Many such partners are highly active across Africa, with relevant skills, products and objectives that meet the needs for transformation and modernization in African national statistical systems. Non-governmental organizations, research organizations and nationally funded international development agencies can be a rich source of learning and assistance, in particular in relation to the digitalization of national statistical systems.²⁴

3.3 Supply-side drivers: optimizing resources

On the demand side, stronger engagement with and influence over users through a multilateral approach are key drivers of transformation and modernization. The common supply-side issues that need to be addressed as a priority are described in table 2. These also require additional tailored solutions to be developed.

It will continue to be important to develop and maintain capacity to deliver technical solutions to meet the demands of users at the national level. Such solutions include improving statistical infrastructure, re-engineering survey approaches to make them more efficient and flexible, making general improvements to statistical methodologies and using administrative and new forms of digital data and innovative data sources. However, a traditional focus on the technical development of sectoral

²² The Statistical Data and Metadata Exchange and the Special Data Dissemination Standard are examples of international standards available for dissemination that can enhance the value of national statistics.

²³ Examples include the Advanced Data Planning Tool of the Partnership in Statistics for Development in the 21st Century and the “Every policy is connected” (EPIC) tool developed by the Economic and Social Commission for Asia and the Pacific.

²⁴ In a report of the Frontier Technologies Hub of the Foreign, Commonwealth and Development Office of the United Kingdom, entitled Frontier Data Study: Releasing the Power of Digital Data Development – A Guide to New Opportunities, multiple examples have been provided of the overlap in learning objectives between official statistics and international development sectors, in particular in Africa.

Table 2: Supply-side issues requiring strategic solutions in Africa

Issue	Description
Basic infrastructure	As an investment priority, all national statistical systems require adequately maintained basic infrastructure, such as buildings, computers, transportation, Internet connectivity and electricity, to ensure effective transformation and modernization. The development of infrastructure should include sustainable solutions, such as the use of solar power in environments with unstable electricity supplies and strategies to mitigate power or Internet outages. It may be increasingly important to ensure basic infrastructure for the processing of administrative data, not only by national statistical offices but also by a range of other government bodies, such as remote health centres.
Financial resources	The availability of increasing or stable provisions of funding for official statistics cannot be assumed. The risks of insufficient funding should be mitigated through enhanced stakeholder engagement that is adapted to emerging data ecosystems. Such engagement should be aimed at meeting the needs of national users and obtaining political commitments to official statistics at the national level, while ensuring agility and resilience in the transformation and modernization process. At the same time, potential funders will need to be convinced of the national statistical system's ability to use resources optimally, in particular through the tactical use of digital technology or innovations to provide added value to the needs of users.
Learning processes	Learning approaches need to be: (a) outwardly focused, bringing in expertise from beyond traditional fields in official statistics, in particular to support the development of a mutually supportive wider data community; (b) focused on long-term and sustainable outcomes in national contexts, with learning programmes increasingly managed through subregional or national training centres; and (c) strategic, in that they should explicitly support the transformation and modernization process and not be focused only on technical capacity development. Learning activities also need to involve peer-to-peer learning and mutual support, and they need to be shaped by better tools for strategic prioritizing and decision-making, such as more sophisticated maturity assessment models. Developers of learning activities need to be mindful that the provision of technical support and training on a short-term basis has limited impact.
External support for capacity development	Investment by and support from non-national partners for the capacity development of national statistical systems should continue to be focused on the development or implementation of international standards, where relevant. However, there also needs to be a shift in focus towards the actions set out in the road map to ensure greater and more sustainable impact. Moreover, enhanced cooperation and coordination are required among members of the African statistical system and development partners to optimize the efficiency and impact of support for capacity development. Such support involves providing assistance and funding, optimizing access to support mechanisms and ensuring that capacity development approaches are focused, consistent and coherent. This is particularly important when developing mutually supportive strategies to ensure long-term commitment of financial and technical assistance, so that the beneficiary entities in a national statistical system can plan effectively over the entire duration of implementation of the national strategy for the development of statistics. Such collaboration is also important to ensure that perspectives from official statistics are better integrated, with support from external partners, into wider development projects in Africa, in particular those involving results-based management and initiatives to improve governance.
Human capital	Many of the major successes in transforming and modernizing national statistical systems in Africa have been driven by non-traditional skills, such as statistical leadership, political engagement, innovative approaches and communication. These skills are important across all levels of staff in national statistical systems. Change and project management and business re-engineering skills are also required at specific levels to carry out transformation and modernization in an effective and agile manner. National statistical systems face significant challenges in emerging national and international labour markets, including the retention of highly skilled staff, largely owing to a lack of competitive remuneration, and access to new skills relevant to the digital era. Strategic and innovative action is required to ensure that such systems develop and access the skills needed to operate in emerging data ecosystems with limited resources. This may include allowing for greater flexibility than is available in other public-sector bodies in staffing policies and management, supporting staff mobility and benefiting from the skills of others through arrangements with external partners.

Issue	Description
Legal frameworks and well-functioning national statistical systems	<p>Regulatory frameworks are important in helping to implement the Fundamental Principles of Official Statistics and the African Charter on Statistics, establishing professional communities within national statistical systems and helping them to adapt to new opportunities and challenges in emerging data ecosystems. However, the following actions also need to be emphasized:</p> <ol style="list-style-type: none"> Significant efforts need to be made to adapt generic legal frameworks for official statistics to national contexts and the African Charter on Statistics; Additional measures that are required to support the intended effects of statistical legislation need to be considered, including through engagement with stakeholders; There needs to be better alignment between statistical and non-statistical legislation, such as data protection laws and bureaucratic and administrative frameworks for public bodies. The process should include establishing appropriate levels of autonomy for entities within the national statistical system to support transformation and modernization and aligning official statistics with wider digital transformation agendas of Governments; Efforts should be made to ensure that legal frameworks allow for, rather than hinder, innovation and promote agility in meeting user needs and responding to new challenges and opportunities.
Use of technology	<p>The use of technology, in particular digital technology, can be highly effective in improving the efficiency of the production and dissemination of official statistics (see the example from the United Republic of Tanzania in box 4). However, there needs to be an emphasis on ensuring that investments therein are good value for money and sustainable by:</p> <ol style="list-style-type: none"> Developing solutions to ensure that basic computing packages are not too expensive to maintain, can be supported and operated by in-house staff and do not quickly become obsolete; Supporting strategic decision-making on the level, type and timing of digitalization, including on how and when to move towards an integrated statistical system within national statistical systems and enable data-sharing among stakeholders; Developing technological expertise that is locally available in national statistical systems or wider national contexts; Developing strategies to mitigate the risk of technological failures, such as maintaining the ability to process paper-based data; Effectively managing the procurement of information technology products and related projects and ensuring coordination among entities within the national statistical system to optimize interoperability for data integration.

^a There have been some initiatives to increase access to advice, for example, the United Nations global platform related to digital data (see <https://unstats.un.org/bigdata/un-global-platform.cshtml>). However, a review needs to be conducted of their usefulness in terms of efficiently identifying, brokering or funding support for learning and capacity development from a multitude of suppliers and partners.

Box 4: Combining geospatial data and official statistics to enhance policymaking on poverty in the United Republic of Tanzania

According to the World Development Report 2021: Data for Better Lives, modifications to official statistics have involved supplementing census data with data from records of mobile phone calls (call data records) or various types of remote-sensing data, typically from satellites, but also from drones.

Official statistics produced from household surveys are the basis upon which national poverty rates are estimated in most countries. However, the survey instrument is extensive and time-consuming to administer, and the samples tend to be relatively small. Estimates of poverty from such surveys are usually statistically valid at the national level and at some slightly finer level of geographic stratification, but rarely are such surveys designed to provide the refined profiles of poverty that would allow policies to mitigate poverty at the village level or lower. Meanwhile, for decades, high-resolution poverty maps have been produced by estimating a model of poverty from survey data and then mapping the model onto census data, resulting in an estimate of poverty for every household in the census data. However, census data are available only once a decade, and even less frequently in many poorer countries.

Using data from household surveys, the Government of the United Republic of Tanzania was able to profile the level of poverty among only 20 regions of the country's mainland. However, once the data were combined with satellite imagery data, it became possible to estimate poverty for each of the country's 169 districts. Combining the two data sources increased the resolution of the poverty picture by eightfold, with essentially no loss of precision.

statistics, collection methods and infrastructure needs to be balanced by a focus on strategic issues that stretch across the generic business process model and beyond. Technical solutions

have therefore been excluded from table 2. A focus on developing solutions for more strategic supply-side issues should enhance the long-term effectiveness of technical developments.

3.4 Designing the desired states of African national statistical systems

Important guidance for the planning and carrying out of effective transformation and modernization is already set out in many global, regional and subregional instruments developed by various organizations. These key frames of reference also inform the provision of support to develop the capacity of national statistical systems. One aim of the road map is to address issues with fragmentation and overlap and challenges in interpreting and delivering these instruments at the national level. However, many of these instruments can continue to be used to inform and support national statistical systems in shaping their approach to transformation and modernization and deciding on their desired state, which is the ultimate goal. The road map is built on and underlines the importance of such guidance. However, it is anticipated that the contents of these frames of reference will evolve, and new ones may be developed in line with the road map.

In summary, while also needing to be shaped by a national consensus on official statistics in most of these key frames of reference, there is

a common expectation that the desired states of national statistical systems, will include ways of optimizing the use of all potentially available data within national data ecosystems, including national and subnational statistics that can meet national development priorities, such as the 2030 Agenda and the goal of leaving no one behind. Attaining this desired state should involve efforts to enhance the use of Government-held administrative data and new forms of digital data, and, in cases where surveys are proven to be the most efficient solution to meet user needs within a given country and time, to optimize survey and census methodologies, including by integrating various surveys to gather data related to multiple user requirements. Overall, it is expected that priority will be given to responding to developments in digital technology, such as new types of data collection, new forms of collaboration, the sharing of data, metadata and microdata, and data fusion, such as linking official statistics to digital geospatial information (see examples provided in boxes 4 and 5).²⁵ Priority is also expected to be given to efforts to address challenges, such as those related to ethics and data quality issues.

²⁵ See also the Guide on Geospatial Data Integration in Official Statistics of the Partnership in Statistics for Development in the 21st Century.

Box 5: Lessons from a project to use of earth observation data to produce agricultural statistics in Senegal

A project known as EOSTAT, funded by the Food and Agriculture Organization of the United Nations, was developed to build capacity in Senegal to use earth observation data to produce agricultural statistics. Earth observation data were used to convert satellite images into a national map of crop types cultivated during the 2018 agricultural season through the deployment of a crop mapping tool (Sen2Agri) on the United Nations global platform for digital data. Inputs included images from the Sentinel-2 satellite and georeferenced crop data from the national agricultural census conducted in 2018. Using the collaborative global platform, solutions were developed to ensure data confidentiality (regarding the location of households) and scripts for automating the deployment of Sen2Agri, with a view to facilitating use across many more countries.

The collaboration involved the Directorate of Analysis, Forecasting and Agricultural Statistics of Senegal, which is responsible for official agricultural statistics, the national statistical office and the National Centre of Ecology and Research. A partnership with the owner of the satellite data, the European Space Agency, also led to the signing of a memorandum of understanding for the Agency to deliver a project entitled “Sen4STAT”, which will continue to help Senegal in its crop mapping, using the same approach.

The project highlights how digitalization can often be effectively realized only through multi-stakeholder partnerships both within the national statistical system and with new kinds of partners, and, in this case, the crowdsourcing of solutions through the global platform. On the other hand, the 12-month duration of the initial project was potentially too short to ensure that benefits were consolidated and new competencies institutionalized, which is why a longer-term solution was provided through the establishment of the memorandum of understanding with the European Space Agency. There has also been a consequent improvement in the overall capability of the national statistical system through the incorporation of best practices in crop georeferencing into national field surveys.

To support the common elements of the recommended desired states of national statistical systems, it is expected that key reforms in approaches to human capital and infrastructure will be implemented. These elements include ensuring that outputs are disseminated and accessible to users in increasingly relevant ways, such as through digital transmission and the provision of value added services, such as analysis, and ensuring that the national statistical systems play a leading role in shepherding society's effective use of data and statistics in decision-making. A key factor for success will be the development of common statistical infrastructure and data-sharing arrangements across the national statistical system and with other partners in ways that safeguard quality and confidentiality. There will also be a need for governance-related arrangements and multi-stakeholder engagement that support agility and resilience.

Some of the most important frames of reference developed at the global and regional levels are set out below. The road map provides support to each country in using these guides to prepare its own path towards transformation and modernization and to reach its own desired state. It also underlines the most important developments needed in a national statistical system to support reaching the chosen desired state.

The list provided below contains frames of reference developed at the generic and strategic levels. Works that relate to technical guidance for specific areas of a national statistical system are excluded. Such frames of reference are also manifold and should be considered important. They include the United Nations National Quality Assurance Frameworks Manual for Official Statistics, guidance generated by the United Nations collaborative on the use of administrative data for statistics, the report by the Partnership in Statistics for Development in the 21st Century and Open Data Watch entitled Data Dissemination in the Digital Age, and many others. There are also many other guides available on sectoral statistics, disaggregation (for example, for gender statistics) and other areas that are not covered below but on the basis

of which overall strategic lessons are reflected in the road map.

Key international frames of reference for transformation and modernization

- Data Strategy of the Secretary-General for Action by Everyone, Everywhere
- World Development Report 2021: Data for Better Lives of the World Bank
- “Capacity development 4.0” framework of the Partnership in Statistics for Development in the 21st Century
- Handbook on Management and Organization of National Statistical Systems of the United Nations
- A range of guides on the modernization of official statistics by the Economic Commission for Europe (<https://unece.org/statistics/modernization-official-statistics>)
- Road Map on Statistics for Sustainable Development Goals of the Economic Commission for Europe
- System-wide Road Map for Innovating United Nations Data and Statistics (CEB/2020/1/Add.1)
- Cape Town Global Action Plan for Sustainable Development Data
- Guidelines for national strategies for the development of statistics of the Partnership in Statistics for Development in the 21st Century
- Fundamental Principles of Official Statistics (General Assembly resolution 68/261)

Key regional frames of reference for transformation and modernization

- Results of sessions of the Statistical Commission for Africa

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- Strategy for the Harmonization of Statistics in Africa 2017–2026, by the African Union Commission and partners
 - African Charter on Statistics
 - *Reference Regional Strategic Framework for Statistical Capacity Building in Africa: Better Statistics for Improved Development Outcomes*, issued by the Economic Commission for Africa and partners in 2006
 - Africa Information Highway of the African Development Bank

Key frames of reference for integrating digitalization into the transformation and modernization process

- World Development Report 2021: Data for Better Lives
- “Data science and official statistics: toward a new data culture”, article by Stefan

Schweinfest and Ronald Jansen published in Harvard Data Science Review in 2021

- Digital Transformation of National Statistical Offices, by the Partnership in Statistics for Development in the 21st Century
- System-wide Road Map for Innovating United Nations Data and Statistics
- Digital Transformation Strategy for Africa 2020–2030

IV. Priorities and principles for transformation and modernization

At the African Conference on a Transformative Agenda for Official Statistics, held in 2015, five thematic areas for coordinated action by the members of the African statistical system were agreed upon:

- a) Coordination within and among the global, continental, subregional and national statistical systems;
- b) Communication on and advocacy of the value of official statistics;
- c) Innovation and modernization through a standard-based statistical business architecture;
- d) Integrating statistical systems and moving away from traditional siloed approaches of statistical agencies and related production processes;
- e) Capacity-building and training that are better adapted to the varying levels of maturity of national statistical systems, and national statistical offices that are less donor-oriented and more demand-driven.

These themes are integrated into the road map within a context of changing overall priorities, a revised concept of transformation and modernization and updated action planning. Consequently, utmost priority is placed on recognizing that engagement with statistical users at the national level and a wide range of national stakeholders is essential for: (a) driving national development through enhanced evidence-based decision-making; (b) generating funding for official statistics that is sustainable, domestically driven and more efficiently used; (c) optimizing strategies to develop and maintain trust in official statistics; and (d) solving critical supply-side challenges, such as by using administrative data, re-engineering surveys or applying innovative approaches to newly available data sources.

The successful transformation and modernization of national statistical systems is therefore best ensured by focusing on engagement with national users and integrating such efforts into all statistical business processes and into the process of determining national choices for transformation and modernization. National user satisfaction should be the primary performance indicator when it comes to transformation and modernization.

National statistical systems will increasingly need to broker and lead multilateral engagement with users, involving key national and often international stakeholders. This will require such systems to engage with actors outside traditional stakeholder communities to generate wider support and investment, to establish partnerships to resolve supply-side issues and to establish consensus on the development and role of official statistics in a specific country. Investing in strategies, capacity and training to maintain or improve such engagement will bring longer-term and more sustainable benefits than investment in technical capacity alone.

To support such engagement, emphasis must be placed on the development of non-technical and non-traditional infrastructure and skills. Effective user engagement is likely to require organizational cultures and mindsets that are outward facing and change oriented. This means that significant cadres of staff will need to be confident communicators, agile and innovative in providing solutions that meet the demands of national users, given the supply-side opportunities and challenges in modern data ecosystems. Senior management teams will need to be focused on statistical leadership both internally and externally, while these skills will also need to be acquired by an increasing number of junior staff.

4.1 Foundational enablers

For transformation and modernization to be effective, priority must be placed on ensuring that such a process can either kick-start or maintain a virtuous cycle of investment in official statistics. A set of mutually supportive foundational enablers should be seen as the core building blocks of success, as set out in table 3. Without these, technical improvements in national statistical systems will have limited impact, and virtuous cycles cannot be maintained. Action plans within the African statistical system should be focused on developing appropriate learning and capacity development activities to support the foundational enablers.

The foundational enablers are both the starting point and the means by which success is achieved and maintained. These enablers are particularly

important in establishing the shared desired state of all African national statistical systems to achieve high levels of user satisfaction based on continuous improvement, resilience and agility. Moreover, the foundational enablers provide the basis upon which the optimal elements of the desired state of a specific country can be agreed with stakeholders, including the inputs, outputs and governance-related arrangements that are appropriate, depending on the availability of funds and other aspects of the national context.

Legal frameworks will continue to be essential for the delivery of official statistics and to ensure the capability of producers of official statistics to function effectively and achieve professional independence and balanced autonomy in times of rapid changes. Thus, statistical laws and other regulations should shape and support the statistical production processes, related services,

Table 3: Foundational enablers for transformation and modernization in Africa

Foundational enabler	Description
Statistical advocacy and leadership	Advocacy and leadership drive success across the foundational enablers and the transformation and modernization process in general. As a priority, senior management teams of national statistical systems should focus on developing strategies for internal and external leadership and non-statistical skills. Leadership and advocacy also should be a core part of the skills developed by staff at other levels. This will be particularly important for securing the proper balance of technical and other skills in potential future leaders. Advocacy and leadership efforts also need to be targeted towards identifying the processes in which influence will be most useful within a national context, such as planning for results-based management and developing wider government planning tools. Leadership and advocacy efforts need to extend beyond the use of the national strategy for the development of statistics and include a shift in overall strategy to enable national statistical systems to be constantly proactive in influencing and responding to external contexts through engagement with stakeholders. This strategy should draw on experiences from outside the national statistical system and involve efforts to market and advocate the value of official statistics to a wide range of current and potential users and producers and other potential partners. National statistical systems should also be driving statistical literacy throughout society and identifying ways to shape the labour market. Staff of entities within those systems need to have the confidence to provide value added services such as statistical analyses and commentary.
Balanced autonomy	Alongside political independence driven by international standards, national statistical systems need the right level of autonomy for non-scientific decision-making. Proper autonomy will facilitate effective transformation and modernization and the overall agility of entities in those systems, for example regarding decisions affecting human resources or the use of finances. However, such independence needs to be balanced with institutional arrangements that facilitate effective engagement with government and parliamentary stakeholders on the primary needs of users, the provision of funding and the wider needs related to advocacy and political engagement. Choices about the level and type of autonomy need to be considered in depth, as do the implications of such autonomy for the effective operation of centralized and decentralized national statistical systems.

Development of national statistical systems	<p>While the legal establishment of a national statistical system is important for driving effective transformation and modernization, coordination mechanisms and the sharing of approaches are also essential to the operation of the system. If managed successfully, a highly integrated approach to statistical production and services involving the sharing of data, skills and stakeholder influence across government departments can be adopted within the national statistical system.</p> <p>Even in very centralized national statistical systems, an expansive community of data stakeholders will need to be managed, with the national statistical system playing an increasingly central role in an integrated national data system.^a The national strategy for the development of statistics is of fundamental importance, and enhanced support for some African countries may be required to optimize its design, in line with the road map. Moreover, efforts need to be made beyond the development of the national strategy to ensure that the national statistical system has influence over and are integrated into wider government mechanisms for financial and policy planning.</p> <p>Subregional and continental statistical systems will also continue to play an essential role in supporting the independence, capacity development and impact of national statistical systems.</p>
Mobilization of sustainable financial resources	<p>The availability of financial resources determines the overall level of ambition of national statistical systems regarding the transformation and modernization process in a specific country. Success in this area, in terms of optimizing domestic support and resources for official statistics, is highly correlated with success in the other foundational enablers.</p> <p>As set out in section 3, national statistical systems must prioritize support for national development priorities and prove their efficiency in the use of resources. Action is required at the national level through the other foundational enablers to establish a national consensus on statistics and to drive the efficient use of resources through other priority enablers (see section 4.2). It is also necessary to ensure perspectives from official statistics are adequately integrated into national financial planning and policy monitoring mechanisms.</p> <p>Action within the African statistical system is also required to ensure that financial resources continue to be monitored, in particular to identify:</p> <ol style="list-style-type: none"> a. Areas in which countries across Africa are falling short in obtaining domestic or international funds, in particular in terms of the longevity of financial commitments and the share of domestically provided funding. There also needs to be an assessment of the extent to which official statistics and data considerations are integrated into national financial planning tools^b and how levels of funding are being tracked, in particular in relation to financial plans in national strategies for the development of statistics; b. (b) The manner in which non-national financial support from external partners is being distributed across African countries, in terms of efficiency, coordination and applicability to the strategic focus of the road map.

^a In the World Development Report 2021: Data for Better Lives, four layers of data governance at the national and international levels are identified that should inform planning, in line with the road map: infrastructure policies (for example, regarding coverage of broadband networks); laws and regulations (in addition to statistical laws); economic policies (for example, anti-trust policies for data platform businesses); and institutions (recognizing that other organizations outside the national statistical system will need to support modern data ecosystems).

^b Integrated national financing frameworks could be a useful tool in that regard. At present, in most countries, such frameworks do not have a specific section on data and statistics, but national and international influence may be useful in ensuring that this issue is addressed. It may also be useful to identify potential links between these sections and other parts of the frameworks in which data are already present.

and deliverables across the foundational enablers, and help to enforce the proper implementation of the Fundamental Principles of Official Statistics in emerging digital data ecosystems. A sound legal framework, however, does not suffice and needs to be complemented by other measures and actions that may sustain the transformation and modernization of the national statistical system and eventually give rise to a flourishing national data ecosystem. Indeed, adapting the legal framework to emerging data ecosystems may take some time since the legislative and enforcement processes are often complex and have repeatedly proved to be practically and politically challenging. Therefore,

national statistical systems should also focus on developing institutional and organizational capacity, including common infrastructure, that encourages good practices among their staff and partners. They also need to respond quickly to opportunities, mitigate risks in meeting user needs, and cooperate effectively with a wide range of external stakeholders.

4.2 Priority enablers

A set of four priority enablers are also of major importance for strategic action planning and monitoring across the African statistical system.

Stakeholders across the system will need to focus on progress in these areas to achieve success in transformation and modernization:

- a) Decision-making about national road maps needs to be supported by an enhanced strategic toolkit, which should be designed to help in conducting consistent, internationally comparable assessments of the maturity of national statistical systems in terms of the implementation of the foundational enablers and the relevant outcomes. The toolkit will help in setting priorities, scheduling developments, making the right choices in terms of learning and capacity development, identifying the appropriate desired state of a national statistical system and its organizational capital and planning for the strategic use of digital technology in the transformation and modernization process. Joint action is required to develop a strategic toolkit to support the design of national road maps;
- b) There is a need for more efficient and sustainable approaches to learning and capacity development that are focused not only on traditional technical statistical capabilities but also on supporting suitable and agile responses by national statistical systems to the modern data ecosystem. Such approaches also need to have an additional focus outside the national statistical systems, with a view to finding opportunities to enhance statistical literacy across governments and integrate perspectives from official statistics into wider government developments. Joint action is required to develop approaches to learning and capacity development in support of national road maps;
- c) Derived from successful approaches to learning and capacity development, traditional and new types of organizational capital need be developed in ways that are relevant to each national context.

Organizational capital is defined as the sum of the inputs to official statistical processes such as financial resources, human capital, basic and technological infrastructure, management practices, the legal and institutional settings and how official statisticians influence statistical supply and demand issues. Transformation and modernization need to be implemented and sustained through new skills, infrastructure, partnerships and cultures relevant to modern data ecosystems. Joint action is required to identify the types of organizational capital needed to support national road maps;

- d) Digitalization will be at the heart of all plans for transformation and modernization, but investments therein need to be optimized according to national circumstances. Plans need to reflect the use of the strategic toolkit, supported by efficient and relevant learning and capacity development activities, and be appropriate to all levels and types of organizational capital at any given time. Joint action is required to support effective decision-making on, investment in and shared learning about the tailored use of digital technology to support national road maps.²⁶

The role of the foundational and priority enablers within the wider process of transformation and modernization is set out in figure III.

4.3 Using the enablers to drive effective outcomes

To ensure effective transformation and modernization, a virtuous cycle must be established and sustained as a primary goal. Such cycles optimize support for the overall process and outcomes of transformation and modernization and ensure that official statistics meet the needs of users as efficiently as possible. The maintenance of such a cycle is based on multilateral engagement with users,

²⁶ The report of the Organisation for Economic Co-operation and Development and the Partnership in Statistics for Development in the 21st Century entitled "Data flow analysis framework: guidelines for analysing data flows in national statistical offices" provides a framework to support this work. Available at https://paris21.org/sites/default/files/inline-files/DFAF_FINAL_WEB.pdf.

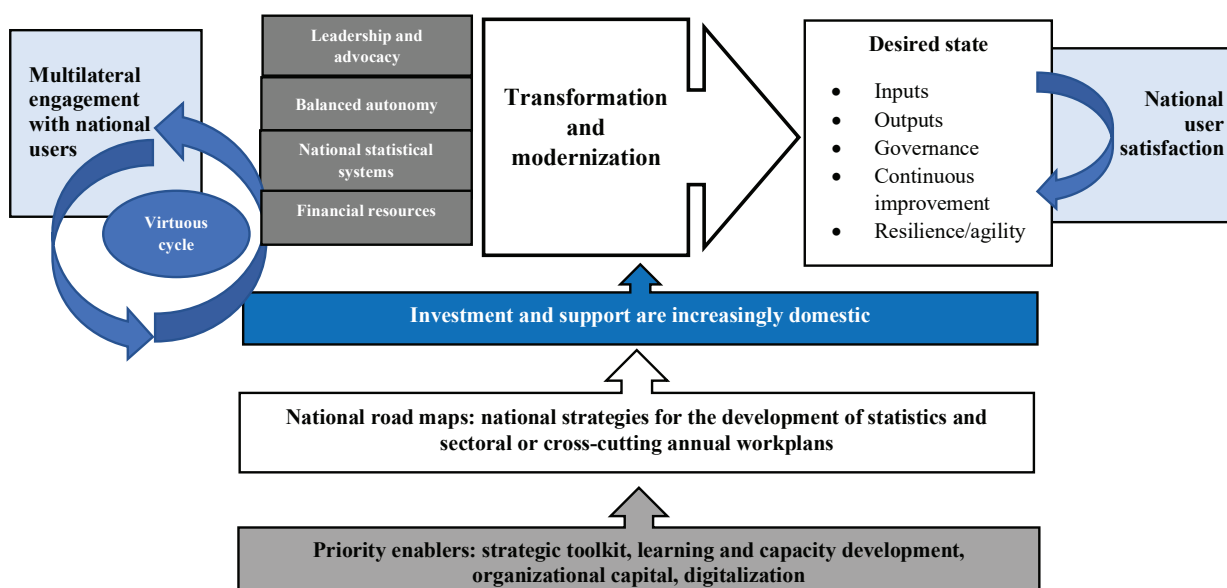
collaboration with a wide range of partners in national data ecosystems to ensure that the needs of users are being met, and prioritization of actions to support the foundational enablers.

As part of this cycle, national statistical systems should develop and actively manage a national consensus on official statistics and national road maps, primarily documented through national strategies for the development of statistics. Priority enablers can then be used to determine and navigate a path towards a nationally

determined desired state, which should include an end goal of continuous improvement, agility and resilience.

In the road map, it is envisaged that members of the African statistical system, international organizations and development partners will increasingly improve their support for this process through actions that strengthen the foundational and priority enablers.

Figure III: Enablers and outcomes of transformation and modernization

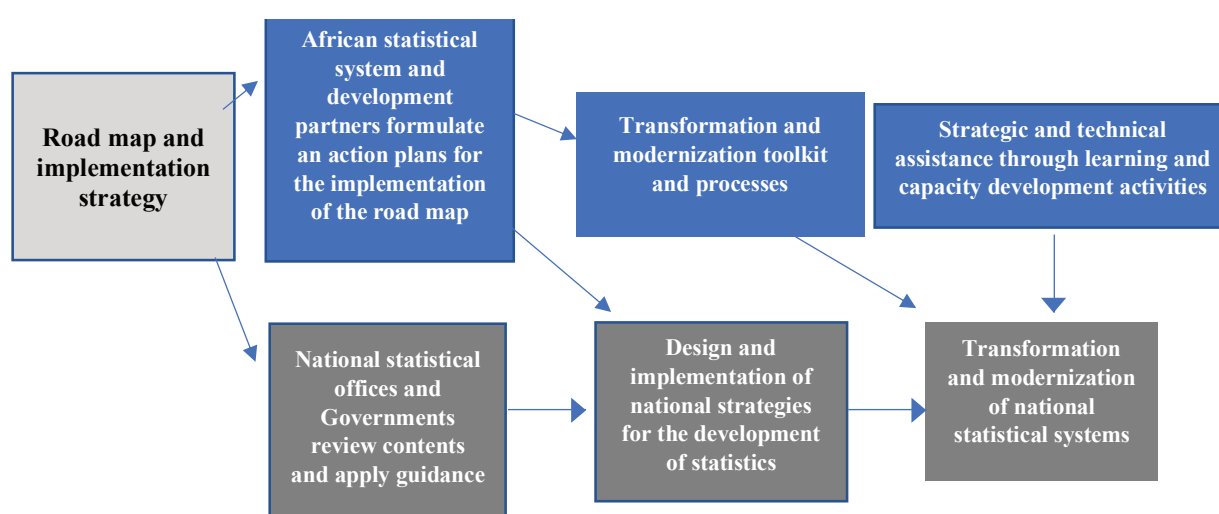


V. Implementation strategy

Countries can apply the priorities and principles of the road map to the design of their national strategies for the development of statistics or to the implementation of a current national strategy, for example, through annual or multi-year workplans, and in their efforts to seek support from external partners. An overview of the intended use and development of the road

map is given in figure IV.²⁷ It is expected that these efforts will be supported by action taken by members of the African statistical system to increasingly support effective planning and implementation of the transformation and modernization processes in African countries.

Figure IV: Impact of the road map on progress towards transformation and modernization in Africa



Note: Blue squares represent actions to be taken by members of the African statistical system; dark grey squares represent actions to be taken by national statistical systems.

Table 4: Key milestones of transformation and modernization in Africa

Time frame	Key milestones
2023–2025	Each country in Africa will have amended its national strategy for the development of statistics or related annual workplans on the basis of the principles and priorities of the road map and will use the strategic toolkit to guide decision-making once it becomes available, possibly by the end of 2023.
By end of 2023	Members of the African statistical system will have made available a complete strategic toolkit for transformation and modernization, which will include tools for strategic decision-making about digitalization. New and more efficient approaches to learning and capacity development and coordination of capacity development assistance will be in place and monitored.
By end of 2024	All African countries will have been assessed using either a pilot or a final version of a maturity assessment model for transformation and modernization. Learning and capacity development activities will have been planned and delivered based on these assessments and the principles and priorities set out in the road map. National strategies for the development of statistics will have been integrated into national results-based management and other tools for national policy planning and reporting.
2026	Progress made on the basis of the road map will be reviewed, and strategic planning will be adjusted accordingly by the Statistical Commission for Africa.

²⁷ Detailed guidance on how the road map should be integrated into a national strategy for the development of statistics is provided in annex II.

The expected key milestones for the transformation and modernization of official statistics in Africa are described in table 4.

5.1 Process

A range of actions are required at all levels to support the transformation and modernization of national statistical systems and thereby support sustainable development across Africa. Actions are expected to be taken by members of the African statistical system that are focused on meeting the needs of national users, including through international coordination, where appropriate, and optimizing the use and generation of resources within emerging data ecosystems.

An indicative strategic action plan is set out in table 5. A final detailed action plan for the implementation of the road map is to be drawn up by March 2023. The aim of the action plan will be to refine the definition of such

actions, determine ownership and set delivery dates to be negotiated among a broad range of stakeholders. As a first step, stakeholders are invited to review the road map's priorities and the indicative strategic and technical action plans, while considering the need to continue or adjust relevant activities in existing strategies that support transformation and modernization in Africa, such as the Strategy for the Harmonization of Statistics in Africa and many others, and to determine and agree upon new action in cases where there are gaps in planning.²⁸ There should be a focus on ensuring good coordination and synergy among all relevant capacity development partners. An overall monitoring framework should be developed that includes new and existing indicators from any relevant programme of work that supports the road map.

The final action plan is to be agreed upon by members of the African statistical system by March 2023. Progress will be reviewed every two years by the Statistical Commission for Africa,

Table 5: Indicative plan of action for the road map

2022–2023	2024	2025	2026	2027–2030
An action plan for the implementation of the road map will be developed and agreed upon.	Progress will be reviewed, and the road map will be adapted accordingly	Progress will be monitored	Progress will be reviewed, and the road map will be adapted accordingly	Future steps will be determined in 2026 by the Statistical Commission for Africa, in line with emerging developments relating to the demand for and supply of official statistics.
A strategic toolkit will be developed and tested.	The strategic toolkit will be used in the design of national strategies for the development of statistics and other strategies. A maturity assessment model will be used to monitor the development of national statistical systems, including their organizational capital, and to target learning and capacity development strategies.			
Learning and capacity development processes will be improved.	Approaches to learning and capacity development will be increasingly: <ol style="list-style-type: none"> Efficient and strategically targeted towards the foundational enablers and the organizational capital required for transformation and modernization; Nationally driven and delivered (including through unilateral, bilateral and multilateral channels and from non-traditional partners); (c) Supported through long-term financial assistance, with an increasing share of funding for national statistical systems being provided domestically as a key indicator of success. 			
The digitalization process will be supported through the provision of an increasing range of guidance, support and examples that enable national statistical systems to digitalize the right things at the right time, supported by adequate organizational capital.				
National strategies for the development of statistics (and other statistical workplans) and government strategies will increasingly reflect the objectives of the road map.				

²⁸ For example, there is a need to build on the useful guidance on user engagement provided in the “Guidelines for developing an integrated user engagement strategy for national statistical systems” of the Economic Commission for Africa. In developing the action plan, it would be useful to receive more feedback from countries on their experiences in applying the guidelines, to gather case studies and share global experiences, to link the learning experiences of countries involving similar challenges, and to develop an outward focus on multi-stakeholder engagement. Other examples of guidance include the United Nations statistics and data project on developing resilient and agile organizations within a national statistical system to meet post-COVID-19 data needs, agreed upon in August 2022. The beneficiary countries in Africa will be Burkina Faso, Burundi, Cabo Verde, the Comoros, Côte d'Ivoire, Egypt, Eritrea, Gabon, Namibia, the Niger, Senegal, South Sudan, the Sudan, Tunisia and Zimbabwe.

on the basis of which adjustments can be made. The approach to developing and agreeing upon the action plan will be based on the principle of subsidiarity. This aims to optimize efficiency by identifying the most appropriate actions at the subregional level, which will guide the regional economic communities in their provision of support at the relevant national, regional and global levels.

Implementation should not be considered as a task only for national statistical offices, partners across national statistical systems or the members of the African statistical system. By March 2023, it is expected that African finance ministers will have been made aware of and will have committed to the implementation of the road map. To strengthen the ability national statistical systems to support national development, in line with available resources, it is recommended that African Governments support the development of strategies for the transformation and modernization of official statistics on the basis of the principles and priorities set out in the road map, and specifically to ensure that ministries are in charge of planning:

- a) Work with national statistical offices to ensure that frameworks for measuring results and public policy initiatives, such as national development plans, sectoral strategies, ministerial programmes and local policies, are systematically and explicitly linked to a requirement for national statistical systems to support national priorities, which should also be explicitly set out in national strategies for the development of statistics;
- b) Work with national statistical offices, alongside a range of other relevant entities in national and international data ecosystems, to strengthen the capacity of administrative bodies in the use of results indicators and official statistics for reporting exercises and policymaking.

5.2 Planning strategic and technical actions

The overall process of transformation and modernization across Africa requires significant continued, new and adapted actions by members of the African statistical system focused on the foundational and priority enablers. This will allow for national statistical systems to have a long-term and sustainable impact and leverage optimal resources. However, it is proposed that a distinction be made between two types of actions:

- a) Strategic actions that support long-term planning and have an impact across transformation and modernization processes and the statistical business cycle. The impact will be long-term and cross-cutting and will directly and significantly support the establishment of virtuous cycles. Such actions need to be prioritized in planning for effective transformation and modernization. It is a focus of the road map and its implementation strategy and should influence planning across the African statistical system;
- b) Technical actions that lead to the development of specific parts of a statistical business process, such as the processing of a data source; of a statistical domain, such as the national accounts; or of other types of statistics, such as gender statistics. They relate to specific priority needs of national users. Priority technical actions to be taken at the regional level are a focus of the Strategy for the Harmonization of Statistics in Africa.

Technical developments alone are unlikely to have a sustained or transformative impact. Therefore, technical actions with strategic value should be a priority for investment. These include using digital technology or other innovations for a particular output or service to prove the overall value of official statistics to users.

An indicative strategic action plan is proposed in section 5.3. The action plan is to be reviewed and agreed upon by the African Development Bank, the African Union, the Economic Commission

for Africa and development partners, on the basis of which detailed plans can be developed and shared. Some activities will be monitored, and in some cases led, by the African group on transformation and modernization of official statistics. The process is also to be supported with input from subregional organizations and national statistical offices.

An indicative technical action plan for the development of traditional data sources is proposed in section 5.4.

5.3 Strategic action plan

Table 6 sets out the areas in which strategic action is required for members of the African statistical system to support effective transformation and modernization across the continent, in line with the priority enablers. Assistance from external partners is encouraged to enhance alignment of actions with the strategic action plan. The plan provides the basis for the development of detailed proposals and deadlines and the assignment of ownership for specific actions, including collaborative ownership to enhance coordination and efficiency.

Table 6: Areas in which strategic action is required to support transformation and modernization in Africa

Priority enabler	Areas in which action is required
<p>Development of a strategic toolkit and tailored integration of digitalization into national road maps</p>	<p>A strategic toolkit is required to assist national statistical offices and other stakeholders leading the development of national road maps in implementing effective strategic decision-making through the use of two main elements, namely, a maturity assessment model and a decision-making guide.</p> <p>To support digitalization, guidance on and support for decision-making about the best tailored use of digitalization at different levels of maturity of national statistical systems should be developed. This includes how and when to focus proportionately on the use of digital technology for improving surveys, the use of administrative data and the use of new digital data sources. Actions should involve planning to ensure that the proper types of organizational capital are available to support the use of digital technology, according to the overall resources of a national statistical system and its priorities for transformation and modernization.^a</p> <p>The focus of the maturity assessment model should be on establishing a baseline and assessing, as consistently as possible, progress made in the implementation of the foundational and priority enablers and the transformation and modernization process across African countries. Such a model will allow for:</p> <ol style="list-style-type: none"> Better prioritization of the use of resources and the sequencing of developments at the national level; Approaches to learning and capacity development that are better targeted towards groups of countries with similar challenges; More effective monitoring of and support for transformation and modernization at the continental level. <p>A detailed discussion and consensus among all countries about the different levels of assessment used in the model will be required in the first instance.^b An indicative framework for the further development of the model is provided in annex I.</p> <p>To support digitalization, indicators should be developed and integrated into the maturity assessment model, in line with the overall digitalization process, data science initiatives and the strategic learning needs of countries across Africa.</p> <p>A decision-making guide is also required to support strategic choices about the development of road maps by individual countries. Covering all elements of the path to transformation and modernization, lessons from around the world are needed on the advantages and disadvantages of certain choices, the likely challenges to implementation, the time frames for implementation and the establishment of theories of change. These could be combined with the maturity assessment model to provide a more complete toolkit for national statistical systems (see annex I).</p> <p>To support digitalization, based on an assessment of the needs and the existing practices across Africa, guidance should be provided on the advantages and disadvantages of the strategic and tactical choices to be made by African countries, best practices and other elements that need to be considered, such as the organizational capital required, links to the foundational enablers and a broad range of technological alternatives.^c Data quality and ethical issues should be key considerations in many choices regarding the use of digital technology.</p> <p>Based on the needs identified in the strategic toolkit and specific national needs, targeted learning and capacity development programmes for digitalization are then needed,^d in line with the enhanced learning processes and capacity development assistance anticipated in the road map (see the section in the present table on learning and capacity development). Learning activities should be focused on ensuring two distinct types of outcomes: (a) tactical gains for countries at lower levels of maturity in terms of transformation and modernization; and (b) strategic investment for countries at higher levels of maturity.</p> <p>In addition, reflection is required on how the development and implementation of a national strategy for the development of statistics, as a key tool for transformation and modernization, can be adapted in theory and used by stakeholders to support the implementation of the road map. Annex II provides an indicative mapping of the road map onto the main steps of the process of designing a national strategy.</p>

<p>Organizational capital for the modern era</p>	<p>The organizational capital national statistical systems will need to be developed in a flexible manner, be increasingly user-friendly and externally focused, and ensure effective support for core traditional approaches to official statistics and plans for modernization, in particular through digitalization. This will require retaining or strengthening some traditional core features, while introducing some substantive changes. A focus should be on optimizing returns based on minimal resources.</p> <p>Lessons learned from the successes of national statistical systems and other relevant entities in the public and private sectors should be reflected in written guidance,^e case studies, training programmes and other capacity development initiatives, and should influence the design of national strategies for the development of statistics and other strategies in the following areas:</p> <ol style="list-style-type: none"> Foundational enablers. Skills and nationally tailored institutional arrangements need to be focused on the development of the foundational enablers and the maintenance of virtuous cycles for official statistics. Specific action plans should be put in place to support each of the foundational enablers, namely, statistical advocacy and leadership, balanced autonomy, the development of national statistical systems¹ and the mobilization of sustainable financial resources (see table 3 for more details). The African group on transformation and modernization of official statistics is expected to play a strong role in supporting enhanced legal frameworks that cut across these enablers; Techniques for managing transformation and modernization. Best practices of such management techniques need to be identified, with a view to maintaining long-term effective strategies for change management and project and programme management and developing innovative and outward facing cultures and approaches to continuous improvement; Business process re-engineering. In many cases, transformation and modernization require business process re-engineering. Reflection is required on the design of business process models at the technical and organizational levels. Business process models plays a vital role in facilitating choices about transformation and modernization. Business processes need to be adapted to the road map and the wider needs of modern data ecosystems, including in terms of emerging ethical issues and processes for flexible responses to user needs; Human capital strategies for the digital era. National statistical systems need to adapt to and influence labour markets and have flexible approaches to the sourcing of a range of skills. Consideration is required on how to nurture and retain highly skilled junior staff, planning for the senior staff with the right skills and experience to be effective in leadership positions and developing adequate traditional and new skills among staff. The concept of human capital will be important, considering that the value of people goes beyond just individual skills to such areas as behaviours and ways of thinking. National statistical systems will also need to draw from the human resources of other organizations. The human capital of a wider data ecosystem should be accessed and managed. New generic career profiles for statisticians in Africa may be relevant, to ensure that adequate experience from outside the national statistical system is considered and valued. However, this needs to be balanced with an increasing recognition of the need to use human resources from other sectors and disciplines in a flexible manner and the need to develop new organizational structures and re-engineered business processes that are relevant to emerging data ecosystems; Core physical and technological capital. Action is needed to ensure that basic infrastructure is in place across all national statistical systems in Africa, including to ensure that buildings are fit for purpose and that power supplies and Internet connectivity can be maintained. ICT hardware and software also need to be reliable, incur manageable levels of risk, in particular in harsh environmental conditions, and be cost-effective; Development of external professional support networks. Independent oversight of and dedicated support for national statistical systems are often lacking at the national level. However, such support could have a significant impact on the sustainability of virtuous cycles. National or regional statistical societies and other types of professional bodies (including in economics and other disciplines) can support links with users, promote statistical literacy, provide partnerships in methodological research and influence statistical education in schools and universities. Such bodies can be crucial non-political partners in support of official statistics; they can fight for legitimacy, scientific independence and resources without being perceived as having a vested interest.
<p>Enhanced and sustainable learning processes</p>	<p>Action is required to ensure that learning processes are developed to drive greater efficiency in the use of available resources, including through greater savings in costs to reinvest in capacity development, and to ensure relevance to modern needs and the priorities identified for effective transformation and modernization. Action should be taken in the following areas:</p> <ol style="list-style-type: none"> Peer-to-peer and mutual learning must be enhanced, in particular within Africa. Groups of countries with similar learning needs should participate in relevant learning activities together, in particular to increase relevance and optimize incentives. The results of assessments using the proposed maturity assessment model could provide a basis for the planning of such learning activities; Strategies are needed to ensure that learning activities are gradually more locally embedded and enhance the statistical literacy of potential domestic users of official statistics. National statistical systems should become more independent in conducting learning activities within the system and with other national partners, or in direct partnership with other countries. At the same time, learning plans should allow for opportunities for statistical advocacy and help to develop statistical literacy outside of the national statistical system; In developing learning activities, expertise and experience from the world beyond official statistics should be leveraged. Such activities should be aimed at the transfer of knowledge that is relevant to the skills and perspectives that are required in evolving data ecosystems. They should be used as an opportunity, wherever relevant, to improve outward facing cultures in national statistical systems; Sustainability should be embedded as a guiding principle in all learning activities. Learning activities should be used for and linked explicitly to the provision of benefits to national users and the sustaining of virtuous cycles for official statistics.

Improved capacity development assistance	<p>Action is required to further strengthen the coordination and impact of the capacity development assistance provided by members of the African statistical system and partners in relation to:</p> <ol style="list-style-type: none"> Monitoring, coordinating and communicating the planning and delivery of technical and strategic action in the context of the road map, in particular in terms of ensuring that planning and reporting are well-coordinated including with the delivery of wider (non-statistical) development assistance to African Governments; Ensuring that technical and strategic guidance and information about sources of assistance for transformation and modernization are more accessible and more frequently used; Improving the types and relevance of participation in international developments regarding official statistics, including a strong African voice and presence in global developments, engagement with junior staff and greater inclusion of expertise and partners from beyond the world of official statistics; Establishing longer-term commitments and a continuous provision of resources to individual countries or groups of countries; Establishing commitments to improving learning processes. A review of current good practices, challenges and opportunities in relation to the road map would provide a starting point for the development of enhanced planning for the delivery of capacity development assistance. The presence of United Nations resident coordinators in many countries should be considered as an opportunity to support enhanced coordination of capacity development among multiple stakeholders.
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a The African group on transformation and modernization of official statistics is expected to play a strong role in the digitalization process, in coordination with the Committee of Experts on Big Data and Data Science for Official Statistics of the United Nations.

b In a report issued in April 2022 by Open Data Watch, the Data for Development Network and the International Development Research Centre, entitled "Better measurement and monitoring of data for development: a stocktaking report", it was stated that "none of the indexes or tools currently available provide balanced coverage of government data systems, suggesting that a more comprehensive measure or a combination of complementary indexes and tools are needed to fully capture the functions of the data ecosystem".

c For example, one could consider the strengths and weaknesses of the use of mobile phones as data collection instruments or as data sources in specific national contexts, given that ownership of digital phones is low in many countries.

d Such programmes should be supported, where relevant, by the regional hub for data science in Rwanda and by a wide range of potential partners outside the world of official statistics, such as the United Nations Pulse Labs and other initiatives involving the use of digital data for the public good.

e The "Guidelines for developing an integrated user engagement strategy for national statistical systems" of the Economic Commission for Africa provide a basis for the development of a more sophisticated workplan to support relevant organizational capital that will enable multi-stakeholder engagement aimed at developing and managing the national consensus on official statistics envisaged in the road map.

f The report of the Partnership in Statistics for Development in the 21st Century entitled Coordination Capacity in National Statistical Systems: A Background Report provides an example of existing work that can be built upon to develop solutions for Africa in this regard.

Box 6: Capacity development assistance for measuring trade in services in West Africa

The United Nations Conference on Trade and Development, in partnership with the Statistical Commission of the West African Economic and Monetary Union and the Central Bank of West African States, developed a complete cradle-to-grave system for the measurement of statistics on trade in services in that region. This was an in-depth, comprehensive, long-term project that ran for more than five years and involved international and subregional organizations. The success of the project was a result of close and coordinated interaction with countries over a sustained period, but also because international standards were implemented in a flexible manner and adapted to national circumstances. For example, questionnaires were designed to align with the standards and definitions set out in the Manual on Statistics of International Trade in Services 2010 of the United Nations and were rigorously tested with enterprises in West Africa before finalization. A common, generic, legal instrument was produced to provide a sound legal basis to support the collection of the data. Each country can adapt this instrument and tailor it to its own national specificities.

Box 7: Increased self-reliance of national statistical systems in the training of staff

As part of the work of the Global Network of Institutions for Statistical Training, there have been discussions on how national statistical offices and the national statistical systems can become more self-reliant in terms of ensuring that staff have the skills and knowledge needed to do their jobs well. In many countries, national statistical training institutes that are either based at the national statistical office or are more independent play a role in this regard. However, in many low-resource countries, such institutes do not have the means to fulfil this need. In Africa, there are regional training institutes that can help.

However, according to the Global Network, national statistical systems should still consider initiatives to increase self-reliance, at least for training on key subjects, which should be conducted regularly at the national level. Such activities include strategic and consistent onboarding of new staff, regular refresher courses on data confidentiality, legal frameworks, data quality and other core areas of knowledge relevant to the basic approaches used in official statistics and emerging data ecosystems in specific countries, including new computing skills, such as the ability to access and use data from non-traditional sources for the production of official statistics, and stakeholder engagement and communication skills. Moreover, the number of staff with key methodological skills is often limited. This presents a high risk should those staff become unavailable. There should therefore be an increased focus on the exchange of information and active discussion groups on key topics among national statistical offices and other entities in national statistical systems, with links to globally available e-learning courses being a useful alternative approach to consider.

Use of innovative approaches and stronger engagement with policymakers

The Data for Now initiative is being delivered as part of a collaboration between the Global Partnership for Sustainable Development Data, the World Bank, the Statistics Division of the United Nations and the Thematic Research Network on Data and Statistics of the Sustainable Development Solutions Network. It helps countries to increasingly use innovative methods, sources and tools in the production of statistics. Another important aspect is that national statistical offices are strongly encouraged to engage with policymakers on priority data needs before support under the initiative is designed and carried out.

There are many examples of good practices in relation to well-coordinated, high impact and long-term commitments to capacity development assistance in Africa. An example is provided in box 6.

Learning and capacity development processes in which the principles and priorities of the road map are embedded are also already being developed and provide inspiration for action planning for transformation and modernization. Examples are provided in box 7.

5.4 Technical action plan

Table 7 sets out the proposed technical actions that are of high priority to support the priorities and principles of the road map. The actions are based on a recognition of the continuing value of survey and administrative data to the development of national policies, but also on the understanding that appropriate modernization is required through digitalization that is tailored to national circumstances and takes into account improvements to traditional data sources alongside the targeted use of a range of newer

data sources and digital technologies. Actions should be supported by inputs from regional and subregional organizations and national statistical offices. Actions are envisaged that can be combined with, and are supportive of, both technical actions that are envisaged in the Strategy for the Harmonization of Statistics in Africa, and strategies that support the technical development of statistical business processes and specific sectoral statistics.

Other technical measures are expected to be planned and delivered simultaneously. These should be based on national or subregional needs to address policy priorities and be developed in accordance with countries' emerging ideas and plans for transformation and modernization. The research and development of methodologies and systems to drive innovation and efficiency in official statistics using geospatial technologies, big data and citizen generated data will continue to constitute important areas for support. Developments in these areas are expected to inform the development of the road map's strategic toolkit and the design and development of organizational capital.

Table 7: Recommended priority technical actions to support road map implementation

Area	Action
Administrative data	<ul style="list-style-type: none">a. Collect the latest and consolidate existing evidence about the use of administrative records in African countries and beyond in order to:<ul style="list-style-type: none">i. Identify good practices in the development and use of administrative data systems in African countries;ii. Identify costs, benefits, time frames and risk mitigation strategies, including for bottlenecks hindering implementation, such as those arising from legal, infrastructure and political issues, and obstacles to the development of organizational capital;iii. Integrate outcomes into the development of the strategic toolkit;iv. Provide strategic guidance to African countries on strengthening administrative data systems, including by identifying data gaps that have the most potential to be filled by administrative data in the short, medium and long terms and those that can be best addressed by alternative sources of data or in combination with administrative data;b. Develop standard tools to assess the quality of administrative data in Africac. Develop, update and support learning around detailed manuals and guidelines on generating, processing, analysing and disseminating administrative data.
Survey methodologies	<ul style="list-style-type: none">a. Collect the latest and consolidate existing evidence on modernized survey methodologies used in Africa in order to:^a<ul style="list-style-type: none">i. Identify good practices in survey methodologies and survey integration and reconfiguration;ii. Identify costs, benefits, time frames, and risk mitigation strategies, including for bottlenecks hindering implementation, such as those arising from legal, infrastructure and political issues, and obstacles to the development of organizational capital;iii. Make recommendations on the development of financing mechanisms for data collection that ensure sustainability;iv. Identify the advantages and disadvantages of technology that can be used for data collection in different types of surveys, including integrated surveys, and assess their suitability to various African contexts;v. Integrate outcomes into the development of the strategic toolkit;vi. Provide strategic guidance on strengthening the use of surveys in Africa, and identify data gaps that can be best addressed through the use of surveys in the short, medium and long terms and those that can be best addressed by alternative data sources or in combination with survey data.b. Develop, update and support learning around detailed manuals and guidelines on the use of appropriate survey methodologies in African countries.

a Such a review should not be limited to national statistical offices and should include other entities in national statistical systems, as well as other actors in the wider data ecosystem that use surveys to address national and international policy priorities.

VI. Conclusion

There is considerable diversity among national statistical systems and national data ecosystems and a variety of resources and policy contexts to be considered in African countries. It is therefore recognized that the transformation and modernization of official statistics, including approaches to digitalization, require national strategies that are highly tailored to national, and often subregional, circumstances.

However, there are common challenges, opportunities and goals that African countries and development partners can jointly address and monitor. Such coordinated action should benefit the sustainable development of all countries in Africa and should be founded on the principle of mutually beneficial support.

The following priorities are identified in the road map to guide the transformation and modernization of official statistics in Africa:

- a) Building on and learning from efforts in Africa and beyond to transform and modernize official statistics;
- b) Developing virtuous cycles for official statistics, based on user-focused strategies that target essential and value-added services for policymakers, building national statistical systems that are resilient and agile in meeting user needs, and integrating official statistics into national resource planning and monitoring;
- c) Developing and maintaining expansive multi-stakeholder networks to support transformation and modernization, learning processes, and the delivery of solutions to meet user needs;
- d) Focusing on strategies that target four foundational enablers: statistical advocacy and leadership, balanced autonomy, the development of national statistical systems, and the mobilization of sustainable financial resources;
- e) Developing organizational capital that is relevant to the level of development and contexts of specific national statistical systems in the areas identified in the foundational enablers and in relation to digitalization, other technological developments, basic physical infrastructure, human resources (including technical and management capacity), business process designs, and professional support networks.

In order to efficiently and effectively support these priorities and the development of national road maps for transformation and modernization, it is recommended that members of the African statistical system develop and monitor an action plan for the implementation of the road map, to achieve the following high-level aims:

- a) Develop a strategic toolkit for countries to use in designing and implementing appropriate national road maps, with a view to guiding capacity development and the identification of priority areas of investment. Key elements include a maturity assessment model and a decision-making guide;
- b) Develop guidance and support for the development of organizational capital that is relevant to modern data ecosystems in a variety of national contexts;
- c) Support the improvement of learning processes for national statistical systems, including through more South-to-South learning among peers with similar learning needs, more sustainable and locally driven solutions, and collaboration with a wider group of partners from domains outside that of official statistics;
- d) Provide more efficient capacity development assistance, including through better coordination and communication, longer-term commitments, and a focus on supporting the priorities identified in the road map;

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- e) Develop technical guidance on survey methodologies and the use of administrative data that are relevant and adaptable to national contexts and plans for digitalization;
 - f) Seek to integrate a measured approach to digitalization and data science into the action plan.

Annex I

Framework for a strategic toolkit for transformation and modernization

The road map for the transformation and modernization of official statistics in Africa includes plans for the development of a strategic toolkit to support decision-making by national statistical systems and their partners.

The concepts, principles and priorities set out in the road map provide the basis for the development of a maturity assessment model for African national statistical systems. A decision-making guide is also proposed that should help countries to understand the options for and implications of nationally tailored paths to transformation and modernization and to develop and implement national strategies for the development of statistics.

The use of the maturity assessment model should also provide a baseline for the measurement of progress and future evidence on the basis of which the transformation and modernization of national statistical systems in Africa can be consistently guided and monitored to support sustainable development across the continent.

An indicative high-level framework for the model is set out in the figure provided in the present annex. The model requires significant further development, including through:

- a) A review of existing quantitative indicators^{29 1} that are relevant to the road map, including gaps in data and methodology, to inform the development of the model;
- b) A review of qualitative assessments conducted as part of recent peer reviews or other assessments, and consideration of ways to improve consistency in approaches, in line with the road map;

- c) The application of available qualitative and quantitative indicators to a pilot framework for a sample of countries, to guide the development of the model;
- d) The design of new quantitative or qualitative indicators that are relevant to the road map, with proposed methodologies to assess the indicators consistently across countries;
- e) Deciding on the most useful and practical number of levels of maturity to be described. On the basis of this categorization, key performance indicators for progress could be established at the regional, subregional and national levels to monitor the proportion of countries that are achieving effective transformation and modernization and to identify areas in which further focus on learning and capacity development is required.

At the highest level of maturity, the World Development Report 2021: Data for Better Lives of the World Bank can provide a basis for many of the indicators required. The report provides inspiration for many long-term objectives of African countries and can inform the process by which those goals can be reached. However, considerable adaptation to African circumstances is required, and the facilitation of feasible and proportionate pathways for the transformation and modernization of all countries in Africa needs to be ensured.

Depending on the outcome of the work described above, further investment may be required to improve methodologies or the availability of data for the development of indicators. This may include new consistent approaches to qualitative assessments of national statistical systems or new methods to measure priority indicators across Africa, such as user satisfaction in official statistics.

^{29 1} The statistical capacity monitor of the Partnership in Statistics for Development in the 21st Century compiles most of the available quantitative performance indicators. Available at <https://statisticalcapacitymonitor.org/>.

The development of a prototype of the model should serve as the foundation for work on a decision-making guide, which should include lessons and expertise to guide decision-making on priorities, risks, scheduling and the costs and benefits of various options available to enhance the maturity of national statistical systems.

An adapted version of the model could also be applied to the production of statistics in specific domains. This will help to ensure that domain approaches are in line with national road maps and the principles of the present road map, and may be particularly useful in supporting the

Framework for the development of a maturity assessment model and decision-making guide
Progress of all African countries to be assessed across each category

Transformation and modernization		Indicative characteristics of indicators based on the road map
Foundational enablers	User engagement	National statistical systems move from a regular formal system of user engagement towards a multi-stakeholder, highly dynamic and responsive system of informal and formal relationships.
	Mobilization of sustainable financial resources	Countries gradually increase government funding for some core statistical activities and move towards funding for an increasingly sophisticated range of outputs. International funds are decreasingly important.
	Balanced autonomy	The institutional position of the national statistical system moves towards enhanced arrangements that are relevant to national contexts that optimize independence, agility, resilience and roles that are tailored to the national data ecosystem.
	Development of national statistical systems	A shift is made from a nascent concept in law towards the development of legal frameworks and more sophisticated institutional arrangements for shared approaches to statistical activities, establishing interoperability between data systems, and enhancing the joint influence of national statistical systems to allow for flexibility and efficiency in the use of data sources.
	Statistical leadership and advocacy	The system moves from building these skills in senior managers towards doing so across many staff levels, an increasing number of staff become outward focused, and an increasing number of stakeholders outside official statistics promote the value of official statistics.
Priority enablers	Strategic toolkit	Decision-making about transformation and modernization is increasingly successful and informed by the road map's strategic toolkit and learning from global and African experiences.
	Learning and capacity development	Learning processes and capacity development are increasingly managed locally and are jointly carried out with other relevant national statistical systems, and training programmes are increasingly based within the national statistical system. Long-term commitments from partners result in measurable success in transformation and modernization.
	Organizational capital	The development of inputs to the statistical process, such as human capital, culture, management, and basic and technological infrastructure, which should include a focus on the needs of modern data ecosystems, is increasingly aligned with national road maps and the African road map.
	Digitalization	Over time, the use of digital technology can be increasingly shown to add value for users and drive long-term efficiency, relative to the unique position of the national statistical system within the national data ecosystem. See also table 6 of the present road map, in which areas are identified to ensure the integration of data science and digitalization into the transformation and modernization process.

Outcomes	Outputs	Core indicators for national policymaking are increasingly harmonized with those of other countries, where relevant. All statistics are increasingly produced to international standards and an increasing range of products and services are delivered to users in accordance with the required dimensions of quality.
	Governance	There are improvements in areas such as management practices, organizational structures, quality management, the management of human resources and business process models.
	User satisfaction	Comparable indicators for user satisfaction, trust and the use of official statistics in policymaking across different African countries are required.

regional or subregional harmonization of specific sectoral statistics, given the known limitations of technical knowledge alone in influencing

outcomes, and in highlighting differences in approaches within and between countries to producing statistics in various domains.

Annex II

Indicative mapping of the road map onto the process for designing a national strategy for the development of statistics

An initial and indicative view, requiring further detailed consideration and development, of

how the road map should be used during the process for designing national strategies for the development of statistics is set out in the table below.

Indicative view of how the road map should be used in designing national strategies for the development of statistics

Stages of the design of national strategies for the development of statistics ^a	Action to be taken by Governments and national statistical offices	Action to be taken by members of the African statistical system (upon request by countries and according to available resources)
<p><i>Preliminary stage</i></p> <p>This stage involves creating an enabling environment for the work ahead, including:</p> <ul style="list-style-type: none"> a. Establishing policy and organizational frameworks; b. Increasing awareness among and ensuring the participation of stakeholders; c. (c) Formulating a plan of action for the design of the national strategy. 	<p>The following actions could be taken on the basis of the road map:</p> <ul style="list-style-type: none"> a. Ensuring that senior managers in the national statistical office and other entities in the national statistical system have enhanced skills in leadership and advocacy; b. Facilitating the development of the national strategy by making significant efforts to engage with political actors and a wide range of stakeholders within national and international data ecosystems; c. Using the priorities and principles of the road map as guidance in identifying and engaging with stakeholders and situating the needs of users and the foundational enablers at the heart of the process. 	<p>The following actions could be taken on the basis of the road map:</p> <ul style="list-style-type: none"> a. Supporting relevant learning and capacity development; b. Monitoring the emergence of needs and adapting accordingly strategic tools and processes for learning and capacity development.
<p><i>Design stage</i></p> <p>This stage involves firmly establishing the basis for the design of the national strategy, which is broken down into three phases:</p> <ul style="list-style-type: none"> a. Assessing the national statistical system; b. Envisioning the strategic direction of the national statistical system; c. Establishing an action plan for the design of the national strategy. 	<p>The following actions could be taken on the basis of the road map:</p> <ul style="list-style-type: none"> a. Using the priorities and principles and the key frames of reference identified in the road map as guidance to determine the desired state of the national statistical system and the steps to achieve it, in collaboration with a wide range of stakeholders; b. Using the strategic toolkit for transformation and modernization, once it is ready. 	<p>The following actions could be taken on the basis of the road map:</p> <ul style="list-style-type: none"> a. Supporting the assessment process; b. Monitoring the emergence of needs and adapting accordingly strategic tools and processes for learning and capacity development.

Stages of the design of national strategies for the development of statistics ^a	Action to be taken by Governments and national statistical offices	Action to be taken by members of the African statistical system (upon request by countries and according to available resources)
<p>Deployment stage The deployment stage involves setting into motion the programmes and activities identified in the national strategy. The national strategy, the frameworks for measuring strategic action and results, and the implementation plan are disseminated and communicated to all relevant stakeholders, including those in specific sectors or areas of specialization. Resources are mobilized and action plans are carried out by ministries or agencies. The implementation and, more important, the results, are monitored routinely to inform changes or updates in terms of the strategy, priorities, actions to be taken or inputs, where necessary.</p>	<p>As indicated in the road map and in guidance by the Partnership in Statistics for Development in the 21st Century, national statistical systems must remain flexible. Strategic management should be a continuous process, involving mechanisms to monitor and evaluate progress, review the national strategy and make modifications. The road map also sets out principles and priorities for ensuring effective transformation and modernization through proactive engagement with multiple stakeholders during the implementation of a national strategy, with a sharp focus on understanding and managing the value that society places on official statistics.</p>	<p>The following action could be taken on the basis of the road map:</p> <ol style="list-style-type: none"> a. Supporting relevant learning and capacity development; b. Monitoring the emergence of needs and adapting strategic tools and processes for learning and capacity development accordingly; c. Monitoring the provision of funding.

a As per the guidelines of the Partnership in Statistics for Development in the 21st Century.

