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SIFA
Skills Initiative for Africa
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STRENGTHENING SKILLS ANTICIPATION AND MATCHING IN AFRICAN UNION MEMBER STATES

A GUIDANCE NOTE

2025

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FOREWORD

We are pleased to present this joint African Union (AU)/International Labour Organization (ILO) guidance note on strengthening skills anticipation and matching in African Union Member States. It is a comprehensive document that builds on the invaluable experiences and insight gained from the Skills Initiative for Africa (SIFA) Skills Anticipation Project and is a testament to the collaborative efforts of the African Union Commission (AUC), the African Union Development Agency (AUDA-NEPAD) and the ILO in addressing the critical issue of skills mismatch in Africa.

The SIFA Skills Anticipation Project has been instrumental in piloting innovative approaches to skills anticipation in several African countries. Through this project, National Action Plans have been developed and adopted by the governments of Eswatini, Ghana, Tanzania, Zambia and Zimbabwe. These plans are designed to strengthen national skills anticipation systems and ensure that they are responsive to the evolving demands of the labour market.

A key highlight of this initiative has been the capacity development of more than 240 labour market and skills development practitioners from 16 African Union Member States. These practitioners have been trained in skills anticipation, measurement of skills mismatch and the application of sector-based skills anticipation methodologies. This capacity-building effort is crucial for the sustainability and effectiveness of skills anticipation systems across the continent.

The establishment of Inter-Ministry and Tripartite-plus National Task Teams in Eswatini, Gabon, Ghana, Tanzania, Zambia and Zimbabwe has further strengthened the governance and coordination of skills anticipation activities. These task teams have played a pivotal role in guiding project activities and developing measures to anticipate future skills needs. In response to the COVID-19 pandemic, the project conducted rapid assessments of reskilling and upskilling needs in several countries, including Cameroon, Ghana, Kenya, Namibia, Nigeria, South Africa, Uganda and Zambia. The findings and recommendations from these assessments have been published and are available on the ILO publications website. Notably, in South Africa, the recommendations were incorporated into the country's overall COVID-19 recovery response.

The Continental Conference on Skills Anticipation and Matching held in September 2021 was a significant milestone. The conference culminated in a communiqué calling on ministers of labour and ministers of education to use their political and convening powers to raise awareness about the importance of skills anticipation in aligning skills development with labour market needs.

This guidance note is the result of the dedicated efforts of many individuals and organizations. We extend our gratitude to the Zimbabwe Economic Policy Analysis and Research Unit for drafting the compendium, and to Ms Alice Vozza, Ms Naomy Lintini, Ms Unami Dube, Ms Sabine Klaus, Ms Bolormaa Tumurchudur-Klock, Ms Olga Strietska-Ilina, Ms Christine Hofmann and Mr Takaaki Kizu for their technical guidance and review.

We believe that this guidance note will serve as a valuable resource for AU Member States in strengthening their skills anticipation and matching systems in support of the implementation of the Continental TVET Strategy (2025–34) and the AU-ILO Youth Employment Strategy. By doing so, Member States, along with employers and workers, can better align skills development with labour market needs, ultimately contributing to sustainable economic development across Africa.

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ABBREVIATIONS

AU	African Union
AUC	African Union Commission
AUDA	African Union Development Agency
CEDEFOP	European Centre for the Development of Vocational Training
ILO	International Labour Organization
LFS	Labour force survey
LMIS	Labour market information system
NEPAD	New Partnership for Africa's Development
NTT	National Task Team
OECD	Organisation for Economic Cooperation and Development
PES	Public Employment Services
SAM	Social accounting matrix
SENAI	Serviço Nacional de Aprendizagem Industrial
SIFA	Skills Initiative for Africa
STED	Skills for Trade and Economic Diversification
TVET	Technical and vocational education and training

1

INTRODUCTION

1. Introduction

1.1 Purpose of the guidance note

The guidance note has been developed for African Union Member States who wish to establish a skills anticipation and matching system or strengthen an existing one. It serves as practical guidance for designing and implementing skills anticipation and matching policies, programmes and measures, and on how to incorporate these into broader socio-economic development agendas and strategies.

The specific objectives of this guidance include the following:

- identifying key elements to consider when developing a coordinated approach to skills anticipation and matching processes as integral elements of labour market information systems (LMIS);
- defining data collection methods that AU Member States must implement as a minimum to generate useful information on current and future labour market skills needs. This will help achieve a better balance between skills supply and demand and promote inclusive economic development through targeted skills investments;
- providing guidance on the role of key institutions in the coordination and governance of skills anticipation and matching within existing LMIS;
- offering a framework and methodological steps to guide Member States in systematically analysing and reviewing governance, coordination and accountability mechanisms for skills anticipation and matching, and identifying areas that need strengthening;
- promoting dialogue among stakeholders to ensure a shared understanding of policy directions and interventions needed to address systematic skills challenges. This includes providing guidance on:
  - policy objectives for skills anticipation and matching;
  - ownership of skills anticipation and matching processes and results by all stakeholders;
  - advocacy for using skills anticipation results in policy formulation for education and training, industrialization, employment, active labour market policies nd labour migration, among others;
  - access to and structured dissemination of skills anticipation results to ensure wide-ranging impact;
  - strategies for financing skills anticipation measures.

The guidance note also highlights the key components of LMIS that need strengthening to adequately identify and anticipate current and future skills needs. Information on labour market trends and anticipated skills needs informs and shapes skilling, upskilling, reskilling and other skills matching policies for the current and future world of work. Thus, achieving key economic and social goals in African countries should be anchored in appropriate skills development, and informed by skills needs assessment and anticipation initiatives.

The guidance note builds on the experience in the Skills Initiative for Africa (SIFA) Skills Anticipation Project pilot countries, which have gone through the process and drawn up National Action Plans on strengthening skills anticipation systems.

1.2 Target audience of the guidance note

This guidance note is aimed at AU governments, particularly their ministries of labour and social partners, that is, organizations of employers and of workers; ministries of education and institutions that provide training, including TVET institutions; policy-makers working on education and training; skills agencies; Human Resource Development Councils; national statistics offices and other players in national statistics systems that generate/compile LMI; academic and research institutions that analyse LMI data drawn from the LMIS and disseminate it to broader users of LMI.

1.3 Context informing the development of the guidance note

Rapidly evolving skills needs raise challenges for labour market and training policies in AU Member States that are contributing to skills mismatch. **Skills needs are changing because of technological advancements and digitalization; COVID-19; multiple crises on the continent; globalization and trade, climate change, demographic change and migration.** In most African countries, skills shortages exist alongside large numbers of college graduates who are facing difficulties in finding jobs. Some degree of misalignment between the supply of and demand for skills is inevitable, particularly in the short run and in the context of dynamic transformations. However, persistent skills mismatches and shortages, which are common in many African countries, are of key concern to the African Union Commission (AUC). Skills shortages can, for example, constrain the ability of firms to innovate and adopt new technologies, while skills mismatch more generally reduces labour productivity. Individuals are also affected by skills mismatch in the form of higher risk of unemployment, lower wages, lower job satisfaction and poorer career prospects.

"Skills needs are changing because of technological advancements and digitalization; COVID-19; multiple crises on the continent; globalization and trade, climate change, demographic change and migration."

Skills mismatch, lack of job creation and poor working conditions, and the resultant high unemployment, especially among young people, undermine the centrality of young people to socio-economic development on the African continent as envisaged by the African Youth Charter (African Union 2006). The Charter highlights the importance of education and skills development. The African Union Continental Strategy for Technical and Vocational Education and Training (African Union 2018), currently updated as the **Continental TVET Strategy (CTVET 2025–34)**, also observes the challenges of underskilling, skills mismatch, low institutional capacity and lack of decent jobs that African populations are facing. The lack of skills anticipation and forecasting to take account of emerging trends that influence the world of work, such as digitalization (including AI), energy transition and climate change, has also been highlighted. The **ILO-AU Youth Employment Strategy** adopted in 2024 points to the growing problem of youth unemployment and underemployment as one of the main socio-economic development concerns of most African governments – despite economic growth on the continent.

The AUC has also called for a Decade of Accelerated Action on Education and Skills, to speed up implementation of adopted strategies and act upon the "skills revolution" called for at the Africa Creates Jobs Conference in November 2021. Through the "Africa Creates Jobs" platform, concrete actions have been taken to produce transformative results in Africa through TVET and build a skilled, technical and innovative workforce for the 21st-century economy. During the African Year of Education in 2024, the first Africa Skills Week took place in Ghana, with the aim for it to become an annual event.

[1] See SIFA, "Skills Initiative for Africa" and ILO, "Skills Initiative For Africa".

The vision of the African Union is that of "an integrated, peaceful and prosperous Africa, driven by its own people to take its rightful place in the global community and the knowledge economy". Embedded in this vision is the development of the continent's human resources. To fulfil it, the Skills Initiative for Africa (SIFA)[1] sought to strengthen the occupational prospects of young people in Africa.

Through the SIFA project, the AUC and the African Union Development Agency (AUDA)-New Partnership for Africa's Development (NEPAD) convened, with technical support from the ILO, the **Skills Anticipation and Matching in Africa virtual continental conference from 15-17 September 2021**.

The objective of the conference was to raise awareness about the strategic role that skills anticipation and matching plays in guiding labour market actors in identifying and planning future skills needs to avoid potential gaps between skills demand and skills supply. In this regard, the SIFA project contributed to the adoption of skills anticipation as an integral part of LMIS, which will foster the achievement of the AU vision. The Conference Communiqué, among other recommendations, called on ministers of labour and ministers of education to use their political and convening powers to raise awareness of the important role that skills anticipation plays in aligning skills development to labour market competency needs and towards minimizing skills mismatch.

The SIFA project began with eight countries (Cameroon, Ethiopia, Ghana, Kenya, Nigeria, South Africa, Togo and Tunisia), which were selected as pilot countries. The expected results of this initiative included the following:

- greater capacities of selected institutions to provide employment-oriented skills development;
- improved access to employment-oriented skills development for young people, in particular for women, students from low-income groups, refugees and migrants;
- increased participation in the design and delivery of employment-oriented skills development programmes by the private sector; and
- lessons learned and best practices disseminated at national, regional and continental level.

The importance of skills anticipation and matching was re-affirmed by the **4th Ordinary Session of the Specialized Technical Committee on Education, Science and Technology** held from 29 August to 2 September 2022 in Addis Ababa, Ethiopia, where **the Council of Ministers "requested the Commission, AUDA-NEPAD and Partners, to support Member States in strengthening capacities for collecting, analysing, interpreting and disseminating skills anticipation-related data".** The adoption of this recommendation firmly placed skills anticipation on the policy agenda of the African Union.

1.4 Methodology adopted in developing the guidance note

The preparation of the guidance note benefited from an extensive review of literature on skills needs anticipation and matching studies. This included knowledge products developed by the ILO, skills anticipation and matching mapping reports, and action plans produced by SIFA pilot countries. Also reviewed were the AU, AUDA-NEPAD and SIFA Conference (15–17 September 2021) Communiqué (AUC 2021) and guides to anticipating and matching skills published by the European Training Foundation and the European Centre for the Development of Vocational Training. Various approaches and models for skills needs anticipation and matching implemented in countries outside Africa were also considered. These included methods commonly used in G20 countries, the Skills for Trade and Economic Diversification (STED) approach and the prospective model used by Brazil's Serviço Nacional de Aprendizagem Industrial (SENAI).

This guidance note describes the main concepts of skills needs anticipation, clarifies basic requirements in countries to strengthen it, and discusses different tools and approaches available for doing so. It includes lessons learned and good practices to help guide countries in undertaking skills assessment and anticipation mapping studies and inform the development of national action plans on skills anticipation.

2

SKILLS NEEDS ANTICIPATION AND MATCHING

2. Skills needs anticipation and matching

This section provides key definitions, discusses the rationale for skills needs anticipation and matching systems, and describes the essential components of such systems.

2.1 Definition and key elements of skills needs anticipation systems

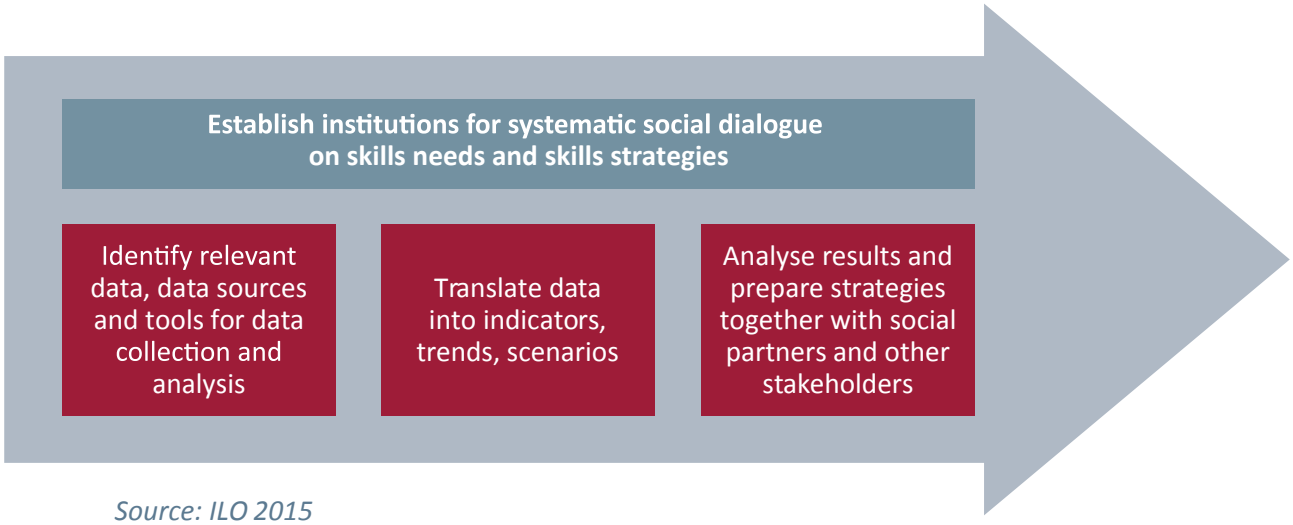
There is no uniform definition of skills needs anticipation. Generally, it refers to **any forward-looking diagnostic of future labour market skills needs, using quantitative or qualitative methods, including interaction and signalling between labour market actors** (ILO 2020).

Many decisions requiring information about future labour market conditions are long term. Education and training take several years and, ideally, provide skills over an extended period. Skills anticipation aids in formulating individual guidance and education policy, and in identifying future imbalances that need collaborative solutions. It involves developing institutions and frameworks that adapt to national settings and economic needs (ILO, 2017).

Assessment and anticipation of skills needs vary by country and are tailored to each country's institutional setting and challenges. The institutional arrangements for collecting, processing and disseminating labour market information are known as a labour market information system (LMIS). An LMIS is broader than a skills anticipation and matching system, which is a part of it. The LMIS aims to generate, analyse and disseminate information on current and future skills needs, encompassing institutional arrangements, technology platforms, datasets and information flows (Cedefop et al. 2016).

The ILO (2015) defined the key elements of a skills anticipation system, as depicted in Figure 1.

Figure 1: Key elements for skills needs anticipation



Source: ILO 2015

Some of the most useful data for skills anticipation is that recorded by governments' Public Employment Services (PES), household surveys, education statistics, social surveys and tracer studies, among other sources. Data from these sources is a record of past and current skills supply and demand, which can be used to assess the extent of future labour mismatches. The quality, accessibility and regularity of the data generated from different sources determine the outcomes of skills anticipation and matching initiatives. In this regard, building and strengthening appropriate institutional mechanisms and procedures for skills anticipation and matching mechanisms that foster adequate coordination among the different parts is a key requirement.[2]

2.2 Why matching skills supply with current and future labour demand matters

Skills mismatch is a broad term that encompasses various types of skills gaps and imbalances, such as over-education, under-education, overqualification, underqualification, overskilling, skills shortages, skills surpluses and skills obsolescence. Therefore, skills mismatch can be both qualitative and quantitative, referring to situations where a person does not meet job requirements or when there is a shortage or surplus of individuals with specific skills. Skills mismatch can be identified at multiple levels, including the individual, employer, sector, or economy level (ILO 2020).

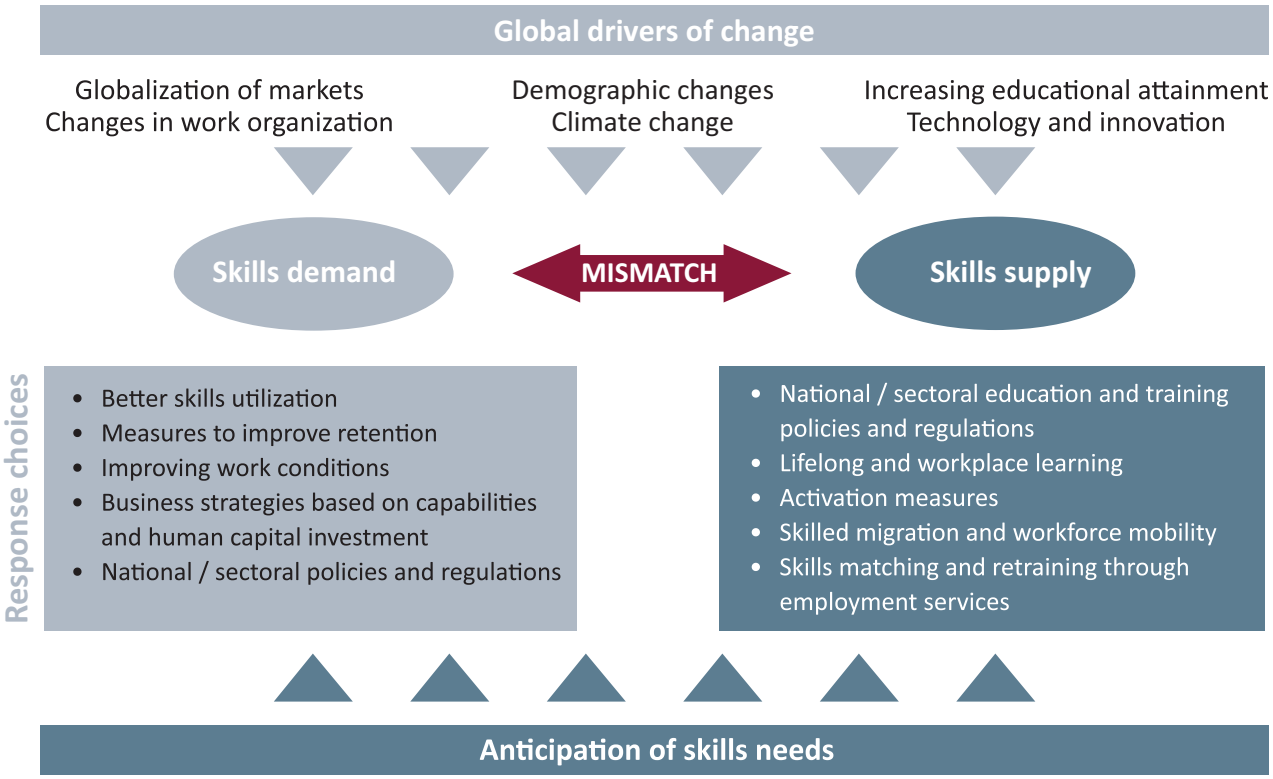
Skills anticipation has emerged as a key policy response to combat skills mismatch in the labour market. Labour markets are transforming at an unprecedented rate and scale, owing to mega drivers of change and multiple crises. Policy-makers have a strong interest in anticipating future skills needs, since they are expected to make decisions on labour market policy and skills provision grounded in empirical evidence (ILO, 2017).

Several factors influence the global evolution of skills demand and supply, which, if left unaddressed, are likely to contribute to further skills mismatch in the future (ILO 2015, ETF 2012). Figure 2 summarizes the **growing importance of skills matching resulting from global drivers of change,** which include: globalization and trade; changes in work organization; demographic change and climate change; increase in educational attainment; technology and innovation. Global drivers of change, including pandemics such as COVID-19, create shocks in the labour market that induce demand for new skills in the labour force. The potential skills mismatches need to be unearthed by a systematic process of anticipating skills needs. Results from skills anticipation processes will further inform the skilling, reskilling and upskilling programmes to enhance the employability of new entrants to the labour market, particularly young people.

The need for skills anticipation to inform training and growth strategies has been identified as a key objective within the African Union, exemplified by the skills anticipation and matching component of the SIFA project.

[2] See ILO, Skills needs anticipation | International Labour Organization for further references to skills anticipation in the ILO's work.

Figure 2: The need for skills matching as a result of global change



Source: ILO 2015

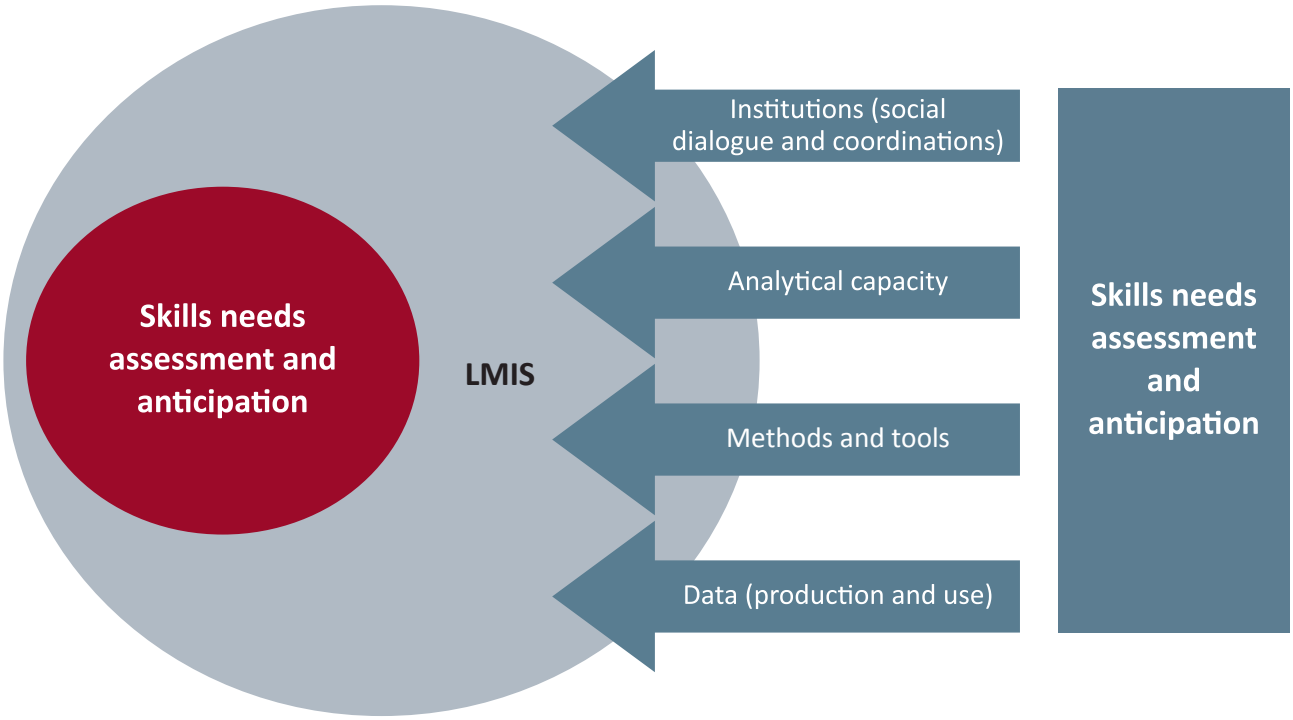
Strengthening the capacities of AU Member States in skills anticipation will provide strategic and systematic information that labour market actors can use to identify and prepare for future skills needs, helping to avoid potential gaps between skills demand and supply.

Skills anticipation will enable training providers, young people, policy-makers, employers and workers to make better educational and training choices, leading to improved use of skills and human capital development. Additionally, skills anticipation will assist AU Member States in coping with the challenging task of providing decent jobs for millions of new entrants to the labour market. The extent of the problem may be understated where there are no systematic skills needs assessments and skills anticipation studies.

2.3 Essential components of skills needs anticipation systems

Strengthening skills needs anticipation and matching systems is premised on a functional LMIS. Skills needs assessment and anticipation is a major component of such a system, as reflected in Figure 3.

Figure 3: Skills needs anticipation as a component of labour market information systems



Source: ILO 2015

A labour market information system is a network of institutions, people and information that have mutually recognized roles, agreements and functions with respect to the production, storage, dissemination and use of labour market-related information and results in order to maximize the potential for relevant and applicable policy and programme formulation and implementation.[3]

A functional LMIS covers the collection and compilation of data and information; analytical capacity and tools; and institutional arrangements and networks. As the structure and problems of labour markets vary from country to country, there is no general blueprint for a single most effective LMIS architecture.

[3] ILOSTAT, "Labour market information systems (LMIS)".

3 MINIMUM COMBINATION OF SKILLS ANTICIPATION MEASURES

3. Minimum combination of skills anticipation measures

The country skills needs assessments undertaken as part of the SIFA project yielded minimum requirements for using skills anticipation approaches effectively and setting up skills anticipation systems.

These will be discussed in this section and include:

- a functional labour market information system;
- capacity for data collection, analysis and interpretation;
- quality data sources for skills anticipation, including administrative data; and
- adapted methods for collecting and analysing data and information.

In addition, it is paramount to i**dentify key stakeholders and assign clear roles** and responsibilities. Sound **mechanisms for coordination and collaboration** between different parts of the LMIS are required, as is a framework to foster an inclusive process of skills assessment and anticipation at different levels of policy-making. Finally, countries require **mechanisms to disseminate results** and to facilitate the use of the results of skills anticipation and assessment exercises to inform policies and programmes.

The section ends with a description of the process and example of steps taken by the SIFA skills anticipation project pilot countries.

3.1 Functional labour market information systems

A functional LMIS is essential for reliable and regular skills anticipation and matching exercises to inform policy responses and training institutions' curricula to address the identified skills. However, some AU Members do not have functional LMIS and robust national statistical systems to supply the required data, owing to limited resources, weak institutions and insufficient data, all of which hinder realization of the full potential of these systems. Strengthening LMIS is critical for creating informed, impactful policies and improving development outcomes.

According to the ILO's Statistics Department[4], a functional LMIS should do the following **three main tasks:**

- Facilitate labour market analysis.
- Provide the basis for monitoring and reporting on employment and labour policies.
- Serve as a mechanism to exchange information or coordinate different actors and institutions that produce and use labour market information and analysis.

Furthermore, they consist of **four main components:**

- Collection and compilation of data and information.
- Repository of information.
- Analytical capacity and tools.
- Institutional arrangements and networks.

Data might also include information on broader economic trends like trade flows and remittances, which are indispensable for an analysis of labour market effects. The quality of data, as well as its accessibility, timeliness and reliability are critical to help measure progress. The **LMIS should track a set of indicators**, the most widely used set of which are decent work indicators. The processes of gathering, analysing and disseminating data require appropriate institutional arrangements and clearly defined roles and responsibilities. Clear institutional responsibilities need to be complemented by adequate resources so that the institutions can discharge their allocated responsibilities.

[4] ILOSTAT, "Labour market information systems (LMIS)".

Institutional arrangements may vary based on the country context. A precondition for establishing an efficient and well-functioning LMIS, however, is the **active involvement and collaboration of various stakeholders, including social partners**. This creates a culture of joint responsibility, which promotes long-term commitment to problem-solving and ensures greater harmonization of skills development policies. The most important labour market players are indicated in Table 1.

Table 1: Actors in a functional LMIS

LMIS information	Institutions
Business and industry information	• Ministry of Commerce/Industry • Research institutions • Business membership organizations • Industry/Sector Skills Councils • Individual companies
Education and training information	• Ministry of Education • Ministry of Higher Education • Tertiary institutions • Training institutions • Non-governmental organizations (NGOs) • Research institutions • TVET agencies and ministries • Human Resources Development (HRD) Councils
Employment services and labour information	• Ministry of Labour/Social Affairs • Ministry of Finance • Ministry of Trade • Employment councils • Employer organizations • Public Employment Services • Trades unions • NGOs
Finance and policy information	• Ministry of Finance • Ministry of Labour/Social Affairs
Labour market trends and forecasting information	• Central Statistics Office • Ministry of Labour/Social Affairs • Research institutions • Ministries of Planning, Development, Trade and Investment
Population information	• Central Statistics Offices • Ministry of Labour/Social Affairs • Immigration department

While collecting labour market data is important, it is not enough simply to compile it. A functional LMIS ensures that **data is analysed to suit the needs of different users.** For instance, policy planners will require complex levels of detail, while job-seekers may only require general information about opportunities in the sector or location in which they wish to work. It is very important for AU Member States to implement an LMIS that responds effectively to different users' needs and disseminates information in a systematic or coordinated manner. The institutional role of the LMIS can also include the exchange of information or coordination of the LMIS activities of labour market stakeholders, which include statistics bodies, research agencies and those involved in policy formulation and implementation, and workers' and employers' organizations. This function may range from the dissemination of information on concepts, definitions and standards to the allocation of resources regarding data collection or specific analytical activities. The LMIS can also be directly involved in monitoring and reporting on employment and labour policies.

The AU Member States can use **various methods and tools to disseminate labour market information.** These include publications and websites featuring information on the labour market situation that is presented in a user-friendly manner and targets people with no special knowledge of labour market analysis. Additionally, general information delivered via online and other tools should be accompanied by guidance services provided by Public Employment Services (PES) and career counsellors at schools and training institutions specifically targeting job-seekers and young people. Guidance services can be used to reach out to those most in need of new and updated skills, helping them to make learning and employment choices. Information on labour demand and supply should also reach business associations and employers to support their plans for human resources development and help them adjust commercial strategies and investment plans.

3.2 In-country capacity for data collection, analysis and interpretation

A key prerequisite for skills needs anticipation and matching exercises is the production of quality and reliable labour market information, consisting of multiple flows of data on skills supply and demand from different sources, both quantitative and qualitative. In this regard, skilled players in the national statistical system, including statistics agencies/offices and various government ministries and agencies that generate administrative data, are critical in improving the availability and quality of data in AU Member States. **Enhancing the capacity of labour market actors in data collection, analysis and interpretation and dissemination is essential for skills needs anticipation.** Data-sharing policies are also essential to facilitate skills anticipation and matching.

Other areas of capacity-building include enhancing statistical infrastructure for collection, analysis, interpretation and dissemination of the data; and training and equipping personnel responsible for data collection and analysis. To enhance the capacity for data collection, analysis and interpretation, AU Member States should invest in methods to collect data and information; the statistical infrastructure, including hardware and software, needed for collection; processing of the data; establishing statistical and analytical units within different institutions; and creating new positions and/or changing existing job descriptions.

Member States should conduct regular data audits, at least once a year, depending on availability of resources. These audits might reveal significant data gaps that suggest a new form of data collection is needed.

Data collection for skills anticipation can be enhanced by:

- introducing skills anticipation modules to existing surveys[5]; and
- merging several existing data sources.

[5] Such as the optional add-on module developed by ILOSTAT on "Occupational qualifications and skills mismatches (v1)" – see ILOSTAT, "Labour Force Survey questionnaire toolkit".

3.3 Expanding data sources for skills anticipation

AU Member States need to use all available data sources when conducting situational analyses of skills needs assessments, anticipation and matching exercises.

Data on skills should be obtained from various surveys conducted within AU Member States, with the primary source being the **labour force survey (LFS)**. Additional modules on skills anticipation can be included in standard LFS questionnaires. In cases where the LMIS is not well developed or functional, measures should be implemented to strengthen it. Potential sources of data beyond the LFS include **establishment/enterprise skills surveys** (see section 4.4).

Administrative data generated by government ministries and agencies also needs to be used in skills anticipation and matching exercises. This can be facilitated by deliberate policies on sharing data across government institutions and social partners. Another challenge, beyond increasing access to data, is addressing issues of regularity and robust representativeness of data when disaggregated by sector or occupation, which is especially useful for skills analysis and assessments.

The following are potential sources of data that can be used beyond LFSs and establishment/enterprise skills surveys:

i. Artificial intelligence and big data

Artificial intelligence and big data analytics can be used for data mining to inform skills needs assessment and anticipation (Cedefop et al. 2021).

ii. Tax and social insurance databases

Analysis of administrative data in tax and social insurance registries has potential value. Such administrative data may include information on employers and individuals. Although there is legislation on the protection of individual data, the level of access to the population registry and the possibilities of merging data on individuals and institutions from several databases vary among AU Member States. This data may contain important information on the structure of employment by occupation, age and industry. Moreover, there is information on wages by occupation, gender, age and sector. In countries with large informal economies, however, this data has its limitations.

iii. The social accounting matrix (SAM)

SAMs provide a detailed representation of a country's economy, disaggregating activities and commodities at sectoral level. SAMs further disaggregate labour into skilled and unskilled labour, making them a useful source of LMI, as they show labour allocation to different sectors of the economy.

iv.Employment services

Employment services always keep some form of records about job-seekers and about the vacancies to which they try to match them. Information from vacancy and job-seeker statistics can offer useful insight into current skills supply and demand.

v. University, TVET institutions and schools registries

Administrative data on students and graduates (admissions, graduates and drop-outs) is one of the main sources of skills supply flows. The best-quality and most useful information can be obtained from records in the form of a register, as these allow for tracking the students across the whole education system and thus calculating actual participation rates and transitions between different levels of education and institutions.

3.4 Methods for collecting and analysing data and information

The requirements and methods for collecting and analysing data will differ depending on the exact research question and scope of the skills anticipation exercise. Institutional arrangements and available technical expertise will also determine the approach taken and lead the levels of stakeholder engagement and human and financial resources required.

Many primary data collection methods can be used at subnational or sectoral level. Doing so can serve as a test of the methodology, while building local expertise in processing and analysing results. Over time, such approaches can be extended to national level to achieve broader coverage. This is especially helpful in countries that have little or no LMI infrastructure (ILO 2017).

Table 2 summarises the key data collection instruments for skills anticipation.

Table 2: Data collection instruments for skills anticipation

Instruments	Data requirement	Technical expertise	Advantages	Disadvantages
Focus groups, round tables, expert workshops, expert opinion surveys and Delphi-style methods	• No specific data requirements	• Technical expertise in qualitative methods is required: • expertise in preparing (structured) interviews, focus groups, Delphi methods, etc; • synthesizing qualitative outcomes often proves to be challenging in new contexts	• Holistic • Direct user involvement • May be able to address problems in greater depth • Useful mechanisms for exchanging views	• May be non-systematic • May be inconsistent • May be subjective • May be non-representative and provide only a partial view • May be anecdotal, not grounded in reality
Sector studies	• Some data requirements (depending on methods used within sector) • Sector-based data from statistical surveys, employer-employee surveys, etc.	Technical expertise required: understanding of sector-based labour markets, occupations and skills requirements; analysis of primary and secondary data; if primary data has to be collected – survey methodology skills	• Holistic (for the sector) • Sector-specific – includes detailed information on capabilities, competencies and skills	• Partial (less relevant outside the sector) • Potentially biased • May introduce inconsistency across sectors
Employer- employee skills surveys; enterprise/ establishment skills surveys	• A firm registry from which the sample frame will be formed • No further data needed for the primary data collection survey	• Survey design and conduct (representativeness, weighting, questionnaire design, interviewer training) • Analysis of survey outcomes • Methods to ensure representativeness	• Direct user involvement • If the survey is factual, focuses on how people behave, not on what they perceive • In case of opinion surveys, allows direct skills • measurement	• Response rates are often too low • Large samples are needed to get robust data, so may be expensive • May be subjective and inconsistent

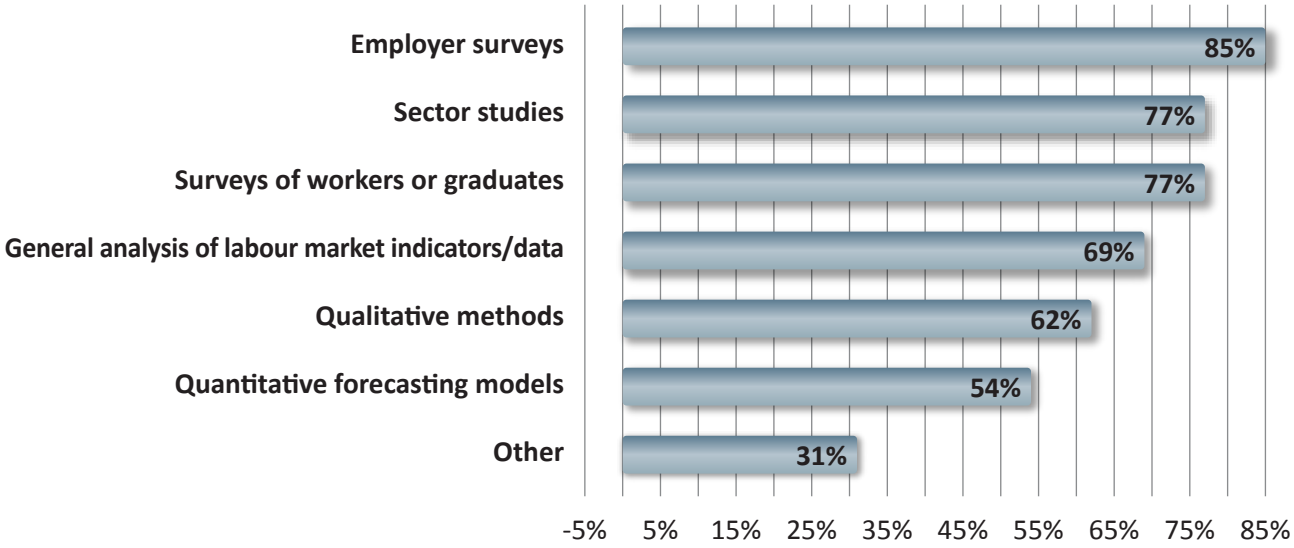
Instruments	Data requirement	Technical expertise	Advantages	Disadvantages
Foresights and scenario development	• May use various input data and reports, such as results of quantitative forecasts, labour market information, sector studies, but this is not compulsory	• Foresight sessions require skillful moderators • Expertise in compiling diverse qualitative information into a report • Expertise in engaging all stakeholders	• Holistic • Direct user involvement • May be able to address. problems in greater depth • Useful mechanisms for exchanging views • Takes into account uncertainties in the future	• May be non-systematic • May be inconsistent • May be subjective
Graduate surveys/tracer studies	• Primary data collection • Tracer studies require the contact details of recent graduates • Additional administrative data from the education institutions can be used to enrich data	• Survey design and conduct (representativeness, weighting, questionnaire design, interviewer training) • Analysis of survey outcomes • Methods to ensure representativeness	• May provide useful information for improving quality of training programmes • Relatively low cost, easy execution	• Difficult to establish detailed information and contacts for forming a sample/ population for the survey • Confined to workers' early market experience and findings may be biased and subjective
Vacancy surveys	• Primary data collection • Can either use existing administrative data or processes of PES, or can be conducted as employer surveys • Using administrative data requires adequate processes ensuring consistency and representativeness of data	• Survey design and conduct (representativeness, weighting, questionnaire design, interviewer training) • Analysis of administrative data and survey outcomes • Methods to ensure representativeness	• Direct user involvement • Target jobs actually available – demand proxy • Objective	• Partial coverage, not representative of all demand • Short-term demand only • Data processing takes time, while some vacancies may be already filled

Source: based on ILO 2017 and ILO and OECD 2018

Selecting and developing suitable instruments for collecting data for skills needs assessment and anticipation exercises involve a trade-off process in which the various advantages and disadvantages have to be weighed against each other. However, **country experiences show that a mixed methods approach**, that is, using a combination of various quantitative and qualitative approaches, **generates reliable results**.

Figure 4 shows the methods most commonly used in G20 countries to undertake skills needs assessments and anticipation.

Figure 4: Methods most in use in G20 countries*



Source: ILO and OECD 2018

* Note: the following G20 countries participated in the joint OECD-ILO-Cedefop-ETF stakeholders' survey: Australia, Brazil, Canada, Germany, France, India, Indonesia, Italy, Japan, Republic of Korea, Turkey, United Kingdom, United States of America.

In most quantitative approaches, the need for skills is projected via occupational demand. When results are combined with detailed descriptions of occupations, including skills information and educational attainment information (education type, level, field of study), the need for skills can be estimated and linked to vocational education and training programmes. However, qualitative information is required to refine information and recommendations (van Breugel 2017).

3.5 Process followed in the SIFA skills anticipation project

The Skills Initiative for Africa (SIFA) is a project of the African Union Commission (AUC) and the African Union Development Agency (AUDA-NEPAD), supported by the German Government and European Union, which seeks to contribute to the AU's agenda for a more prosperous Africa. Under the EU-funded SIFA component Skills for Youth Employability, the AU collaborated with the ILO to build capacities in skills anticipation.

The SIFA skills anticipation project aimed to facilitate the identification and anticipation of skills as integral parts of national LMIS, to ensure more effective matching of skills supply to skills demand in the labour markets of targeted AU Member States. Interventions under this project contributed towards the overall SIFA objective of enhancing the employability of African youth. The project was initially piloted in eight countries: Cameroon, Ethiopia, Ghana, Kenya, Nigeria, South Africa, Togo and Tunisia, and later expanded to Eswatini, Gabon, Namibia, Tanzania, Uganda and Zambia.

At country level, the SIFA skills anticipation project was implemented according to the following process and steps, with some variations:

Step 1: Constituting a multi-stakeholder National Task Team

A key feature of the process included the constitution of a multi-stakeholder National Task Team (NTT), comprising the tripartite partners and other key stakeholders, depending on the institutional architecture of each country. These included the ministries of labour and their social partners; and ministries of education and institutions responsible for TVET, among others. **The mandate of the NTTs was to provide support and strategic guidance for the situational analysis of the labour market information and skills anticipation systems and practices** in the respective pilot countries. The findings from the situational analysis/mapping studies formed the basis for the development of a National Action Plan that was expected to guide the strengthening of current systems and practices, with a view to better aligning skills development with the skills and competencies requirements of the labour market.

Composition of National Task Teams in Zimbabwe and Eswatini

The SIFA National Task Teams in Zimbabwe and Eswatini were led in each country by the Ministry of Labour. The teams involved the main national employers' organizations (National Employers' Confederation of Zimbabwe, Confederation of Zimbabwe Industries and the Zimbabwe National Chamber of Commerce; and the Federation of Eswatini Business and Chamber of Commerce), the main national workers' organizations (Zimbabwe Congress of Trade Unions and Zimbabwe Federation of Trade Unions; and the Federation of Swaziland Trade Unions), and the countries' statistics agencies.

In Zimbabwe, the task team involved three ministries: Ministry of Public Service Labour and Social Welfare (lead); Ministry of Higher and Tertiary Education; and Ministry of Industry and Commerce.

In Eswatini, the following four ministries participated in the task team: Ministry of Labour and Social Security (lead); Ministry of Education and Training; Ministry of Commerce, Industry and Trade; and Ministry of Public Service.

Step 2: Conducting a situational analysis and skills needs assessment study

A national institution or expert was designated as the "pen holder", who compiled the situational analysis and drafted the National Action Plan under the guidance of the NTT. The situational analysis focused on mapping the existing data sources/ providers; reviewing current practices, capacities and institutional arrangements for labour market information and skills anticipation; and providing **practical recommendations for improving existing systems and structures.**

Key focus areas of the situational analysis included:

i. Availability and quality of data relevant for conducting skills anticipation and assessment activities

- This relates to having an in-depth understanding of the current situation with respect to possible data gaps. The following key questions were answered in this analysis:
- What data is available at the national, regional, local and sectoral levels, and what are the main data gaps?
- What are the sources of existing data – for example, labour force and other household surveys; censuses; national statistics agencies, including statistics on vacancies and job-seekers and administrative statistics on education and training, enterprise and social security; skills-specific surveys, such as enterprise skills surveys, tracer studies and qualitative skills studies?
- To what extent is skills supply data, such as TVET institution administration records and tracer studies, collected and aggregated?
- What is covered in the available data in terms of population, time series and possible breakdowns – for example, gender, age, rural/urban, region/ sector/occupation? What classifications are used? What are the gaps?
- In what form and quality is the available data – for example, raw numbers, relative indicators?
- Who are the data providers and custodians? Who is responsible for data collection?
- Are there administrative records with PES, employers' organizations, academic institutions, or international agencies?
- How is the data published or shared with other institutions?
- How regularly are data collection exercises conducted? Is there any regulatory framework for data collection? Is there a systematic funding mechanism for data collection?

The analysis used various types of data source. Figure 5 provides a distinction between standard statistics (useful for skills analysis but primarily established for other purposes), skills-specific data sources and secondary data sources.

Figure 5: Data sources for analysis of skills supply, demand and mismatch

A. Standard statistics useful for skills analysis	B. Skills-specific data sources	C. Secondary data sources
• Labour force (and other) household surveys • Public Employment Service statistics on vacancies and job-seekers • Enterprise statistics • Education statistics • Censuses • Other administrative data (tax, social security)	• Establishment skills surveys • Tracer studies • Qualitative data on skills	• Projections of labour supply and demand • International databases • Online job vacancies • Big data

Source: Cedefop et al. 2016a, with authors' additions

ii. Capacity for data collection, analysis and interpretation

The situational analysis assessed the available capacity within each country for data collection, analysis and interpretation, as well as the key challenges and proposed strategies to resolve them and address capacity gaps. This entailed reviewing national, regional and sectoral analytical capacities and tools for data collection, compilation and analysis, as well as interpreting the data and translating it into policy and institutional reforms. Countries were expected to use both qualitative (skills surveys, focus groups, foresight) and quantitative (skills surveys, statistical indicators, modelling, forecasting) methods, plus mixed-method approaches that included sectoral methodologies.

The situational analysis revealed that capacities for collecting quality and regular data required strengthening if AU states were to undertake regular skills needs assessment and anticipation. The data collected must be sufficiently robust to enable disaggregation of the information by sex and age. Moreover, it was found that available data was not readily used by PES, or career guidance and counselling services supporting school-to-work and other labour market transitions.

The importance of assessing the capacities of research institutions, academia, labour market observatories and tertiary training institutions (including TVET institutions) to conduct skills anticipation research – such as labour market assessments, sector studies and regular tracer studies – also became apparent. The extent of institutional deficits that needed to be addressed to strengthen the LMIS in the pilot countries was established. This included assessing the degree of inclusivity, visibility, appeal and recognition of technical, vocational training. Comparisons were made with institutional arrangements in other jurisdictions with effective and integrated LMIS.

The policy responses to the adverse effects of the COVID-19 crisis also revealed the need for further investments in data collection and analysis systems in AU Member States to enable them to identify emerging skills needs – including reskilling and upskilling needs for key economic sectors (for example manufacturing, agriculture, mining, energy, tourism and hospitality, education and training, digital and health) and investing in related retraining programmes.

iii. Institutional framework and coordination

The governance of LMI and skills anticipation processes is facilitated by fit-for-purpose institutional frameworks and coordination arrangements. In this regard, the **situational analysis reviewed the adequacy of the policy, legal and regulatory frameworks for labour market information and skills anticipatio**n, including for the monitoring of existing employment and labour market policies and programmes.

To understand the extent of institutional coordination, the following were reviewed, among others:

- The type and quality of partnerships among government ministries, particularly ministries of labour and education; employers' organizations; training institutions; qualifications and standards authorities; and workers' organizations to create a competent workforce and meet the skills requirements of industry.
- Institutional and policy reforms that are required to support the establishment or capacity-building of industry-driven sector skills bodies and contribute to the development of industry-aligned occupational and competency standards, training, guidelines and mutual recognition systems for internships and training.
- The scope for expanding opportunities for quality apprenticeships, mentorships, internships, learnerships and other forms of work-based learning that are key to aligning skills demand and skills supply.
- Incentives for skills providers to offer responsive, flexible, innovative and evidence-based skills development programmes.
- The adoption of virtual and technology-based skills development platforms.

Effective coordination among institutions requires them to have adequate capacity and analytical capabilities to analyse, interpret and disseminate data. Only when skills anticipation is firmly established within a country's institutional environment can it influence broader socio-economic policy areas like employment, trade, investment, digital and the environment. Social dialogue is a fundamental mechanism to enhance the quality of coordination.

iv. Social dialogue mechanisms

The situational analysis in the pilot countries also established the extent of or impediments to social dialogue within each country. This entailed assessing the degree of commitment at all levels to engage in social dialogue that fosters consensus-building on labour market and skills development issues, including skills anticipation. In some countries, social dialogue platforms already existed through interministerial committees and skills councils, among others. However, the effectiveness of these social dialogue mechanisms/platforms and the extent to which they included discussions on skills needs assessments and anticipation still needed to be established through the situational analysis.

Effective skills needs assessment and anticipation is enabled by structured, tripartite social dialogue. It is therefore essential to establish ways of facilitating active and inclusive participation and collaboration by employers' and workers' organizations using a "whole of government and whole of society" approach to create and implement skills development initiatives. The National Task Teams established in the SIFA pilot countries were seen as highly useful platforms for fostering structured dialogue on skills needs anticipation and matching – especially after their mandate was institutionalized and extended beyond the project phase. These social dialogue opportunities and platforms should also involve young people and local communities, to ensure ownership, sustainability and impact among beneficiaries and stakeholders.

Step 3: Developing action plans for strengthening LMIS and skills anticipation

The situational analysis needs to be reviewed by the NTT and validated more broadly in a stakeholder workshop. In the SIFA pilot countries, the NTTs organized hybrid stakeholder workshops to validate the mapping studies. The situational analysis findings were then used to inform the development of National Action Plans, taking into consideration the specific country contexts. Among other things, the action plans highlighted the following:

- gaps within the labour market and LMIS and skills anticipation systems;
- main policy priorities and policy actions that needed to be addressed through strategies adopted in the action plan;
- existing programmes and strategies, institutional and coordination frameworks relating to LMIS, skills anticipation and matching;
- existing institutional arrangements, networks and dialogue mechanisms;
- existing strategies for matching skills development to labour market skills needs;
- existing institutional arrangements and dialogue mechanisms;
- initiatives related to LMI and skills anticipation (including donor-supported programmes);
- priority actions for strengthening skills anticipation processes and capacities within key institutions;
- coherence of policy frameworks supporting skills anticipation and development; and
- implementation and coordination mechanisms for the action plan, depending on country context.

The action plans developed in the pilot countries included a matrix of key stakeholders and their specific roles in contributing to strengthening the LMIS and skills needs anticipation. The action plans also included logframes with expected outcomes, outputs, activities and indicators of achievement. Table 3 provides illustrative examples of action plan outcomes, outputs and activities drawn from the logframes of SIFA project pilot countries.

Table 3: Examples of action plan outcomes, outputs and activities from SIFA project pilot countries

Outcomes	Outputs	Activities
Strengthened institutional mechanisms for policy coherence, social dialogue, and coordination of LMI and skills anticipation systems	Key policies reviewed or developed (such as TVET, employment, labour migration and data-sharing) Institutional coordination, governance of skills anticipation and dialogue mechanisms strengthened	Incorporate coordination and governance of skills anticipation and matching into the roles and responsibilities of the ministries of labour and education Develop an LMIS that adequately addresses skills anticipation needs to ensure effective coordination and dialogue Develop the TVET policy to incorporate aspects of LMI and skills anticipation
Informed skills planning and development to reduce skills mismatch	Instruments for monitoring skills trends and development devised Labour market players, research and training institutions are able to analyse and use the LMI and skills anticipation system to inform decision-making	Train labour market players in skills needs assessment and skills forecasting techniques; Skills for Trade and Economic Diversification (STED) Undertake regular labour surveys Provide research support to labour market actors in implementing the action plan Devise and operationalize instruments to monitor skills trends to inform skills needs assessment and anticipation through migration centres

Outcomes	Outputs	Activities
Credible and comparable data produced from the LMIS to inform policy-making	LMI concepts and definition of terms standardized Data collection tools for LMI and skills anticipation developed	Conduct training on the institutions responsible for data generation to ensure understanding of the integrated LMIS Procure hardware and software systems to support the integrated LMIS Develop capacity to manage the integrated LMIS
Strengthened and institutionalized access to, sharing and dissemination of LMI and skills anticipation data	LMI and skills anticipation data accessible by and disseminated to all users LMIS and skills anticipation funded LMI and skills anticipation data regularly collected and updated	Disseminate LMI and data in formats that meet the diverse needs of labour market participants Prepare annual LMIS and skills anticipation reports Advocate for the National Action Plan and mobilize resources for its implementation

4

APPROACHES AND TOOLS FOR SKILLS ANTICIPATION

4. Approaches and tools for skills anticipation

In this section, selected approaches and tools for skills anticipation are briefly discussed. These include quantitative skills forecasting techniques, qualitative methods, surveys, foresight, the STED tool (the ILO's sectoral approach to skills anticipation and matching) and the SENAI prospective model.

4.1 Skills needs forecasting

There is no uniform definition of skills needs forecasting. The term usually refers to mid- to long-term employment projections based on econometric models that quantify employment outlook by industry and occupation (ILO 2020). Skills needs forecasting is one way to identify future imbalances between labour supply and demand. The approach makes predictions about such imbalances by producing a comprehensive picture of future labour market developments in terms of economic sectors, occupations, qualifications and skills. Skills needs forecasting is also highly dependent on data availability (time series data with adequate disaggregation by sector/occupation). Industry classification is based on the International Standard Industrial Classification of All Economic Activities (ISIC) (United Nations 2008). Occupational data is based on the ILO International Standard Classification of Occupations (ISCO) (ILO 2012a).

Typically, a forecast exercise tries to answer three questions:

- Where will the jobs of the future be concentrated in the country (sector or region)?
- What are the implications of this for skills needs, as measured by occupation and qualification level?
- How does this compare with developments in the supply of skills?

Skills forecasts act as an early-warning mechanism to help alleviate potential labour market imbalances and support different labour market actors to make informed decisions. The key assumption of such forecasts is that the patterns of performance and behaviour in the economy and labour market will reflect past trends and that there will be no major disruptions to the economy. Their reliability is thus dependent on the concept that the past is a good predictor of future developments, as well as on the forecasting team's skills in interpreting past developments and applying them to likely future scenarios (ETF 2017).

It should be noted that skills forecasts may not predict the future with precision, as they are dependent on the assumptions made. Assumptions are generally based on the available experience and knowledge, as well as on judgement. In a stable economic environment, estimates can be projected into the coming years using different methods and approaches. However, a forecast can be undermined by radical disruptions or sharp deviations from the past. In this regard, the results should not be considered a precise view of what will happen. Rather, they indicate a likely future, given a continuation of past patterns of behaviour and performance. Furthermore, skills forecasting methods are usually limited in their potential to provide in-depth information on specific emerging technologies, changing job profiles and skills needs in key economic sectors.

In light of marked structural changes affecting economic sectors and occupations, partly spurred by economic crises, foresight methods are more valuable, as they can make sense of emerging trends in and drivers of changing skills needs, their interactions and possible disruptions, and provide fertile ground for exploring and shaping alternative futures.

4.2 Foresight methods for skills anticipation

Foresight is defined as a systematic, participatory, future intelligence-gathering and medium-to-long-term vision-building process aimed at present-day decisions and mobilizing joint actions (Shevchenko et al. 2017, Cedefop et al. 2016c). Foresight studies are typically multidisciplinary qualitative and quantitative analyses that assume that alternative futures are possible. Foresight studies may include alternative scenarios. Foresight activities may also consider the actions that should be taken to shape the future (ILO 2020).

Skills foresight offers early warning on evolving skills mismatch, which gives stakeholders enough time to counteract such mismatch. Foresight is more applicable in cases where there are data challenges, since the method is largely based on social dialogue involving representatives of stakeholders from the private and productive sectors. This makes foresight best suited for most African countries that face data challenges and hence have difficulties implementing quantitative skills anticipation approaches that require good quality data. Other key factors for successful foresight include a good facilitator, good preparation and identifying the right participants/stakeholders at the right level (decision-makers). The method involves back-casting, brainstorming, expert panel/focus group discussions and horizon-scanning to come up with different scenarios for consideration in skills anticipation.[6]

The multiplicity of technological foresight methods demonstrates that no one method fits all situations. The choice of foresight method is specific to national contexts and must reflect both fitness for purpose and its suitability for and adaptability to the national, cultural, economic, political and organizational contexts in which it is to be implemented. While literacy in foresight methods is highly important for their successful implementation, even more important is knowledge of the organizational and social backgrounds of the specific country.

Emerging trends that are shaping future jobs and skills and whose implications may require further interrogation through foresight methods include but are not limited to the following:

- Demographic change and greater consideration of diversity and gender in the labour force.
- Growing uncertainty over household income, more inequality and greater desire for a better work-life balance.
- Changing work environments shaped by information and communications technology (ICT), outsourcing, internationalization and the need for greater flexibility.
- Converging technologies and cross-disciplinary skills, particularly the combination of biotechnology, ICT, nanotechnology and cognitive science.
- Digitalization of production: automated and additive manufacturing processes, involving 3D printing.
- The age of big data, the power of digital devices, and the potential to capture and use vast amounts of data.
- Impact of disruptive technological changes on skills and jobs.
- Opening up of new economic opportunities within the context of implementing the industrialization agenda on the continent and implementation of the African Continental Free Trade Area.
- Preparedness for climate change, environmental change and natural disasters; demand for skills in the emerging green economies; and the need for "just transition".
- Penetration of artificial intelligence (AI) and robots into highly skilled occupations, redefining the world of work.

[6] See Mohamed Aichouni et al., "Technology Foresight Methods for Future Skills Anticipation: An Empirical Study", International Journal of Scientific & Technology Research 10, No. 1, (2021): 79–87 for more details on technology foresight initiatives implemented in different countries and their suitability for skills anticipation.

4.3 Tracer studies

Tracer studies are standardized surveys of graduates from educational institutions usually conducted three, six or twelve months after graduation. The questions that may be asked in these surveys that are relevant to skills anticipation can relate to the transition of graduates into work, their current occupation, skills use and career path.[7] Table 4 highlights the stages in implementing a tracer study.

Table 4: Stages in implementing a tracer study

Phase	Major tasks	Duration
Concept and instrument development	• Defining survey objectives (selection of themes to be investigated) • Survey design (selection of the cohorts of graduates to be included; strategies for tracing the graduates) • Technical concept for carrying out the survey • Collecting and updating addresses • Formulating questions and response items • Formatting questionnaires • Pre-testing questionnaires • Printing questionnaires and other dispatch material	Four months
Data collection	• Training the survey team • Distributing and collecting questionnaires • Ensuring a high level of participation	Four months
Data analysis and report writing	• Defining coding systems for the responses to open questions • Coding open responses • Entering and editing data • Analysing data • Preparing the survey report • Workshop with students, graduates and employers • Further actions to improve the study/training programme	Four months

Source: Cedefop et al. 2016b

[7] For examples of tracer studies conducted in African countries, see Botswana Training Authority, Tracer Study on the Employment Outcomes of the Vocational Training Graduates, June 2010; Dr Rania Roushdy, Tertiary Education Graduate Survey in Egypt 2021: Towards Achieving Graduates' Full Potential, 2021; Amin Sorkatii et al., A Tracer Study of Technical Vocational Education and Training Institute Graduates in Khartoum State, 2016. See also ILO and GIZ, An Impact Assessment of Career Guidance Services for Technical School Students, 2017.

Phase 1: Concept and instrument development

In this stage, the objectives of the tracer study are determined. One of the goals is to identify whether the skills that graduates acquired in training are actually being used and, hence, are in demand in the labour market. Clear objectives will help guide the selection of both the survey questions and the cohort to be traced. The latter involves gathering contact information for the cohort, such as their physical addresses, email addresses and/or telephone numbers, to facilitate distribution of the questionnaires. Once survey questions have been formulated, they should be pre-tested to make sure they are understood and likely to produce the required results (Cedefop et al. 2016). After revisions, the questionnaire is finalized for distribution in the form of printed copies, or via online platforms or digital forms filled in by enumerators.

Phase 2: Data collection

The next step after development of the data collection tool is actual data collection. This phase involves training the enumerators who will collect the data – unless the questionnaires are distributed by email only. The enumerators then distribute the questionnaires to the intended audience, with mechanisms being put in place to ensure high participation rates. These mechanisms can include pre-education of the participants in how to answer the questions and promotion of the benefits of participating in such surveys; events where graduates are asked to gather; phone calls; or face-to-face interviews. The higher the participation rate, the better the quality of the data collected and, ultimately, of the skills anticipation results from such surveys. Surveys sent only by email usually achieve a response rate of between 5 and 30 per cent.

Phase 3: Data analysis and report writing

The final stage involves analysing the data and writing up the findings. This requires systems to be defined for coding the responses to open questions and involves data entry and actual analysis of the data. It is important to note that the quality of the results largely depends on the rigour of implementation of the previous stages. The better they were implemented and the better the quality of the data analysis, the better the quality of the final report.

4.4 Enterprise skills survey

The major aim of enterprise skills surveys, also called establishment skills surveys, is to collect key data for skills anticipation exercises regarding enterprises' skills use and needs. The information from employers is seen as critical to understanding labour market demands, maximizing the economic value of skills and shaping public and private investments in education (ILO 2017). With the assistance of the World Bank, many African countries have established enterprise skills surveys to help them assess skills demand and supply in different sectors of the economy. The main objective of this type of survey is to contribute to effective future employment strategies by providing information on the types of skills and occupations in demand. Table 5 summarises the implementation phases of an effective enterprise skills survey.

Table 5: Phases of an enterprise skills survey

Phase	Outputs	Financial resources	Technical capacity required
Survey design	Sampling frame, questionnaire design and manual design	Moderately high. Use past experiences to minimize the financial resources needed	Highly complex. National statistics offices and technical experts play key roles at this stage
Implementation	Field work to actually collect the data; cleaning the data and presenting it in tables	The financial resources required depend on the level of outsourcing – usually, the higher the level of outsourcing, the higher the cost	Moderately complex – potential to use in-house resources
Data analysis	Recommendations and evidence-based conclusions	High	There is likely a need for in-house experts and external consultants, making the task potentially highly complex
Policy/programme changes	New or upgraded policies and programmes	Moderately high	Moderately complex; cooperation of all social partners

Source: ILO 2017

4.5 Skills for Trade and Economic Diversification (STED) tool

Since 2010, the ILO, through its Skills for Trade and Economic Diversification (STED) programme, has been assisting AU Member States in diagnosing the skills they need to develop to participate effectively in international trade and diversify their economies. **Implementing the STED tool is a participative process** involving industry, government, social partners, providers of education and training, and other government and civil society organizations to anticipate and identify the skills development strategies required for future success in international trade.

The full STED diagnostic process (ILO 2012b) places strong emphasis on primary research, including an enterprise survey, a study on the supply of skills and extensive consultation with experts, as well as background desk research based on available statistics and a literature review. While the full STED process has been shown to be well suited to many contexts, evaluations and feedback from partners revealed the need for a lighter, faster approach to STED analysis. In response, the rapid STED approach was developed (ILO 2020).

The rapid STED process deepens collaboration, focuses on building capacities among national and sector partners, and helps move more effectively from diagnosis of skills needs to implementation of the skills development responses required. It differs from the full STED process in that, rather than relying on primary survey research, it centres on a substantial technical and policy foresight workshop involving industry, national and sector partners, and providers of education and training. Its focus on collaboration and consultation with partners throughout the process is more comprehensive than that required for full STED (ILO 2012b).

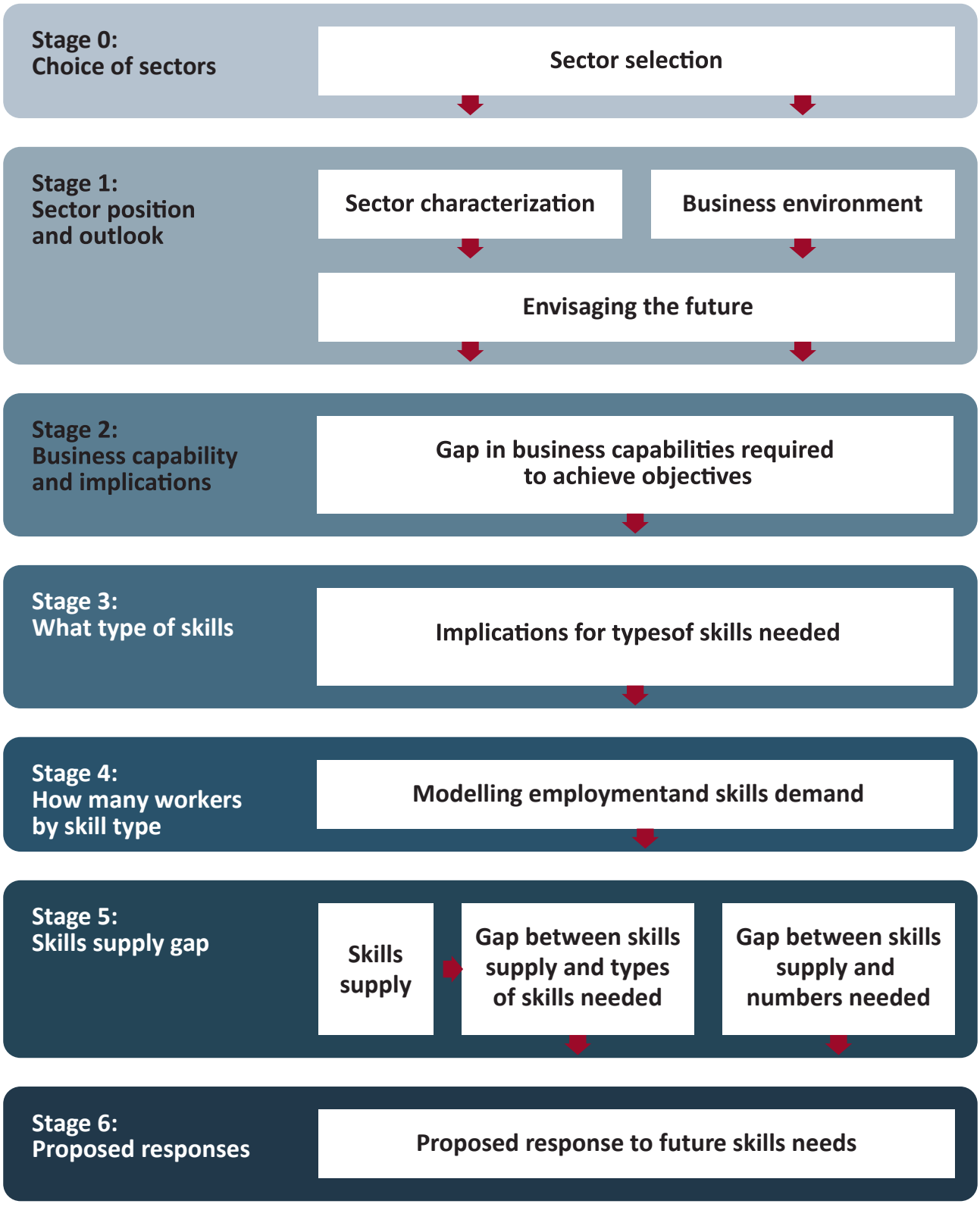
While national-level initiatives to strengthen skills development systems have an important role to play, much of the **detailed work on diagnosing skills needs** and on creating and implementing practical strategies to address them **can be done most effectively at sector level.** In this regard, the rapid STED guide aims to help countries with strategic skills anticipation, including selecting priority sectors for policy attention, analysing a sector's position and prospects, determining what it must strengthen to achieve its vision for the future, as well as how skills can contribute to this, and what the strategy and plan of action should be.

The distinctive nature of the STED approach is that it is a:

- combination of strategic analysis (forward-looking approach) and social dialogue;
- practical approach that describes "how to do" skills analyses and assessments, when it comes to the specific skills implications for a sector's development; and
- learning-by-doing opportunity for skills development actors.

Figure 6 shows the stages of the rapid STED diagnostic framework.

Figure 6: Rapid STED diagnostic framework



Source: ILO 2020

African countries that have implemented the STED methodology include Egypt, Ethiopia, Ghana, Malawi, Tunisia, Senegal, Zambia and Zimbabwe. In some of the SIFA pilot countries, implementation is being spearheaded by the NTTs, which facilitate participation of national and sectoral stakeholders in traded sectors to understand the challenges facing the sector in question and how skills development can contribute to addressing the identified challenges.

The process requires coherence between trade, employment, development and skills policies. The perspective of the STED approach is forward-looking, in that a sector's development and growth opportunities are analysed and the skills implications of participating more effectively in international trade anticipated. Together with an analysis of current skills supply and demand, the approach generates an overview of existing and future skills gaps. In doing so, it combines an establishment survey (for the full STED), an expert workshop and other qualitative and quantitative approaches to skills analysis and anticipation (ILO and OECD 2018).

Using the STED approach in the agro-processing sector in Ethiopia

The Ethiopian Industrial Development Strategic Plan (2013–2025) recognized the importance of a strong and competitive manufacturing sector, including the agro-processing sub-sector, for industrial development and economic transformation.

Skills development was viewed as essential for the expansion and upgrading of the agro-processing industry and its contribution to the rapid industrial development and structural transformation of the Ethiopian economy. Skills development was also considered critical for enhancing the effectiveness and efficiency of manufacturing enterprises, because it improves productivity and compliance with quality standards. It also contributes to the creation of more decent jobs. The STED approach was used to assess the skills requirements of the sector as it moves towards high-technology production. It led to the publication of STED Strategic Skills Recommendations for the Agro-processing Industry – a strategy document prepared under the SKILL-UP project, funded by Norway (ILO 2022a).

In the Ethiopian Growth and Transformation Plans (I and II), the education sector is assigned a key role in accelerating economic development. A key problem the STED strategy document sought to address was the quality and relevance of the education being delivered by training institutions. For example, it was observed that the skills needs of the economy were not taken into account in either higher education or TVET institutions and the training they provided lacked a practical focus. Their existing education policies and strategies were generic, with no emphasis on the needs of the various economic and industrial sectors. Only two TVET institutions had provided training in agro-processing, having delivered courses on a pilot basis in 2019 (ILO 2022a). Thus, sector-specific skills policies were needed to narrow the skills gaps in the agro-processing sector, including the food, beverage, dairy and meat subsectors, which were the main focus of the analysis.

The ILO's rapid STED approach was applied, including a background study combining secondary research, consultations with key stakeholders (involving 15 firms) and the experience of consultants based on similar policy work in Ethiopia in the agro-processing industry and on skills development. A major two-day technical and foresight workshop on skills for the agro-processing industry examined the main findings of the background study and involved a collaborative process of forward-looking analysis and strategy formation with representatives of key stakeholders. The workshop provided the core of the analysis and policy proposals contained in the STED strategy document (ILO 2022a). Table 6 summarizes the steps taken to develop the document.

Table 6: Steps taken to develop the strategic skills recommendations for the agro-processing sector in Ethiopia using STED

Step	Activities
1. Situational analysis	• Review of the country's economic and workforce profiles • Understanding the business environment in which the sector is functioning • Identification of major trends and the likely impact on employment (drivers of change)
2. Identification of key occupational categories	• Description of major occupational categories and key skills required in each subsector • Review of current skills gaps in each category, with a focus on training needs and skills shortages
3. Examination of present skills	• Examination of the present supply of skills (key institutions, formal programmes and qualifications) • Exploration of other sources of skills (NGOs, industry development institutions)
4. Identification of critical supply-side challenges and constraints	Analyses of: • Skills demand and supply gaps • National skills policies and strategies • Relevance of curricula and qualifications to the industry • The links between industry and the TVET providers
5. Gaps in the capabilities and skills needed to realize the industry vision of the future	• Analysis of business capability gaps and main skills implications, focusing on key occupations and emerging occupations • Identification of core skills • Envisaging the future of the sector, whereby stakeholders develop a shared vision of the sector's future development (medium term)
6. Recommendations	• Providing recommendations on meeting priority skills needs and filling gaps Recommendations are developed to address two broad areas: • systemic skills supply issues and • the occupation-specific skills gaps and shortages identified

Source: ILO 2022a

The analysis provided important information concerning the existing skills in each main occupation in the agro-processing industry and the extent of skills shortages and gaps. The strategy document also recommended further investment where serious skills shortages and deficiencies were identified and in areas with the potential to boost the sector's productivity and competitiveness, nationally and internationally, and help improve the welfare of workers (ILO 2022a).

Following the same approach, a skills strategy for the garment sector in Ethiopia was produced in December 2022 (ILO 2022b).

Developing a skills strategy for the horticulture sector in Zimbabwe

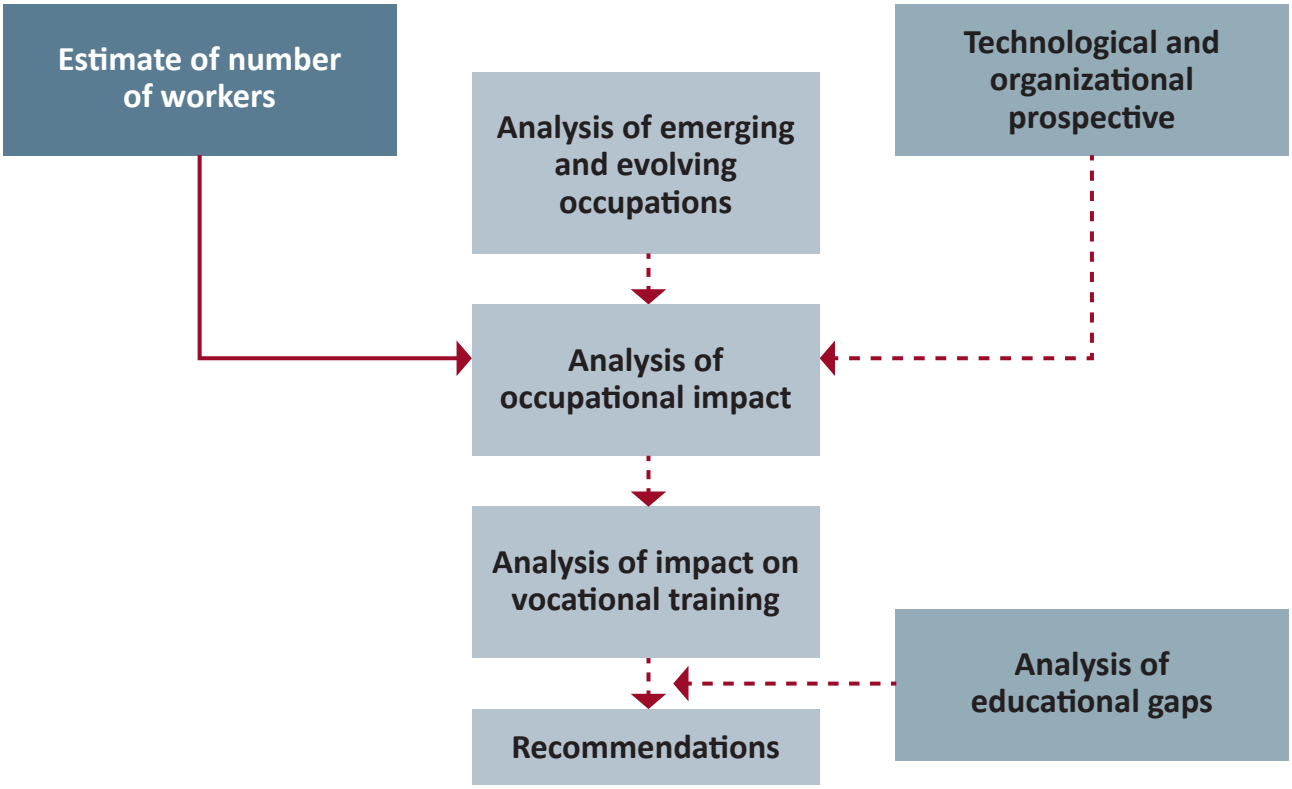
With ILO support, Zimbabwe used the STED methodology to develop a skills strategy for its horticulture sector to enhance capacities for labour market forecasting and skills needs anticipation. The Zimbabwean process was supported by the SIFA National Task Team (NTT), which guided the situational analysis and development of an action plan to strengthen LMIS and skills anticipation.

The process began with a consultative workshop with trade and skills stakeholders to select the most relevant sector for the STED approach. After considering a number of value chains, stakeholders agreed on the horticulture (fruit and vegetables) sector, given its potential impact on job creation across the country and foreign-currency generation. The consultative workshop was followed by the production of the ILO STED Zimbabwe background study and a foresight workshop with stakeholders. The findings of the background study and insight from the foresight workshop informed the development of the Zimbabwe horticulture sector skills strategy 2022–2025, which was approved by stakeholders before being finalized. The Ministry of Industry and Commerce coordinated the entire process.

4.6 The SENAI prospective model: anticipating demand for vocational training

The prospective model used by Brazil's Serviço Nacional de Aprendizagem Industrial (SENAI) is based on a technological innovation process. It uses a quantitative analysis of jobs while significantly modifying occupational profiles. The model analyses emerging and evolving occupations based on current and anticipated technological and organizational changes and estimates the impact of these changes on the skills content of occupations. The structure of the SENAI prospective model is illustrated in Figure 7.

Figure 7: The methodological layout of the SENAI prospective model



Source: ILO and Cinterfor 2015

The model involves the following steps:

1. ***Estimate the number of jobs*** to be created in the industry in the following five years based on multiple data sources.
2. ***Identify technological and organizational changes*** that are likely to impact occupational profiles.
3. ***Identify probable changes in occupational profiles*** caused by the introduction of specific emerging technologies and organizational changes identified.
4. ***Identify emerging or evolving occupations*** as sectoral occupational changes, classifying them as emerging or evolving occupations.
5. ***Analyse probable changes in the supply of vocational education*** by establishing new knowledge, skills and attitude standards for TVET institutions.
6. ***Formulate recommendations (thematic antenna)*** as the final stage of the SENAI prospective model. Discuss all the preliminary results obtained in the previous stage regarding changes in vocational education, as well as all the results obtained in earlier steps.
7. ***Monitor*** the main variables that support the conclusions and recommendations.

5

LESSONS LEARNED AND GOOD PRACTICES IN SKILLS ANTICIPATION

5. Lessons learned and good practices in skills anticipation

Lessons gleaned from the reviewed literature and experiences in the SIFA pilot countries suggest that, in AU Member States, **institutional frameworks and coordination arrangements for skills needs anticipation need to be strengthened.** This includes establishing sound frameworks for the production of labour statistics; having supportive legal and regulatory frameworks; producing adequate data; facilitating the use of administrative data in skills anticipation; enhancing capacities of different players who contribute to the effective functioning of the LMIS; and ensuring interministerial coordination on data collection and dissemination to enhance data-sharing and help build and formalize institutional partnerships, networking and collaboration arrangements with clear, legally stipulated mandates to facilitate skills anticipation and matching exercises.

Existing institutional frameworks, along with the national culture of collaboration and trust, have a considerable influence on the outcomes of skills needs assessment and anticipation exercises. The main goal of these assessments and anticipation exercises should be **to inform evidence-based policie**s to improve how the education and training system works to ensure better labour market outcomes. The ILO (2020) established that the **frequency of skills assessment**s can range from multiple times a year, for analysis of statistics, to once every five years, for approaches repeated in a consistent way. Diverse skills anticipation approaches are used to formulate strategies to overcome skills mismatches.

Skills anticipation and matching approaches can **help workers make better decisions regarding training and careers**, thus promoting job quality and lifelong learning. Information about skills needs can be used by individual job-seekers – and employers – to **facilitate recruitment and worker-employer matching** at microeconomic level, as well as skills investment decisions.

Effective skills anticipation systems act as early warning systems for actual and potential skills mismatches in the labour market by providing policy-makers, companies, education providers and individuals with the information they need to prepare and, ideally, intervene in and correct skills mismatches before they arise. A one-off analytical exercise can even be used to understand skills supply and demand for a particular region or sector in country. However, regular skills anticipation exercises contribute to better matching, longer-term dialogue and closer alignment of skills supply and demand. A necessary precondition for this is a conducive institutional framework.

A few countries, including South Africa, publish regular reports on skills supply and demand (RSA 2022). These reports aim to overcome challenges of coordination and collaboration between different parts of the system. For example, the South African Department of Higher Education and Training, since its establishment in 2010 and its adoption of the function of skills planning, has been compelled to look more closely at the relationship between education and training on the one hand and the labour market on the other. It does so through the labour market intelligence research programme, which is a major, multi-year project intended to help the Department move towards a more responsive and demand-driven post-school education and training system. AU Member States intending to strengthen their skills anticipation and matching initiative can draw lessons from the experiences of South Africa, among others.

6 CONCLUSION

6. Conclusion

This guidance note provides a conceptual framework for skills anticipation and matching, along with methods and approaches that can be replicated in AU Member States. It includes examples of processes followed in conducting skills needs assessments and anticipation initiatives. Skills needs anticipation has been adopted as a key policy priority, owing to its critical role in generating evidence to inform labour market policies and skills development.

Policy interventions to address skills mismatches rely on accurate information on current and future skills needs. In this regard, AU Member States should consider the different approaches outlined in these guidelines to develop qualitative and quantitative information on skills needs, drawing lessons from countries with experience in skills anticipation exercises. Successful skills anticipation systems identified in the literature on skills needs anticipation and matching share several common features, including clarity on their principal objectives, that is, whether to support policy formulation and strategic planning, provide data for better-informed career choices, or both. Skills anticipation exercises need to be user-oriented, stakeholder-owned and well-coordinated.

Stakeholder engagement, notably through social dialogue, is key to ensuring that skills assessment and anticipation exercises provide information in a format and at a level consistent with policy objectives, so that it can feed into policy action. Fostering structured social dialogue among AU Member State governments and social partners will facilitate active and inclusive participation and collaboration in developing and implementing skills anticipation initiatives. Making the most of these strengthened social dialogue opportunities and platforms, which involve young people and local communities, will further entrench ownership and sustainability of skills needs assessment and anticipation processes. Furthermore, efforts in this regard should extend to promoting life skills, employability skills and psychosocial support. Such support should also facilitate productive mind-sets and paradigm shifts in skills development on the continent.

AU Member States need to be mindful of the challenges in translating qualitative and quantitative information from skills needs assessments and anticipation into effective policy action. Implementing skills anticipation results may require AU Member States to incentivize entities that provide responsive and evidence-based skills development programmes and initiatives. Providing complementary support to research institutions, academia, labour market observatories and tertiary training institutions (including TVET institutions) will ensure that skills anticipation research, such as labour market assessments, sector studies, enterprise surveys and tracer studies, is conducted regularly. This will further inform training policies, curriculum development and other requirements to ensure that education and training are aligned with the skills needed for current and future labour markets.

Enhancing the inclusivity, visibility, appeal and recognition of TVET needs to be prioritized and focus on improving skills to access future jobs and entrepreneurship opportunities. Efforts in this regard may include international benchmarking and partnerships, twinning programmes with other globally recognized TVET institutes and partnerships with industry, labour and employers. Furthermore, skills anticipation exercises are relevant to several policy domains, meaning information on skills needs has the potential to inform various policy dimensions and contribute to developing a systematic and comprehensive policy response to skills imbalances. In employment policy, skills needs information is commonly used to update occupational standards and to design apprenticeships, re-training courses and on-the-job training programmes. In education policy, it is used to inform curriculum development and set the number of student places at all levels of education, including TVET. Skills needs information also feeds into career guidance to inform students' choices. In migration policy, this information is used to update shortage lists and identify fast-track candidates for migration with skills that are in high demand.

The relevance to such a broad range of stakeholders calls for the results of skills assessment and anticipation exercises to be widely disseminated to maximize their impact on policy-making. The challenge for those leading these exercises is to make the results available in a useful and accessible form. Engaging all relevant parties and using mechanisms that help reach consensus are instrumental in ensuring that the required policy responses to skills imbalances are put in place. Various mechanisms have proven successful in reaching consensus, ranging from informal and ad-hoc consultations to the establishment of independent bodies such as National Task Teams and advisory groups, as well as formal mandates to foster dialogue among stakeholders. Sectoral bodies provide the most favourable opportunities for both employer and trades union involvement in TVET and skills policy formulation and implementation.

Strengthening partnerships among AU Member State governments, training institutions and workers' organizations is essential for improving the anticipation of skills needs and related skills development. This will build capacity for sustained skills needs assessments and anticipation across the continent. Such efforts will help secure competent labour for sustainable business operations and create training systems supported by robust skills anticipation. Additionally, this will reduce the imbalances between skills demand and supply that are currently common in AU Member States.

The COVID-19 pandemic has created new demands for skills and further widened the existing skills gaps in AU Member States. To address these gaps, more investment is needed in data collection and analysis systems for identifying skills needs arising from pandemics or other disruptions. Skills needs assessments and anticipation exercises will facilitate the identification of reskilling and upskilling needs in key economic sectors, including but not limited to manufacturing, agriculture, mining, energy, tourism and hospitality, education and training, digital and health.

While there is no crystal ball to predict exactly what skills will be needed in the future, the approaches outlined in this guidance note help generate evidence on prospective skills required to inform policy responses and skills development initiatives. Examples of areas requiring new skills and learning include cognitive flexibility, digital literacy and computational thinking, judgement and decision-making, emotional and social intelligence, and a creative and innovative mind-set.

This guidance note is expected to assist AU Member States in developing robust skills intelligence mechanisms as a strategic reference point for designing skills policies and training programmes. These programmes should respond to the dynamic nature of the world of work, influenced by rapid technological changes, climate change and other crises, and the requirements for sustaining economic development, trade and prosperity within the continent.

7

RECOMMENDATIONS

7. Recommendations

1. AU Member States need to explore i**nnovative and sustainable financing options for skills anticipation** and related skills development. These may include restructuring the implementation of skills development levies to enhance capacities, strengthen capabilities, and develop and rehabilitate the necessary infrastructure for improved and more responsive skills development.
2. As the Fourth Industrial Revolution unfolds, companies are seeking to harness new and emerging technologies to achieve higher levels of production and consumption efficiency, expand into new markets and compete with new products for a global consumer base increasingly composed of digital natives. **To harness the transformative potential of the Fourth Industrial Revolution** and the opportunities within the African Continental Free Trade Area, governments and business leaders across all industries need to formulate comprehensive workforce strategies. These strategies must be ready to meet the challenges of this new era of accelerating change and innovation with the requisite skills.
3. Creating **awareness of and advocacy for skills anticipation and matching among a broad base of AU Member States**, capitalizing on the work done under the SIFA project, should encourage more governments to commit to promoting skills anticipation and matching as a pathway for labour market-responsive skills development. This also supports the strengthening of dialogue and lesson-sharing platforms related to skills anticipation and matching. In this regard, policy-makers and all labour market actors need to work together to foster the institutionalization of skills anticipation within AU Member States' LMIS. This will further facilitate timely responses to imbalances in the demand and supply of skills.
4. Skills anticipation strategies should be **incorporated into employment, trade, investment, digital and environmental policies** that support the achievement of economic and social goals.
5. Development partners may also consider collaborating with AU Member State governments, especially those that are experiencing binding fiscal space constraints, to:
    a. **strengthen capacities and processes** for skills anticipation research, analysis, interpretation and application of research results;
    b. **establish industry-driven sector skills bodies** and contribute to the development of industry-aligned occupational and competency standards, training, guidelines and mutual recognition systems for internships and training;
    c. **expand opportunities for quality apprenticeships**, mentorships, internships, learnerships and other forms of work-based learning that are key to aligning skills demand and skills supply;
    d. establish structures that address trainees' ability to survive, thrive and scale up their skills and enterprises beyond start-ups;
    e. contribute towards financing of skills anticipation and skills development initiatives;
    f. establish **integrated labour market information systems** that feature robust methods and tools for data collection, storage and dissemination;
    g. build the capacity of human resources to generate and analyse information required for delivery of labour market-responsive skills development.

6. There is also a need to enhance the capacities of AU Member States in the following areas, among others:

    a. incorporating skills anticipation into their labour market information systems;
    b. adopting skills anticipation and matching approaches and tools that best respond to the country contexts;
    c. collecting data that will facilitate effective measurement of skills mismatch.

These capacities need to be anchored in strong institutional and governance arrangements, social dialogue and coordination mechanisms. Furthermore, effective knowledge management and sharing within AU Member States require strengthening mechanisms for expanding information access and outreach. This includes supporting the collection, documentation, sharing and replication of good practices and innovative ideas on skills anticipation and matching. **Lessons learned from skills anticipation approaches piloted under the SIFA project in selected AU Member States should drive the scaling up and institutionalization of skills anticipation and matching across AU Member States.**

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