United Nations
Economic Commission for Africa

ICE
Central Africa
11 - 12 Nov. 2020

THIRTY-SIXTH SESSION OF THE INTERGOVERNMENTAL COMMITTEE OF SENIOR OFFICIALS AND EXPERTS

By Videoconference, 11 and 12 November 2020

Thematic Report

"Building Skills for Economic Diversification in Central Africa"

Final Draft

Yaounde, Republic of Cameroon
October, 2020

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Executive Summary

Economic policies and other development strategies in Central Africa increasingly underscore the urgent need to seek an alternative to the development model long implemented by the sub-region. Based on heavy dependence on raw materials, this model has not been able to promote robust, inclusive, sustainable and resilient economic growth. The Douala Consensus reaffirms economic diversification driven by industrialization as the way forward if Central Africa is to rid itself of volatile, unsustainable, low employment-creating growth with a low impact on poverty. Achievement of the African Union's Agenda 2063 and attainment of the Sustainable Development Goals (SDOs) call for a review of growth strategies in the same direction.

The promotion of an inclusive and technology-intensive industrialization cannot be supported by an unskilled labour force and the new development agenda requires that the education and training system be technically aligned with the needs of industry.

While the role of enterprises and industrial clusters as centres of continuous training is now well established, Central Africa's labour force remains largely concentrated and underemployed in the services sector, often informal, and driven by a mosaic of small enterprises poorly connected to skills transfer opportunities provided by international partnerships.

Equipped with the required skills, the large young population could enable the sub-region to place itself on a more sustained growth trajectory and take advantage of the "demographic dividend" through agile skills mobilization and thus capture a large part of its human capital potential.

Central Africa cannot continually avoid putting in place a sound skills development strategy based on responsiveness, quality, efficiency and flexibility of supply supported by the assured transferability of proven, recognized and certified skills for better human resource employability. Holistic and integrated actions of such a system should aim to facilitate: (1) wider access to early childhood education; (2) ensuring the future-readiness of training programmes; (3) investing in the development and maintenance of a pool of professional trainers; (4) earlier exposure to the workplace and career guidance; (5) promotion of digital, ICT and green skills and competencies; (6) development of robust and respected technical and vocational training programmes; (7) creation of a culture of lifelong learning; and (8) openness to innovation in education.

While the sub-region has improved access to basic education through its large primary school cohorts despite gender biases, there are still issues relating to the quality of education. The declining trend in secondary school transition enrollment and a sharper decline at the tertiary level underscore the fact that countries' education systems are struggling to attract and retain

students, especially girls. Weak upstream and downstream coordination among providers of primary, secondary and higher education, and the provision of technical and vocational training are matched only by massive but rudimentary informal training systems.

Higher education and the associated scientific research, as sources of skills development and innovation, remain handicapped by inadequate educational opportunities in relation to the needs of the labour market for universities that remain poorly ranked in terms of research output and training quality.

An analysis of the shares of graduates by field of specialization shows a predominance of executives from the social sciences. Specialists in science, technology, engineering and mathematics (STEM), who are catalysts of technological innovation, constitute a small portion of the system's alumni, while TVET programmes suffer from shortcomings relating to their relevance, quality and attractiveness.

The private sector is not very involved in forecasting and identifying skills needs and matching supply and demand for the TVET sub-sectors, which are still characterized by poorly qualified teachers, obsolete curricula, and a lack of quality infrastructure and resources. The budgets of ministries of education remain lower and more subject to cyclical cuts in the event of shocks, for countries whose STI landscape remains largely embryonic.

The mismatch between training opportunities and economic diversification needs is accentuated by training systems whose programmes are only rarely updated on the basis of job references, in addition to a lack of appropriate teaching material. Partnerships between the "education system and companies" are almost non-existent, thus cancelling out the opportunities for work-linked training.

Skills development requires a proactive and ambitious planning. Better anticipation and monitoring of skills needs will make it possible to identify changes in supply and demand and to define, accordingly, new qualifications and training, and the necessary changes to existing curricula. There is a definite opportunity to strengthen sub-regional cooperation for the adoption of a coordinated approach to skills forecasting methods and the use of the results for the effective governance of skills development systems.

The strategic papers of ECCAS countries identify 15 priority industries, which are the basis for economic diversification in the sub-region: (1) Agriculture / Agro-industry, (2) Banking and Finance, (3) Cultural and artistic goods and services, (3) Wood - Forestry, (4) Chemicals / Pharmaceuticals, (5) Construction, Building and Public Works, (6) Livestock, (7) Energy (excluding oil), (8) Manufacturing, (9) Metallurgy / Mining, (10) Digital / ICT, (11) Fishing / Aquaculture, (12) Hydrocarbons / Natural Gas / Refining / Petrochemical, (13) Textile / Leather, (14) Tourism / Hospitality and (15) Transport and Logistics.

Given the cross-cutting nature of many of the priority sectors identified, the skills development strategy should benefit from the economies of scale of sub-regional cooperation in terms of training programmes and experience sharing.

The new generation of industrial development strategies in Central Africa gives pride of place to special economic zones (SEZs) and other industrial clusters. The emergence of these economic enclaves offers a clear opportunity to develop targeted approaches aimed at strengthening the skills base and consolidating gains in terms of decent jobs.

By bringing business and labour closer together, governments and training providers at local, sectoral and regional levels, SEZs, with the agglomeration effects they imply, can facilitate the alignment of training with business and labour market needs. Dynamic SEZ laws can strengthen skills development by providing incentives for a culture of continuing education, promotion of innovation, and innovative partnership with training institutions within their boundaries and in the local economy in general.

These enclaves of efficiency provide a suitable framework for mobilizing innovative, sufficient, stable and sustainable financing for skills development through better involvement of industry. Initiatives for the creation of training financing funds fed by a proactive tax system will make it possible to meet the massive needs for pre-employment training, support continuing education and promote equity through the integration of certain disadvantaged groups into the labour market.

Active policies to promote local content that require FDIs located in Central African SEZs, which were previously disconnected from local value chains, to connect with local suppliers and subcontractors confirm the role of clusters in strengthening the productive capacities and technical skills of SMEs and VSEs in the sub-region. Improved labour mobility in enterprises will help consolidate these efforts, for SEZs whose older generation excelled in importing skills. The portability of skills reinforces this new economic role expected from SEZs. Current education systems focused on the development of cognitive skills are called upon to integrate behavioral skills that strengthen the ability of workers to collaborate, innovate, self-direct, train and solve concrete problems.

A good skills development system should be able to anticipate skills needs and audit existing offers, using both quantitative and qualitative approaches. It will need to mobilize employers and workers around decisions on training provision in line with industry needs; maintain the quality and relevance of training; make it accessible to all segments of society; and promote viable governance of skills development and deployment.

0. Introduction

Economic policies and other development strategies in Central Africa are increasingly emphasizing the urgent need to seek an alternative to the development model based on heavy dependence on raw materials, which has not been able to promote strong, inclusive, sustainable and resilient economic growth. The new generation of development strategies for countries in the sub-region establishes industrialization and the development of modern services as means of promoting economic diversification. Such a movement requires judicious investment in the development of a quality labour force and a better match between supply and demand for skills in the area.

This introductory chapter sets out the relevance of supporting economic diversification through the development of appropriate skills, before presenting the ambitions, methodology and structure of the study.

0.1. Economic diversification imperative and skills constraints in CA

Central Africa, like the entire African region, has recorded remarkable economic growth rates over the last few decades. While Africa's sources of growth are gradually diversifying, Central Africa continues to rely heavily on the production and export of raw materials, especially oil. The sub-region contributes little to global value added (GVA) given the low technological intensity of its manufacturing activities relating either to natural resources or to traditional "low-tech" activities characterized by limited productivity levels **(Le Henry, 2019).**

Consequently, Central African economies remain undiversified and vulnerable to exogenous shocks relating to fluctuations in commodity prices, for a sub-region with a high level of poverty and inequality.

Various experts identified the need for the sub-region to change course and strengthen economic diversification and structural transformation if it is to generate decent jobs for its young and rapidly growing population,[1] raise income levels and add value to its exports.

The Douala Consensus reaffirms structural transformation and industrialization as the key strategy for achieving this, as the way forward if Central Africa is to move away from volatile, unsustainable, low employment-creating and low poverty-impact growth. Achievement of the African Union's Agenda 2063 and attainment of the Sustainable Development Goals (SDGs) call for a review of growth strategies in the same direction **(ECA, 2016).**

[1] People under 15 years of age account for 45% of the population of Central Africa. The number of young people is estimated to double by 2045. The youth are the most affected by the socioeconomic divide and account for 60% of all unemployed Africans. Central African countries face the challenge of creating enough jobs to sustain the pace of economic growth and absorb the working-age population, especially the growing number of young people **(GRIP, 2014)**.

The success of economic diversification ambitions requires the availability of a suitable qualitative and quantitative labour force.[2] A reform of the education system and particularly the strengthening of technical education and vocational training **(Nkoy Elela, 2014)** are becoming a prerequisite for improved industrial productivity and competitiveness. Indeed, the promotion of inclusive and technology-intensive industrialization desired by Africa **(ECA, 2017)** cannot be achieved by an unskilled labour force. The new development agenda requires that the education system be technically aligned with the needs of industry.

Modern economic growth can be summarized as a continuous process of technological innovation and the structural transformation resulting from technological progress symbolizes, for low-income countries, the shift of factors (labour, capital, knowledge) from low to high productivity sectors and activities **(Dabla-Norris et al., 2013).**

These sectoral changes did not stem from a mechanical process. Their speed and magnitude reflect the willingness and ability of capital and labour factors to migrate to the most productive sectors. They are influenced by the country's economic policy and institutional environment, with human capital being at the heart of the process.

0.2. Inadequacy of skills and the urgent need for partnerships and targeted actions

More than ever, the holistic mobilization of talent resources and the strengthening of people's ability to acquire, develop and deploy skills throughout their working lives are becoming imperative if economies are to industrialize. An efficient and inclusive educational system remains a constraint to involvement of Central African economies in the fourth industrial revolution **(WEF(b), 2017).**

Unfortunately, technical and vocational skills development is finding it difficult to take off and the gap between training opportunities and labour market demand is not narrowing in the sub-region **(Nkoy Elela, 2014).** Local industry increasingly identifies a low-skilled labour force as one of the major constraints to business development **(Sajitha Bashir, 2015).**

The mismatch between the number of trained human resources seeking employment and the availability of qualified formal jobs bears witness to education systems that are out of touch with the skills required by the labour market, while rapid technological development only exacerbates this gap. Education systems are increasingly outdated and modernization efforts,

[2] The African Union has adopted a number of initiatives including the Pan-African University (a network of higher education institutions and centres of excellence), Africa's Science and Technology Consolidated Plan of Action, and the Plan of Action for Accelerated Industrial Development in Africa. All of these instruments emphasize the need to develop skills for employment and strengthen the links between education, training and the private sector.

where they exist, are generally not aligned with the demands of the economy and society in general.

While the role of enterprises and industrial clusters as centres of continuing training is now well established, Central Africa's labour force is mostly concentrated and underemployed in the services sector, which is often informal and driven by a mosaic of small enterprises poorly connected to skills transfer opportunities provided by international partnerships. The meager resources and isolation of these SMEs and VSEs limit their investments in the development of new skills **(UNDP and ILO, 2012; AfDB, 2019).**

An economic approach based on profitability and relying on endogenous actors such as professional associations would ensure efficiency. To achieve enhanced economic diversification, it is necessary to identify business needs, better plan skills development and promote partnerships with institutions working in science, technology and innovation (STI). Despite the position of "Science, Technology and Innovation" in countries' development strategies, weak human and institutional capacities prevent the mobilization of STI in the sub-region's skills development process **(ACBF, 2017; EDEA, 2005).**

While Poverty Reduction Strategy Papers and Private Sector Development Strategies have only recently begun to address the issue of skills and knowledge development, CEMAC-ECCAS countries will need to have clearly defined, operational and quantifiable public strategies with sufficient resources to enhance the employability of human resources with a view to inclusive industrialization and economic diversification.

Horizontal segregation between men and women is very present in the professional and especially industrial spheres. "*Affirmative and targeted*" continuing training must be a lever to improve women's access to certain technical positions and offset the inequalities in access to initial training that they face **(OIF-RAFF, 2014).**

Limited skilled labour is thus a constraint vis-à-vis the accelerated industrialization ambitions in Central Africa and prevents industrial firms from positioning themselves on more advanced segments of value chains and thus adopting more complex production systems **(Bashir, 2015).**

This situation calls for proactive responses from States, regional economic communities, the private sector and other development partners for successful economic diversification and the achievement of sustainable development goals.

Faced with these challenges, the United Nations Economic Commission for Africa's Sub-Regional Office for Central Africa (ECA/SRO-CA) is drafting this report on the theme "*Building*

Skills for Economic Diversification in Central Africa" to inform the discussions of the 36th session of its annual meeting of the Intergovernmental Committee of Experts (ICE).[3]

This ICE session and this report on which it is based, contribute to the operationalization of the Douala Consensus adopted at the 33rd ICE session held in Douala, Cameroon, in September 2017. It is also in line with the rich discussions held during the 35th session held in Malabo, Equatorial Guinea, in September 2019, on the development of the digital economy in Central Africa

0.3. Ambitions, methodological approach and structure of the report

0.3.1. Study objectives and methodology

This report on the theme: "***Building Skills for Economic Diversification in Central Africa***" is mainly intended to enrich the discussions of the 36th ICE Session. It aims to contribute to the debate on the challenges, opportunities and innovative strategies for the development of the skills needed for economic diversification and inclusive structural transformation in Central Africa.

The main objective of the study is to take stock of skills and other knowledge in support of economic diversification in the sub-region, identify the challenges, constraints and opportunities relating thereto and make recommendations for better development and efficient mobilization of the skills needed for the structural transformation of economies.

Specifically, the study intends to:

- Discuss the major trends in economic diversification and industrialization in the sub-region and audit the related skills needs;
- Analyze national and sub-regional trends in terms of skills development in support of economic diversification, identify challenges and opportunities and share good practices and lessons learned;
- Identify strategic and political thrusts for the development and mobilization of technical and professional skills in Central Africa;
- Propose innovative partnerships, including the public-private coalition, for raising the level of qualification and employability of human resources and better coordination

[3] The Intergovernmental Committee of Experts (ICE) is the highest statutory body of the United Nations Economic Commission for Africa's Sub-Regional Office for Central Africa (ECA/SRO-CA). This body is a strategic platform for dialogue and close collaboration among high-level experts in the sub-region, with the common objective of promoting inclusive and sustainable economic growth. The ICE meets annually to identify and discuss challenges for the economic and social transformation of the sub-region and propose holistic solutions to address them. The Committee also serves as a platform to discuss the state of regional integration in Central Africa and proposes coherent strategies to accelerate its pace, particularly in the context of the Continental Free Trade Area (FTAA).

among the various partners involved in skills development and economic diversification in the sub-region.

The study is based on an extensive literature review covering diverse reports from specialized agencies and other relevant development actors as well as an analysis of secondary data from credible public and private sources. The findings of the analyses were discussed with experts from the sub-region through two webinars organized by ECA/SRB-CA. The first virtual meeting was organized on 29 May 2020 and focused on the theme of "*Skills for Economic Diversification in Central Africa: Challenges and Opportunities*", while the second, held on 30 July 2020, focused on "*Skills for Economic Diversification: Lessons for Central Africa*". These meetings were attended by experts from ECCAS, CEMAC, the ministries of industry, education and planning of Central African States, private sector actors, civil society and academic research institutions. The recommendations resulting from these discussions enriched the final version of this report.

0.3.2. Structure and content of the report

This report is divided into four parts, the first of which discusses the challenges and content of a skills development programme for Central Africa, thus laying the theoretical foundations for an audit of the challenges and opportunities relating to skills supply in the sub-region (Chapter II), as well as an analysis of skills demand based on an inventory of the qualifications required by the priorities of the States' Industrialization and Economic Diversification Masterplan (PDIDE) (Chapter III). Chapter IV discusses the role of SEZs as a foothold for a skills development strategy aligned with industrialization needs as well as the related innovative partnerships. The report concludes with recommendations for improved skills development to support economic diversification in the sub-region.

CHAPTER I: Industrialization and Skills Development: Challenges for Africa and CA

The fact that industrialization is back on Central Africa's development agenda underscores the crucial role of human capital in economic diversification. This shift requires mastery of the theoretical foundations of an efficient skills development system and the content of a related strategy. This chapter specifies the central position of an integrated approach to skills development throughout the life cycle and the related opportunities, as a support tool for economic diversification and structural transformation.

I.1. Return of industrialization for development and human capital challenges

Sustainable and inclusive industrialization has made a remarkable comeback on the development agenda of the African continent in recent years. The Sustainable Development Goals (SDGs), and in particular Goal 9 adopted at the request of African delegations, call for the building of resilient infrastructure, promoting sustainable industrialization and encouraging innovation. Development institutions working on the continent confirm industrialization as one of the major priorities of the region. In its 2016 Economic Outlook Report, the African Development Bank called for the creation of conditions for competitive manufacturing in response to the continent's heavy dependence on the production and trade of raw materials **(Newman and Page, 2017)**.

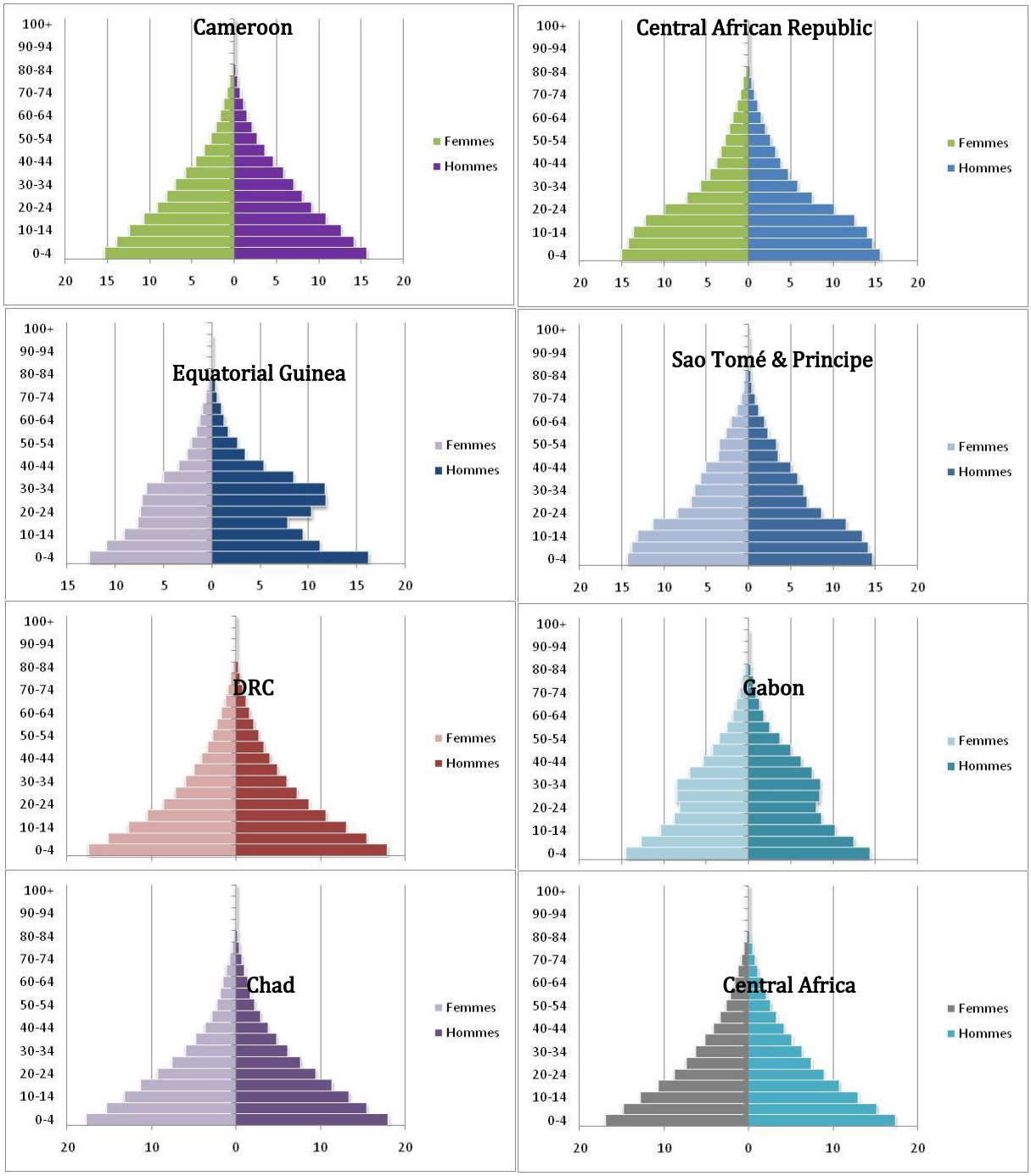
The highly sought industrial development remains strongly linked to the availability of skilled human resources. National competitiveness can no longer be seen as the result of natural resource allocations alone. The quality of human resources is increasingly central to explaining levels of productivity and efficiency.

With its enormous demographic assets, sub-Saharan Africa (SSA) has undeniable potential to take advantage of the new economic opportunities created by the industries of the future, significantly strengthen the productivity of its labour force and thus diversify its economy. To achieve this, the continent will have to promote strong talent-driven economic growth and thus ensure decent and massive employment for the majority of its young population.

Equipped with the required skills and given the right opportunities, the large youth population could enable Africa, in general, and Central Africa, in particular **(Box 1),** to position itself on a more sustained growth trajectory. Conversely, if this "demographic dividend" is not exploited, the associated risks will have serious consequences. Today, young people in Africa are among the most vulnerable population groups. The 15-24 year olds make up the vast majority of the poor (**AfDB, 2016**).

While young people need relevant skills and qualifications to meet the needs of a dynamic labour market and an ever-changing business world, the continent is still far from mobilizing its human capital potential and remains ill-equipped to cope with the risks associated with the massive destruction of jobs brought about by the fourth industrial revolution.

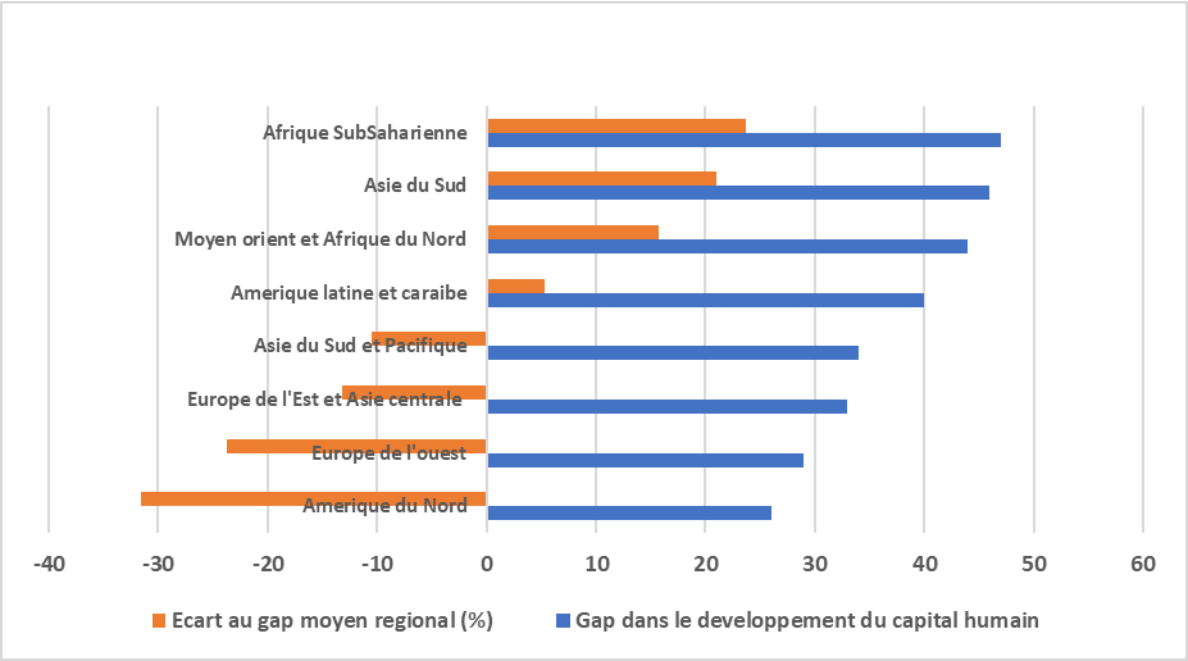
Box 1: Age pyramids by age group of five (5) as % of total population in 2019



Source: UNDSA, Population Division, World Population Prospects 2019.

The Global Human Capital Index[4] developed by the World Economic Forum indicates that SSA captures only 55% of its human capital potential, compared with an overall average of 65%. Continental trends range from 67-63% for Mauritius, Ghana and South Africa to only 49-44% for Mali, Nigeria and Chad. Human capital refers to the sum of knowledge and skills that people possess and that enable them to create value in the global economic system **(WEF, 2016).**

Graph 1: Gap in human capital development by region in 2017: magnitude and deviations from mean



Source: Global Human Capital Index, 2017.

As a result, SSA has the largest deficit in terms of human capital and skills development. The skills gap remains one of the factors contributing to the magnitude of unemployment in many countries on the continent.

I.2. Efficient skills development: concepts, content and actions

Skills can be difficult to define and quantify as they are socially constructed, intangible and unobservable. Research uses a number of approximate measures to quantitatively assess the level and content of skills available and deployed in the workplace. In practical terms, skills can

[4] The Human Capital Index, developed by the World Economic Forum, measures the extent to which countries and economies are optimizing their human capital through education and skills development and their deployment throughout the life cycle. It provides a holistic assessment of a country's human capital and views relevant skills as a dynamic resource that people possess and develop over time, far beyond innate talent. The Global Human Capital Index, reviewed in 2017, assesses the degree to which countries have optimized their human capital for the benefit of their economies and individuals. It is based on four concepts that build its sub-indices: capability, deployment, development and know-how.

be measured on the basis of qualifications and occupations **(S.A. Department of Higher Education, 2019).**

I.2.1. Effective skills development strategy: consensus on content

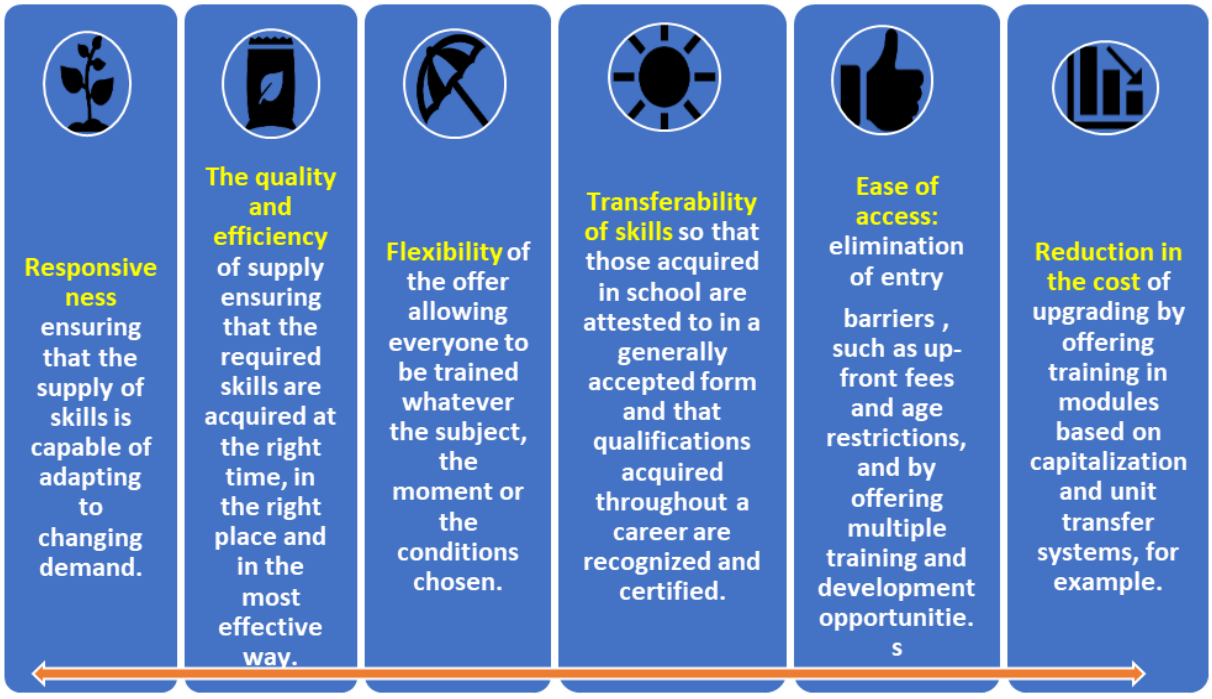
Knowledge, talent and skills are key to the knowledge-based economy, the bedrock of any inclusive and prosperous economy backed by a dynamic labour market.

Effective human capital development for economic diversification can help equip the greatest number of people, regardless of age, gender or origin, with the know-how, skills and opportunities to propel industrialization, the guarantee of inclusive growth in Central Africa.

Such an approach is based on an integrated education and training system that ensures the development of mobilizable knowledge and skills to produce high-quality goods and services so as to enable countries and their citizens develop their cultures, society and economy. It is based on a strong premise that the region's ability to adapt to the requirements of future jobs remains measured by the quality and coverage of its education system, the availability of skills and the deployment of human resources (**WEF, 2017).**

The OECD (2011; 2019) defines a good strategy for skills development through responsiveness, quality, efficiency and flexibility of supply supported by assured transferability of proven, recognized and certified skills. Such a strategy remains characterized by ease of access and lower training/upgrading costs (**Box 2).**

Figure 1: Characteristics of an efficient skills development system



Source: Summary, OECD (2011, 2019).

Levers for creating stronger education systems include: (1) expanded access to early childhood education; (2) ensuring the future-readiness of training programmes; (3) investing in the development and maintenance of a pool of professional trainers; (4) earlier exposure to workplace and career guidance; (5) promotion of digital capabilities and ICT skills; (6) development of robust and respected technical and vocational training programsme; (7) creation of a culture of lifelong learning and (8) openness to innovation in education **(WEF, 2017).**

I.2.2. Integrated approach to skills development throughout the lifecycle

It is clear that an effective performance development system promotes training throughout the life cycle of the individual and lays the foundations through a solid basic education, while remaining driven by the promotion of high-level skills likely to ensure human resources employability. Such a system is based on an integrated and holistic approach that defines specific roles for both the private and public sectors.

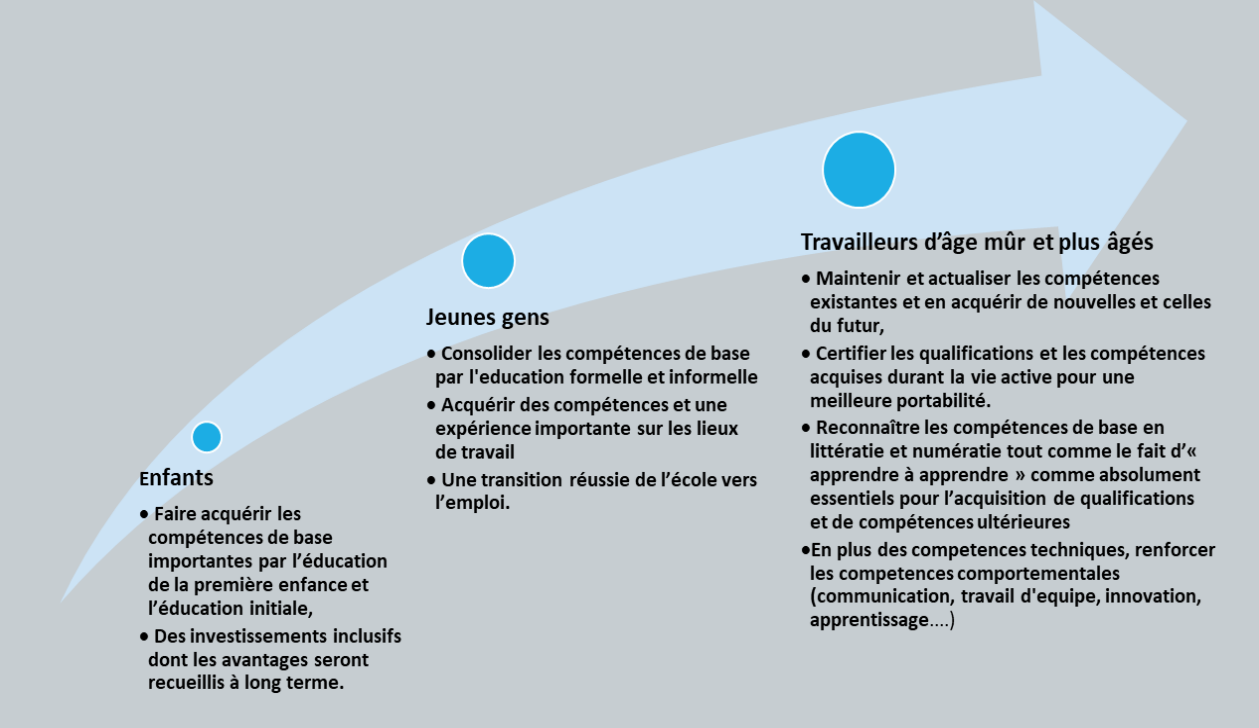
Table 1: Skills development: a holistic lifecycle approach

Thrust	Content and strategic focus
Continuous and smooth learning paths	Pre-school and primary education that adequately prepares for secondary and higher education and vocational training. Career guidance, labour market information and advice for those entering the labour market. Continuing education opportunities to upgrade skills and acquire new qualifications throughout life.
Basic skills development	Literacy, numeracy, communication skills, teamwork, problem-solving skills and the ability to learn. Sensitivity to workers' rights and an understanding of entrepreneurship as bases for lifelong learning and adaptability to change.
High level skills development	Professional, technical and human resource skills. Skills that enable workers to take advantage of or create opportunities for quality and/or high-paying jobs.
Skills portability	Basic skills through which workers can apply their knowledge and experience to new occupations or industries. Systems that codify, standardize, assess and certify qualifications so that skill levels can be easily recognized in different employment sectors in national, regional or international labour markets.
Employability (for wage-earners or self-employment)	A base composed of basic skills, access to education, availability of training opportunities, motivation, ability to take advantage of continuing education opportunities. Support in the approaches and recognition of acquired skills.

Source: ILO Summary (2010).

The actions to be undertaken by the State and industry are specific depending on the workers' age, for trainings that must be directed towards the needs of industry. The objective remains the promotion of employability of competent and agile human resources through targeted measures that are integral parts of the overall development plans and strategies, especially in the areas of health and nutrition.

Figure 2: Targeted actions according to the life cycle for a continuous skills development



Source: ILO Summary (2011), OECD (2017; 2019) and (WEF, 2017).

Central Africa's capacity to adapt to future job requirements remains measured by the quality and coverage of its education system, the availability of skills and the deployment of human resources in a sub-region that emphasized economic diversification as a major thrust of its development strategy.

This report aims to audit the skills development system throughout the biological and professional life cycle of economic agents in Central Africa in light of effectiveness, efficiency and inclusiveness requirements. It will help highlight the challenges, constraints and opportunities for strengthening the supply and demand for skills to support economic diversification in the sub-region.

Box 2: OECD's 2019 Skills Development Strategy: Skills for a Better Future

In an increasingly complex, interconnected and changing world, it is vital for every country to ensure the continued employability of its citizens. It is within this context that in 2012, OECD launched its Skills Strategy to enable citizens of its member countries to equip themselves with the skills they need to thrive in a changing world of work. The strategy was updated in 2019 in light of "megatrends" such as globalization, digital transformation, demographic change and migration: "OECD 2019 Skills Strategy: Skills to Shape a Better Future" (OECD, 2019). Indeed, these megatrends have implications for skills in OECD countries:

- ✓ ***Globalization***: The interconnection, or even globalization, of the world's economies has enabled the development of global value chains for some products whose components are manufactured in different countries. The general trend in OECD countries is the offshoring of repetitive low-skill tasks to low-wage emerging and developing countries, leading to the destruction of jobs in developed economies.
- ✓ ***Digital transformation***: Development of ICTs, advances in artificial intelligence (AI) and robotics are changing the way people work, live, communicate and do business. This digital revolution is increasingly leading to the automation of jobs and repetitive tasks requiring few skills. This will contribute to destroying human jobs in favour of robots and machines. Thus, non-automated jobs and even new types of jobs will require specialized and higher level skills.
- ✓ ***Demographic change:*** Demographic transition in most OECD countries is increasingly marked by population ageing.
- ✓ ***Migration***: Migratory flows are constantly increasing because of profound demographic and economic imbalances between countries and regions of the world, and even conflicts. This calls for proactive migration policies to attract migrants to sectors with labour shortages.

In view of these megatrends, OECD recommends policies and actions structured around three thrusts:

(1) ***Acquiring useful skills throughout life***: the process of acquiring skills starts in childhood and youth and continues throughout adulthood and requires, among other things:

- ➢ **Encouraging lifelong learning**: defining the vision and fostering informed learning choices;
- ➢ **Providing a good foundation for lifelong learning**: developing a solid foundation in pre-school and school education;
- ➢ **Making lifelong learning affordable and sustainable**: strengthening funding arrangements for adult learning;
- ➢ **Making lifelong learning visible and enriching**: strengthening systems for the validation of skills;
- ➢ **Making lifelong learning accessible and useful**: meeting the needs of individuals and employers.

(2) ***Making effective use of skills in the professional and social context***: strong and varied skills acquired throughout life should be used fully and effectively. OECD aims to:

- ➢ **Promote activity:** reduce barriers to work and help workers laid off for economic reasons to return to employment;
- ➢ **Promote participation in society**: raise awareness on the benefits of civic participation and facilitate the use of skills in society and in everyday life;
- ➢ **Expand the talent pool**: attract the skills sought from abroad, improve transparency of skills and provide language training;
- ➢ **Make intensive use of skills in the economy**: improve work organization and management practices to make full use of employees' skills;
- ➢ **Reduce skills imbalances**: improve the balance between supply and demand for skills;
- ➢ **Stimulate the demand for high-level skills**: support the innovative activities of enterprises and remove barriers to growth.

(3) ***Strengthen skills systems governance***: the implementation of reforms requires the involvement of several stakeholders and therefore requires strong governance mechanisms. The aim is to:

- ➢ **Promote coordination, cooperation and collaboration at all levels of government;**
- ➢ **Involve stakeholders in the entire policy cycle;**

I.3. Jobs, economic diversification and structural transformation in CA

Central Africa's labour market remains characterized by a lack of employment opportunities due to weak, volatile and non-inclusive growth, while disparities and inequalities continue to plague national economies. Whole sections of the population remain at the mercy of a low probability of finding work and low wages received, if employed.

Despite the growing recognition of the role of education in the probability of finding or not finding a decent job, skilled workers remain scarce in entire occupational segments, given the effects of an often failing and inadequate education system.

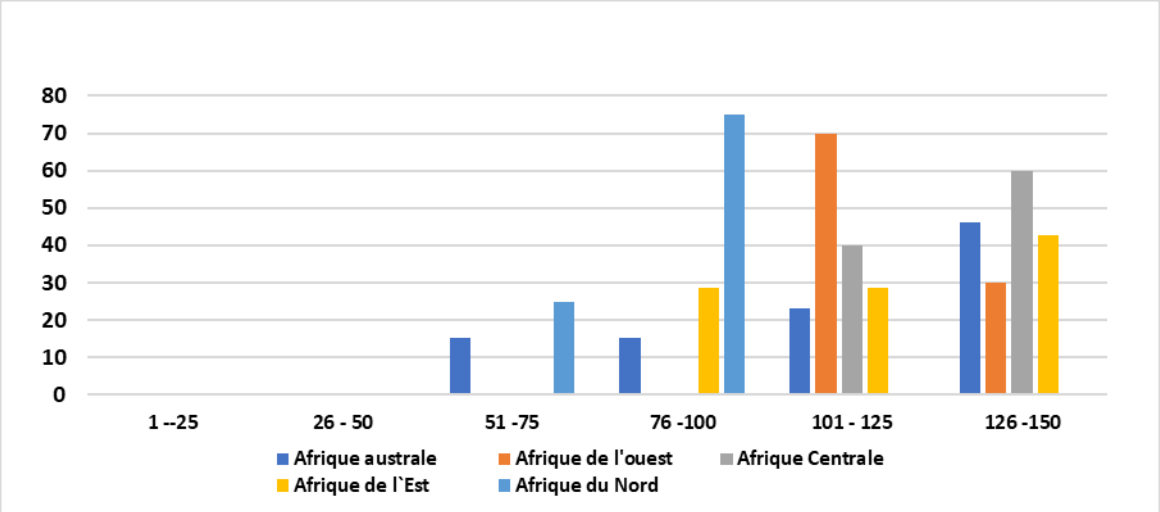
An analysis of Central African economies leads to the conclusion that one of the major constraints to sustainable job creation remains the structural mismatch between labour supply and demand. Skilled workers are still the most in demand on the labour market, while most unemployed people are under-skilled.

Economic diversification and the necessary structural transformation of Central African economies require a shift to economies directed towards efficiency and innovation. While growth in most of these economies is still driven by the extractive sector and agriculture and depends mainly on unskilled labour, an efficiency-driven economy is characterized by greater competitiveness and a more efficient production process, as well as economic growth that is more driven by skilled personnel. An innovation-driven economy, on the other hand, is characterized by growth largely driven by knowledge-intensive activities and an expansion of the high-productivity service sector **(S.A. Department of Higher Education, 2019).**

1.4. CA: opportunities to strengthen competitiveness through skills

Central Africa is among the lowest ranked sub-regions in terms of competitiveness, both globally and regionally. Indeed, according to the 2019 global competitiveness index, only four countries in the sub-region are among the 150 most competitive countries **(WEF, 2019**).

Graph 2: Percentage share of African countries in the top 140 of the Global Competitiveness Index by rank brackets in 2019



Source: Statistics from "The global Competitiveness Report, 2019".

No CEMAC and/or ECCAS country is listed among the top 110, while the most competitive African countries are mainly found in Southern Africa (Mauritius, South Africa) and North Africa (Morocco, Tunisia and Algeria). Gabon and Cameroon, the best-placed countries in the sub-region, are ranked 119th and 123rd respectively in the World Economic Forum Index.

Overall, 73% of the African countries in the top 150 of the global competitiveness index are concentrated between 87th and 141st position in the ranking. None of the African countries is among the 50 most competitive countries at global level, while the rank of half of Central African countries on this scale of competitiveness deteriorated in 2019 compared with 2018. The DRC deteriorated both in rank and score on the competitiveness index.

Low productivity caused by inadequate skills development, among other things, undermines the competitiveness of Central African countries that are struggling to diversify their economies and promote inclusive and sustainable growth.

There are yet enormous challenges in a system which, despite notable performance in access to basic education, suffers from quality constraints and poor alignment with market needs, as well as weak technical and vocational training frameworks. A comprehensive audit of the education, training and skills development system will identify real opportunities for capacity building if ECCAS economies are to diversify.

CHAPTER II: Audit of CA's Skills Development System Challenges and Issues

This chapter reviews the challenges of skills development relating to a sub-regional context dominated by young populations, growing primary school cohorts and an education system with established quality and inclusiveness constraints. It discusses the challenges of the different compartments of the sub-region's education system, from higher education, secondary and primary education, through technical and vocational education, both formal and informal. The analyses highlight the cross-cutting pitfalls of efficiency, credibility, attractiveness and inclusiveness of the system, and concludes with the identification of opportunities for policy action for effective skills development.

II.1. Young population, large primary school cohorts with gender bias

While Central African States have improved access to basic education in response to the mobilizing decades on "*School for all and the right to education*", there are still issues relating to the quality of education. The sub-region recorded sustained growth in primary school cohorts in recent years, but the gross enrollment rate shows a declining trend in the transition to secondary school and a steeper decline in higher education, with significant gender biases indicating that the countries' education systems are struggling to attract and retain students, especially girls. Retention and completion rates remain very low despite high primary school enrollment rates.

It is therefore not surprising that, like the rest of Africa, the sub-region has the lowest numbers of years of formal education for the older generations, even if these data do not take into account alternative modes of training such as informal learning, on-the-job training, and the traditional knowledge system that provides learning and training opportunities for millions of people of working age for a region with few formal qualifications **(WEF, 2017).**

African education points to an acceptable level of access to primary education with about 79% adjusted net primary school enrollment (up from about 59% a decade ago). Nevertheless, secondary school enrollment has dropped to 50 percent and only 7 percent of young people reach higher education. The younger generations remain considerably better educated with a higher potential for access to productive employment than their predecessors.

There is weak upstream and downstream coordination between the providers of primary, secondary and higher education in Africa and the regional supply of pre-primary, technical and vocational training for adults, while non-formal training systems remain the least developed.

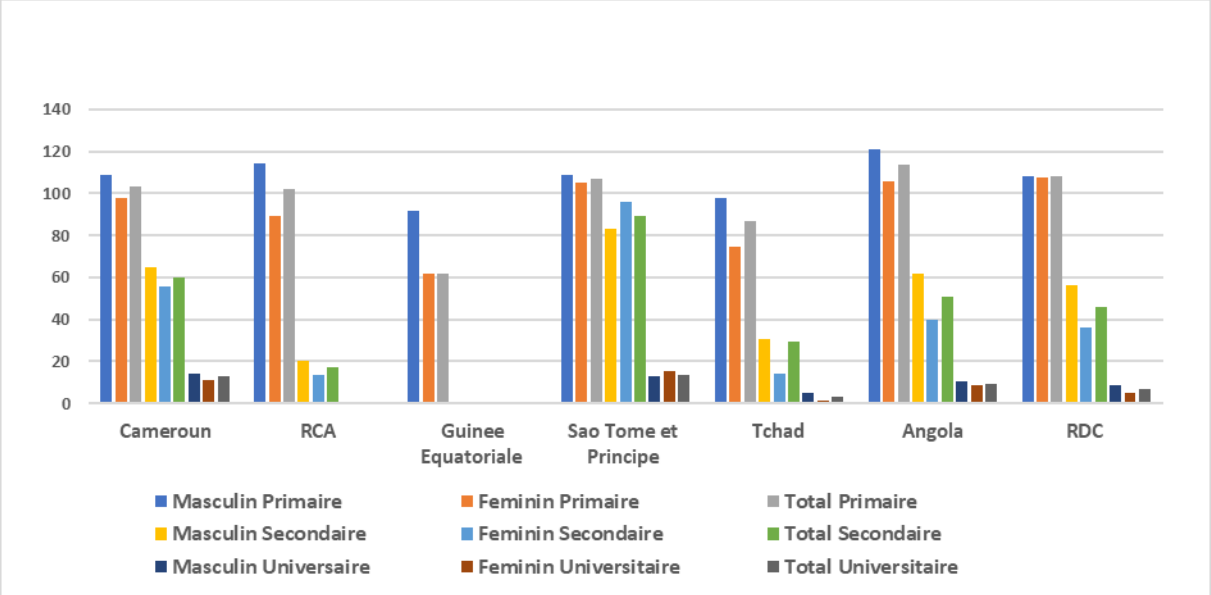
School dropouts remain enormous as the ages of students increase, again with a strong impact on girls' education. The role of technical and vocational education to recover those who leave the conventional system before the end of secondary education remains limited by the constraints specific to the sub-sector, so that a large segment of the population remains outside any training and skills development system in Central Africa.

In Chad, for example, people under age 15 make up more than half of the population (55%), those aged 15-64 make up 42%, while only 3% of the population is aged 65 and over. A significant proportion of the Chadian population aged 6 years or older is uneducated. In fact, 60% of women and 44% of men have never attended school. However, even though these proportions remain high, there has been a marked improvement in school enrollment in recent years **(Chad EDS-MICS, 2014-2015).**

II.2. Visible democratization of education at grassroots level tinged with quality deficits

The democratization of basic education in Central Africa, driven by the calls of the World Conference on Education for All (Jomtien, 1990), the World Forum on Education for All (Dakar, 2000), the Millennium Development Declaration and the Sustainable Development Goals, has not often led to improvements in learning and skills acquisition conditions.

Graph 3: Gross enrolment ratio (%) in primary, secondary and higher education in Central Africa



Source : UNESCO UIS. Stat

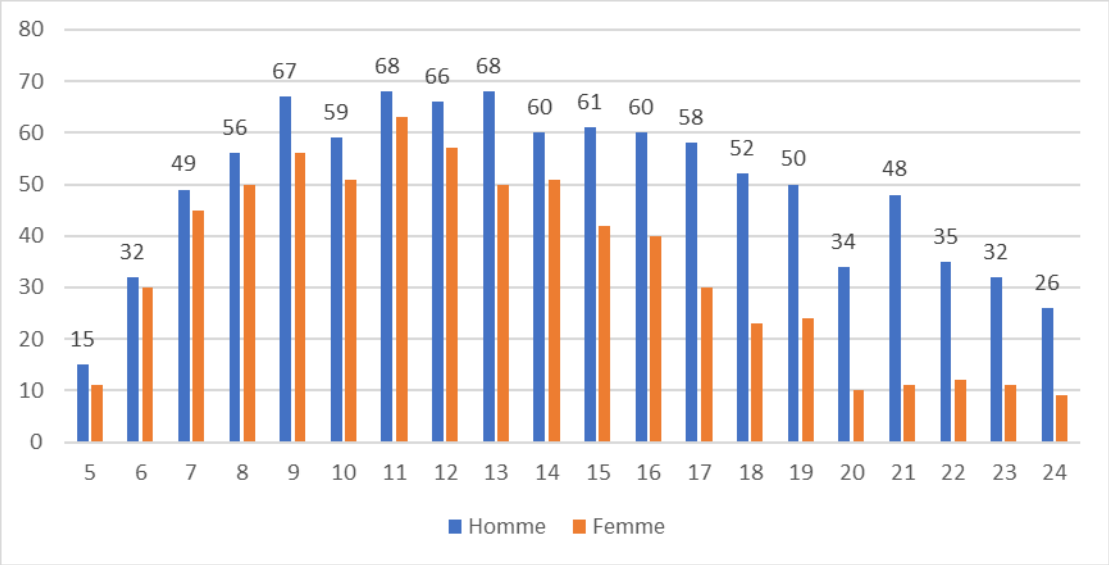
Textbooks have remained in short supply in most countries, reflecting teaching and learning conditions that are not conducive to improving skills acquisition. There is the persistent phenomenon of repeating, with its cohort of economic implications. This affects the dropout rate whereas it does not necessarily improve the performance of repeaters.

Primary school pupils show low levels of acquisition of the skills expected at this level. For example, 52% of students do not reach the "sufficient" threshold of mathematics proficiency at the beginning of secondary school in Chad. Only a small proportion of students (20.2%) reach the higher level in mathematics **(PASEC Chad, 2014).**

Higher learning and technical and vocational education training (TVET) institutions, both public and private, continue to face difficulties in integrating students with low academic achievement, especially those with poor performance in mathematics, languages and science at the secondary level.

Low performance in mathematics and science continues to have a negative impact on the quality and types of skills entering the labour market. The average of successful students in mathematics and science constitutes the pool of those who can access tertiary education in science, engineering and technology at the tertiary level.

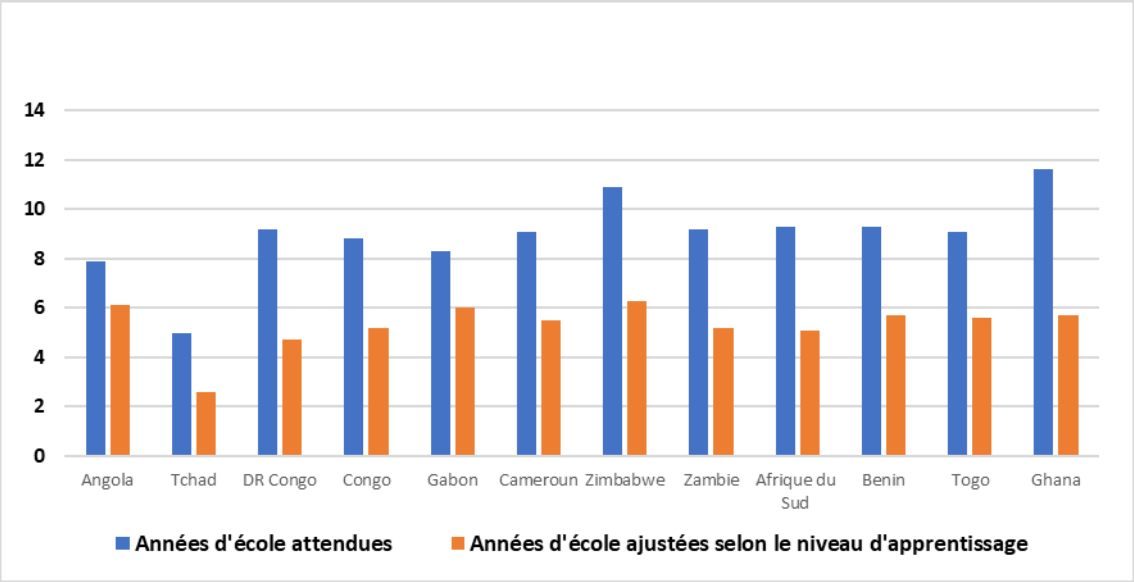
Graph 4: School attendance rate (%) by age and gender in Chad



Source: Chad's Interim Education Plan (PIET) 2018 - 2020.

The quality and capacity of education systems to meet the needs of a competitive economy remains a concern. These education systems are at the bottom of the global classification, suggesting that pupils/students are not acquiring the knowledge and skills required by today's economies and societies for their educational levels. This is corroborated by the findings of surveys on business leaders who highlight difficulties in finding skilled workers for their companies **(WEF, 2017).**

Graph 5: Years of study and learning quality challenges in Central Africa



Source: World Bank, 2018 and Roe and Dodd, 2018.

The intake capacity in the first years of higher education, both public and private, remains very insufficient compared to the cohorts of secondary school leavers, as mass enrollments in lower cycles of education have not been followed by sufficient structural reforms.

As a result, access to higher education is particularly low, with geographical and gender inequalities often accentuated. The geographical distribution of training institutions as well as the location of qualified trainers shows a strong preference for large cities and especially capital cities. Almost all Central African countries suffer from lack of a proactive policy in favour of vulnerable students or students from disadvantaged backgrounds.

II.3. Challenges of an unsuitable, poorly graded and non-professionalizing higher education system

Higher education and associated scientific research as a source of skills development and innovation remain handicapped by several shortcomings. The mismatch between educational opportunities and labour market needs remains accentuated by the preponderance of low-professionalization courses and generally theoretical training. Bottlenecks linked to insufficient financial and infrastructure resources (classrooms, various equipment, libraries, research laboratories, computers, etc.) limit the sector's ambitions in terms of effective skills development. Qualitative supervision ratios (Student/Teacher, Student/Classroom, Student/Library, Student/Laboratory, Student/Amphitheater, and Student/Computer Room) remain very low.

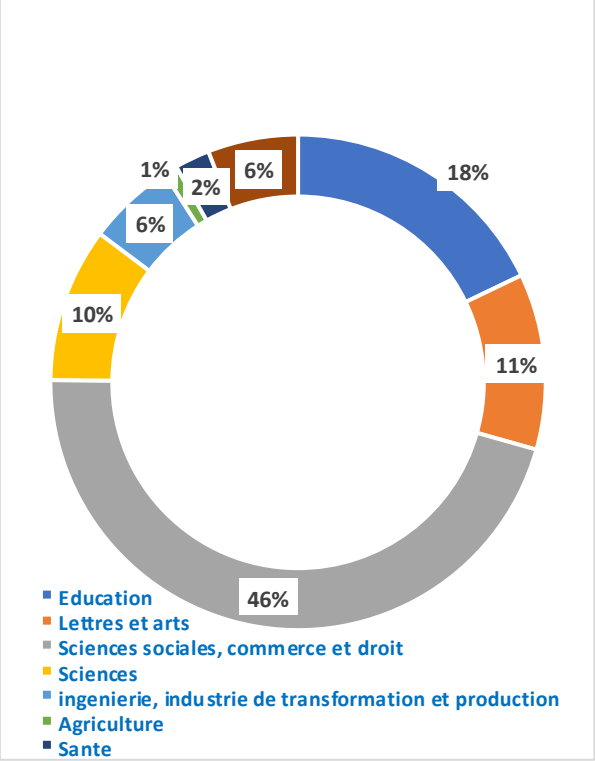
Universities in the sub-region therefore remain poorly ranked in terms of research output and quality of training. Their international rankings reflect low competitiveness at regional and international levels. The triangulation of the various university rankings in the world[5] shows that no Central African university is among the 150 best universities in the world. Universities in the sub-region are not among the top 15 African universities dominated by South Africa, Egypt, Tunisia and Nigeria in 2020. Rather, the best French-speaking universities in Africa are listed mainly in Senegal, Morocco and Algeria. Weak quality assurance mechanisms and inefficient information systems do not facilitate effective monitoring of the university sector performance.

Those who are among the most qualified and white-collar staff in the sub-region, as on the African continent, are found much more in humanities than engineering sciences. Data reveal that 35% of African LinkedIn members who have attained tertiary education have degrees in business, administration and law-with a preponderance of specializations in accounting supplemented by qualifications in law and business administration, banking, finance, marketing and human resource management **(WEF, 2017).**

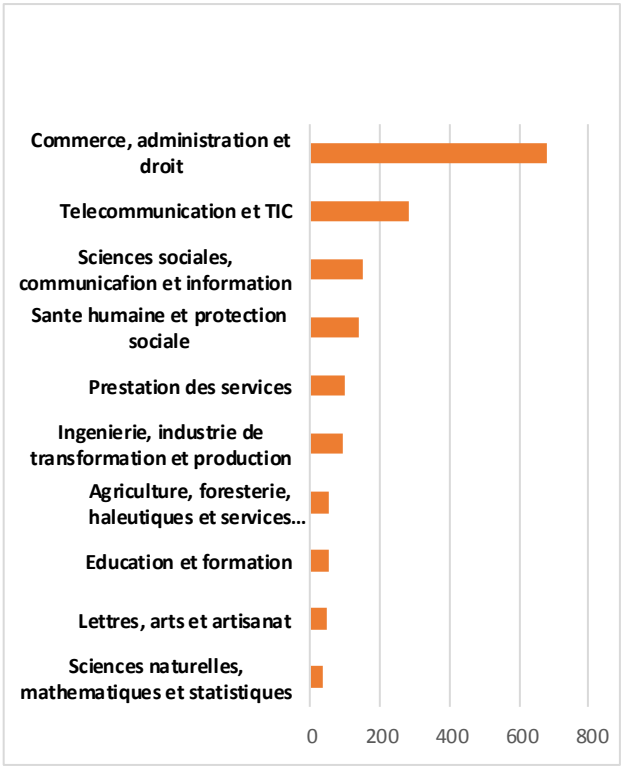
An analysis of the shares of graduates by field of specialization indicates that Cameroonian universities have produced more than 70% of executives from faculties and departments of social sciences. Of these, 46% have qualifications in social sciences, business and law, which dominate the mix of degrees obtained in 2014. Graduates from science, technology, engineering and mathematics (STEM) courses make up a quarter of all graduates from the country's universities. Agricultural sector graduates account for less than 1% of the total, despite the identification of agriculture as a major priority for the country and the Central Africa sub-region.

[5] Unirank, Quacquarelli sysmonds, Shangai Ranking Consultancy.

Graph 6: Distribution of graduates by field of study in Cameroonian universities in 2014



Graph 7: Openings of courses by field of training in Cameroon in 2018



Source: MINESUP, Statistical Information Bulletin, No.001, January 2018.

While the structure of 2014 graduates by training courses indicates a real mismatch of the training offered in relation to the strategic priorities of economic diversification in Cameroon, recent trends in the opening of new fields indicate that the existing imbalance is being consolidated. Indeed, the new sectors opened in Cameroon in 2019 are still predominantly (41%) commercial, administrative and legal studies. STEMs constitute less than 10% of the new fields launched by Cameroonian universities. ICTs, a major component of the skills of the future, nevertheless account for 17% of new university offers.

II.4. Renewed focus on TVET and issues of efficiency, credibility and attractiveness

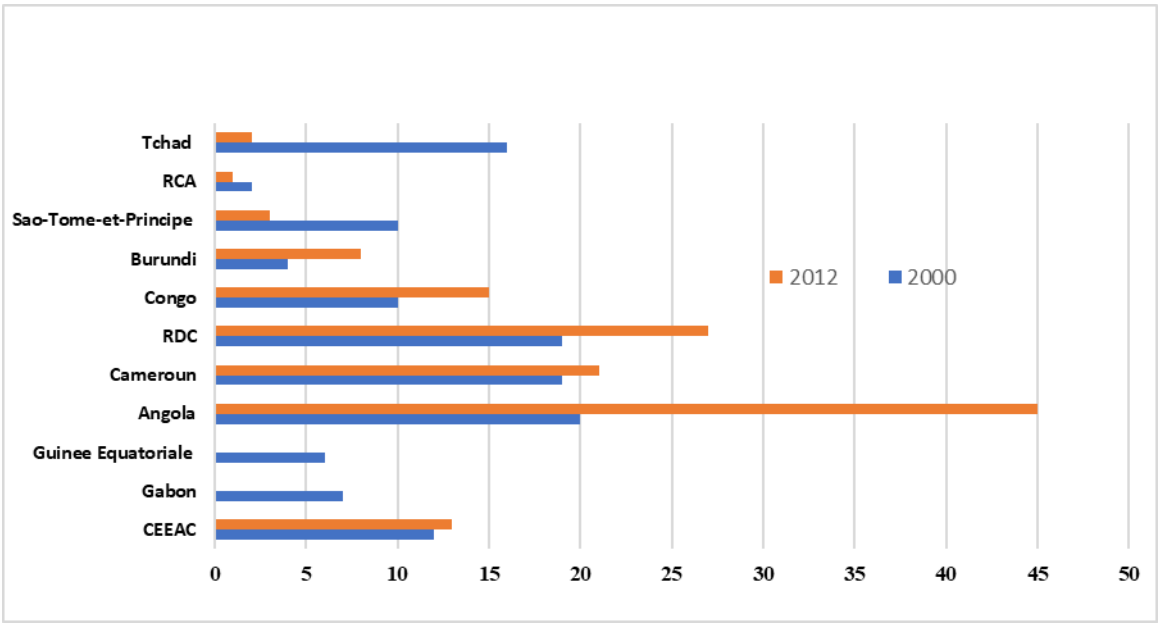
Improved access to basic education, with large cohorts of students now completing primary education, is proof of the attention paid by policymakers and development partners to post-primary education options and the development of vocational skills as alternatives to general secondary and university education **(Republic of Chad, IIEP Pole Dakar-UNESCP, UNICEF-Dakar, 2016).**

Although the countries of the sub-region are far from being homogeneous in terms of socioeconomic status, labour markets, and education and training systems, various reports and assessments show that, in the area of technical and vocational education and training (TVET), most countries face almost the same difficulties.

II.4.1. Quality issues and low gender-biased attractiveness

TVET programmes suffer from major shortcomings relating to their relevance, quality and attractiveness. The sector tends to attract few students and often those with low levels of education. It is still characterized by low professionalization of teachers and trainers, mismatch with the labour market and heavy financial constraints for a sector essentially supported by public resources.

Graph 8: Enrollment shares (%) of FTEs in secondary school enrollment between 2000 and 2012



Source : UNESCO Pole Dakar, 2018

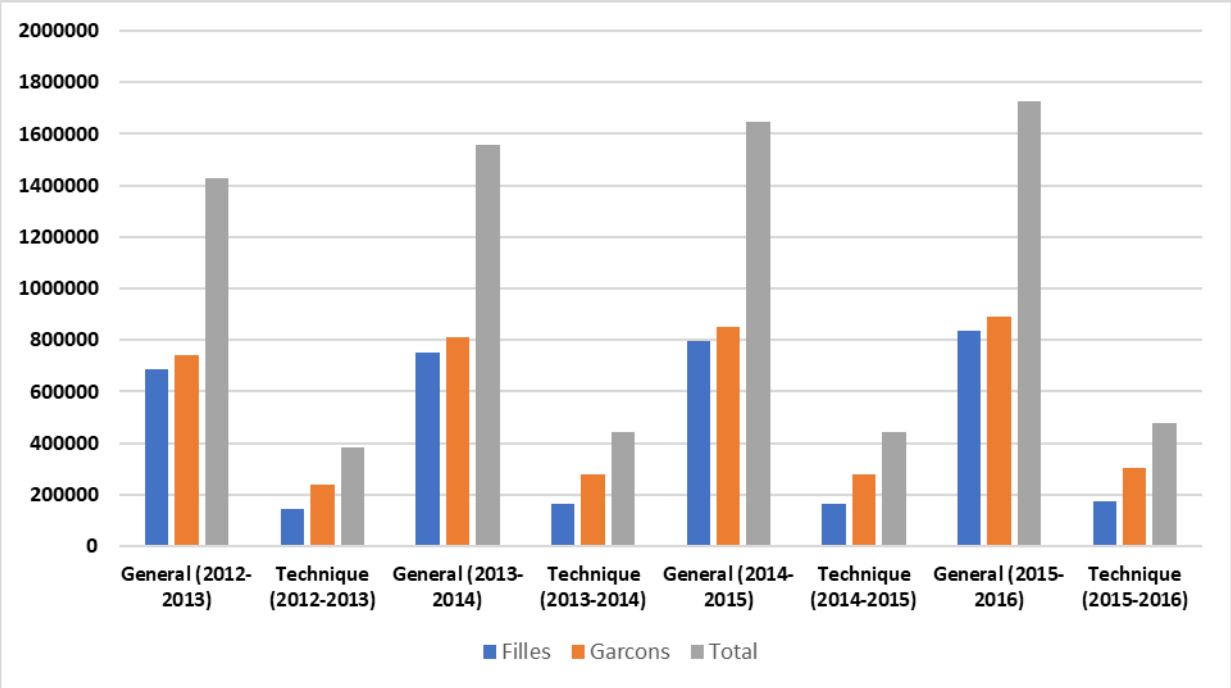
As a result, the proportion of graduates from the technical and vocational sub-sector remains generally very low. The low level of education does not allow the sector to provide the labour market with a sufficient number of qualified workers. For example, only 2% of graduates from the formal education and training system, including university, come from technical and vocational training in Chad.

It is worth underscoring the negative role of the social representation of professions in the low attractiveness and inclusiveness of vocational and technical training in the sub-region. There is little preference for these programmes in the selection of the trades that young people plan to pursue. The hierarchy of occupations according to students' order of preference indicates that

young graduates value "white-collar" jobs. They are still more attracted to the public service, general education and traditional higher education against more technological and professional fields **(Sovet, 2013).**

Over the last ten years, Cameroon has registered one student in technical education compared to threein general education, all sexes combined. This gap is even greater for girls, for whom there is, on average, one girl in technical education compared to about four in general education **(CAMERCAP-PARC, 2018).**

Graph 9: Enrollment of secondary school students by year and type of education in Cameroon



Source: CAMERCAP-PARC data, 2018.

II.4.2. Private Sector involvement, localization and relevance of TVET programmes

Although TVET is still the channel of last resort and a "*valuable second chance*" for some youth and marginalized segments of the population, the private sector remains weakly engaged in projecting and identifying skills needs and matching supply and demand for skills in the sub-sector. There are still enormous concerns about the quality of TVET programmes, which are still characterized by poorly qualified teachers, obsolete curricula and a lack of quality infrastructure and resources for teaching and learning, for sectors that are struggling to attract young people, especially girls **(UNESCO-EU, 2018).**

It is therefore not surprising that the unemployment rate for graduates in the technical and vocational sectors is often high. In Chad, the unemployment rate for technical secondary school graduates (11.1%) is higher than that of general secondary school graduates (7.1%). Moreover, the TVET sub-sector is still characterized by a lack of an institutional framework conducive to its development (**Republic of Chad, 2017**).

The establishment of technical and vocational education structures in countries is not based on an in-depth analysis of local needs, socio-economic characteristics and industrial potential. This results in a training-employment mismatch. Some technical and vocational schools are deserted; the rush of young people towards the long cycle and university is an indication of the lack of attractiveness of technical and vocational careers **(Nkoy Elela, 2014).**

II.4.3. Massive informal professional learning system and need for recognition

Technical and vocational education is not limited to formal training relating to the national education system. It also encompasses the non-formal and informal dimensions of skills development offered by a mosaic of public and private actors.

While the formal system focuses on long-term programmes, provided in accordance with national guidelines and validated by State certification, non-formal systems integrate training in State-accredited schools and centres that do not necessarily lead to a certificate issued by the State. The non-accredited system, on the other hand, refers mainly to the traditional apprenticeship system that operates in the informal sector. In Chad, nearly 77,000 young people were undergoing apprenticeships in such informal production units in 2011.

The quality of training in the informal sector remains poor. Many apprenticeship instructors are untrained, lack the necessary equipment and quality assurance is non-existent or at best deficient. These aspects need to be addressed through an inclusive skills development policy.

II.5. Transversal action levers for dynamic and agile skills development

Opportunities for improving the skills development system call for, among other things, removing the financial constraints on the sector, encouraging better mobilization of the "Science-Technology-Innovation" trilogy and promoting the skills of the future, including green skills, which are a guarantee of sustainable industrialization. Any relevant policy action will aim to strengthen the adequacy of the training offer with the needs of industry and encourage better coordination of human capital development strategies and those of industrialization.

II.5.1. Insufficient and vulnerable skills development financing

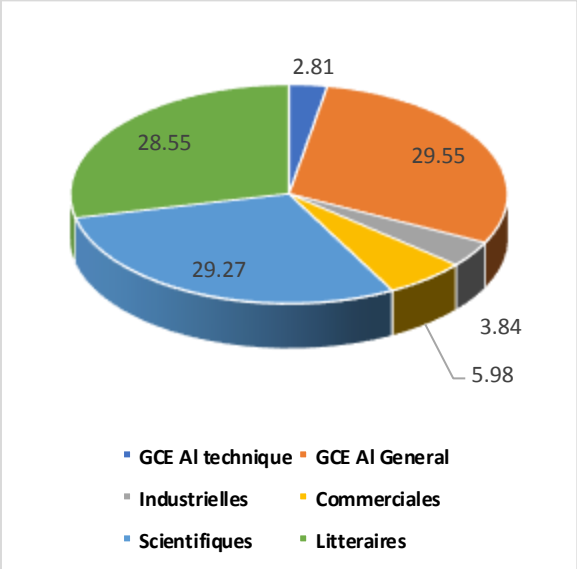
The budgets of the ministries of education, for all sectors and especially technical education, remain lower in countries and are more subject to cyclical cuts in the event of shocks. Chad's MESRI, for example, experienced a drastic reduction in public allocations of around 47.2% in 2015 compared to 2014 and more than 50% in 2016 compared to 2015. This significant drop in resources is inversely correlated with enrollments, which continue to increase steadily at the basic level, thus contributing to deterioration in the quality of education **(Republic of Chad, 2017; Republic of Chad, IIEP Pole Dakar-UNESCP, UNICEF - Dakar 2016).**

The recurrent economic crises experienced by economies that are highly vulnerable to commodity price shocks, generate pressure on public spending on education and training, while the urgent need for investing in skills in order to stimulate economic growth and facilitate integration (or reintegration) into the labour market is becoming increasingly apparent. The quality of public spending on skills development will need to ensure that such actions are efficient, effective and appropriately shared between the public and private sectors **(OECD, 2011; 2019).**

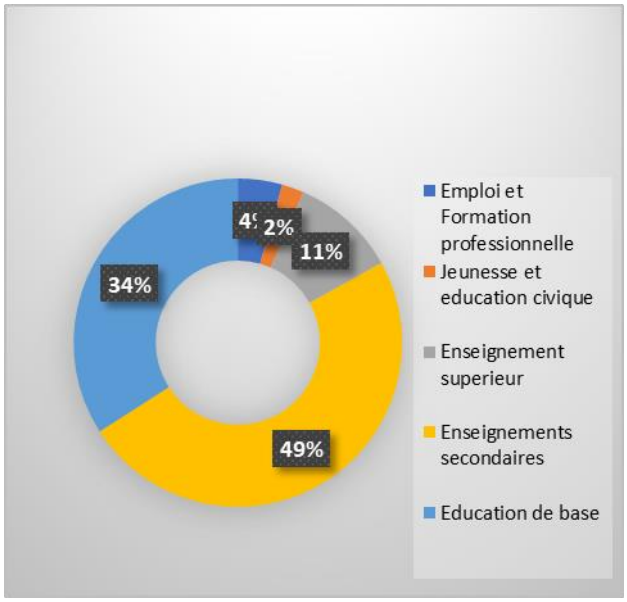
The share of current public expenditure and especially investment allocated to TVET remains low for governments that have identified this sub-sector as a priority, while technical and vocational education remains considerably more expensive[6] than general education, given its lower student-to-teacher ratios and the exorbitant costs of teaching materials. The costs of access (training fees, travel, materials, accommodation, etc.) to the TVET sector are an economic barrier for the poorest families. In addition to this economic difficulty-induced access for children from underprivileged backgrounds, there is often a lack of availability or geographical proximity of training facilities, most of which remain confined to large cities, better still the capital cities.

[6] A student enrolled in a public technical and vocational school costs the government 24 times more than a primary school pupil in Chad. He costs the government 16 and 6 times more than a middle and secondary school student respectively.

Graph 10: Share (%) of baccalaureate holders by field of study in Cameroon in 2007



Graph 11: Budget allocations by education and training sub-sector in Cameroon in 2017



Source: Cameroon education data, 2017

Increasing the formal supply of technical and vocational education as well as improving the quality of informal supply remain an urgent priority for ECCAS/CEMAC countries. The need to direct training supply towards priority sectors of activity, where the shortage of skilled manpower is evident, remains a top priority.

To face these multiple challenges, the coalition of actors including governments, the private sector, civil society, youth organizations ... is called upon to invest in the balance between technical training supply and the needs of individuals and those of the labour market. There is an opportunity to strengthen the attractiveness of TVET, particularly for women, through awareness-raising, promotion of lifelong learning opportunities and improving the quality and relevance of the training offer. Countries should be encouraged to share experiences on skills development reforms at national level and thus raise the profile of technical training in the regional integration agenda.

An analysis of the situation of technical and vocational education underscores the need to increase the intake capacity of public and private training institutions, the establishment of a pro-development policy and regulatory framework and the further diversification of courses, which are currently very limited in number.

The sector will have to align its choice of sectors with the needs of industry, improve the number and qualifications of trainings, administrative and supervisory staff and better mobilize resources, both public and private. Public-private partnership is one of the innovative paths

not only for financing but also for aligning the sub-sector with Central Africa's industrialization ambitions.

II.5.2. Mobilization of "Science-Technology-Innovation" (STI) and R&D

Research and development (R&D) and the share of the State budget allocated thereto are theoretically and empirically recognized as important levers in promoting innovation, productivity and growth, skills development and economic diversification.

The different types of scientific and technological activities that are part of research and development include: (1) basic or fundamental research, (2) applied research, and (3) experimental development. In Central Africa, they are dominated by the public sector in terms of origin and funding, and form the backbone of "Science-Technologies-Innovations", the knowledge base and sources of skills that can boost industry.

The STI landscape in Central Africa remains largely embryonic. No country in the sub-region is on the list of African leaders in this area. The ranking remains dominated by South Africa, Egypt, Morocco, Kenya, and Tunisia. Research and development (R&D) spending remains below 0.5% of GDP in all countries of the sub-region. No CEMAC/CEEAC country is up to the target of 1% of GDP allocated to R&D as set by Agenda 2063 and the recommendations of the African Union.[7] Central African countries are cited among the least innovative in Africa. The sub-region is the least performing and attractive to foreign investors. No country in the zone can measure up to the African champions in innovation identified by investors, which are: Kenya (57% of investors), South Africa (66%), Morocco (42%), Rwanda (45%), Nigeria (32%) and Senegal (32%) **(Havas Horizons, 2018).**

Most STI policy development structures operate in a vacuum with no linkages to other entities active in development policy. These structures are characterized by weak links with the private sector in a context where the infrastructure supporting STI, such as high-speed Internet access and electricity, are still inadequate.... Countries lack the expertise required for the development of STI policies. STI policy development remains largely dependent on bilateral and multilateral partnerships whose actions suffer from weak ownership and sustainability.

[7] The Ordinary Session of the Executive Council of the African Union, held in Khartoum in 2006, endorsed the decision of the African Ministerial Conference on Science and Technology to increase the share of national budgets allocated to science and technology to 1% of GDP. The decision was reinforced by the 9th AU Council held in Addis Ababa in 2007 calling on countries to allocate at least 1% of their GDP to promote R&D and develop innovation strategies for wealth creation and economic development from 2010 onwards. This recommendation was reinforced by the Strategy for Technology and Innovation in Africa 2024 (STISA-2024), adopted in 2015, which calls for greater country ownership and responsibility for R&D **(UNECA, 2018).**

II.5.3. Constraints to green skills for sustainable and inclusive industrialization

Agenda 2030 recommends the development, transfer and dissemination of environmentally friendly technologies. The concepts of green growth, economy and jobs aim to meet the challenges of development that does not "*compromise future growth and poverty reduction objectives*", in a context where the effects of climate change are now a daily reality.

The growing importance of the concept of sustainable development and the desired shift towards a low-carbon economy requires a change in the skills development process. Many Central African countries are facing difficulties in translating green jobs into practice as they lack sufficient skilled labour to support the shift to a green economy.

The shift to a more environmentally sustainable economic model is an opportunity to create millions of new jobs in Central Africa. For example, it is estimated that South Africa alone could create an additional 462,000 jobs by 2025 by "greening" areas such as energy production and consumption, pollution control and natural resource management. There are similar estimates for countries like Mauritius, Namibia, Kenya, Senegal, Uganda and Zambia **(WEF, 2017).**

Innovative policies in technical and vocational education and training should integrate green skills into traditional approaches to skills development and thus ensure that the sub-region is better prepared for new emerging jobs as well as for the changing skills profiles that lie ahead for a wide range of occupations.

Opportunities for the acquisition of new skills should target those at risk of losing their jobs in industries with high greenhouse gas emissions but also marginalized segments of the population, in order to make green growth and the green economy inclusive.

These policies should aim to equip young people entering the labour market and older workers at the core of their careers with the skills and competencies required to adopt new green technologies, align with new environmental regulations, move towards renewable energy sources, promote sustainable production and consumption and the circular economy**.**

Integrating sustainable development and environmental considerations into education and training at all levels, starting with basic education, will help change consumer behaviour and spur market forces towards the green agenda.

So far, legal requirements and some higher education initiatives have tried to cover, to some extent, the countries' green skills deficit while education and technical and vocational training are lagging far behind in the adoption of green economy precepts in the sub-region.

While all sectors need a certain level of environmental skills for their workers, there is a low representation of women in science and technology relating to green jobs. There is a need to

strengthen the gender dimension in developing green skills insofar as gender segregation is not yet strongly entrenched in new occupations **(Strietska-Ilina, et al.; 2011).**

Table 2: Green Skills in Central Africa: Summary of responses at various stages

Level	Strengths in general	Weaknesses in Central Africa
Company	These are faster and more effective responses in the development of skills that are in line with the current needs of the company. These responses often follow a "bottom up" approach to development.	They are still timid and yet remain rarely coordinated and have little impact in the production of green skills. Their promotion in the national programme remains low.
Industry	Bodies such as industrial competence boards or chambers of commerce have already achieved remarkable results in many countries on these issues.	There is little commitment from sectoral bodies to these issues. Many actors, even the SEZs, have enormous capacity building needs on the issue.
Government	Training programmes can be offered through the formal education and training system, including ministries of education, employment and labour and universities or training centres attached to the system. Responses can be defined under the relevant ministries - energy, agriculture, construction...- to meet national, regional or local demand. Often "top down" approach.	There is a visible emergence of the debate on the green economy driven by support from international organizations. The ministries of the environment remain mobilized as well. Nevertheless, difficult coordination between several entities and weak alignment with the needs of industry, weak communication channels between training systems, industry and agencies implementing policies on the green economy, cumbersome procedures for the development of new skills programmes, etc., are some of the reasons for this.
Public-private partnerships	Reconciling government resources with the business community's stranglehold on relevance and quality of skills has proven its effectiveness in many cases. The involvement of trade unions and employer associations can provide effective training responses for large-scale green transformation.	Timid development in the sub-region and low trust between the two sectors, which make it difficult to forge partnerships based on links between the productive sector and the education and vocational training system

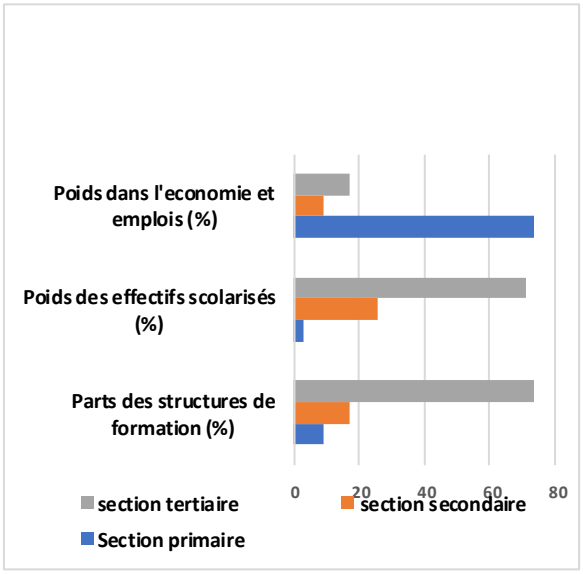
Source: Summary of literature review

II.5.4. Mismatch between training offer and FTEs and needs of the economy

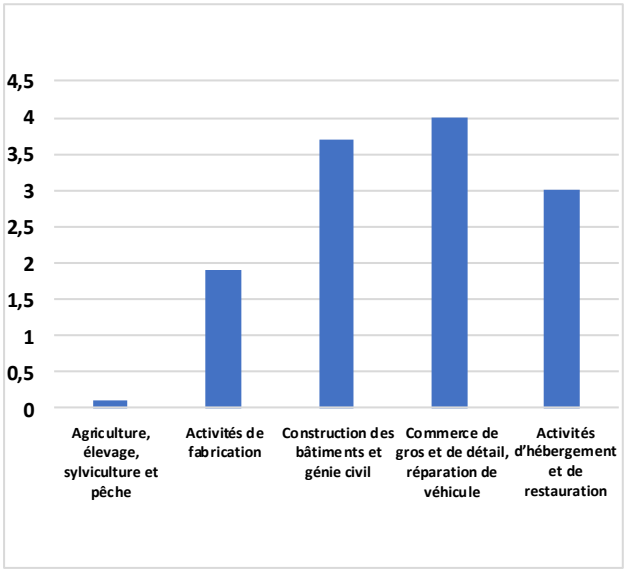
The training offers proposed by the education and vocational training system, in general, suffer from inconsistency with the needs of the economies and industry in Central Africa.

Training offers, which are not aligned with the demand of the real economy, hamper the enthusiasm of potential beneficiaries. They end up losing their attractiveness to consumer households which cannot identify real prospects in terms of jobs after training. Such irrelevance to local industry hampers the effectiveness of the training offer given the difficulty of finding local expertise to support practical work and the lack of structures that can accommodate learners in the context of company visits and internships.

Graph 12 : Mismatch of vocational training offers, economy and employment opportunities in Chad



Graph 13 : Share (%) of qualified persons by sectors in Chad



Source: Republic of Chad, IIPE Pole Dakar-UNESCP, UNICEF, Dakar 2016.

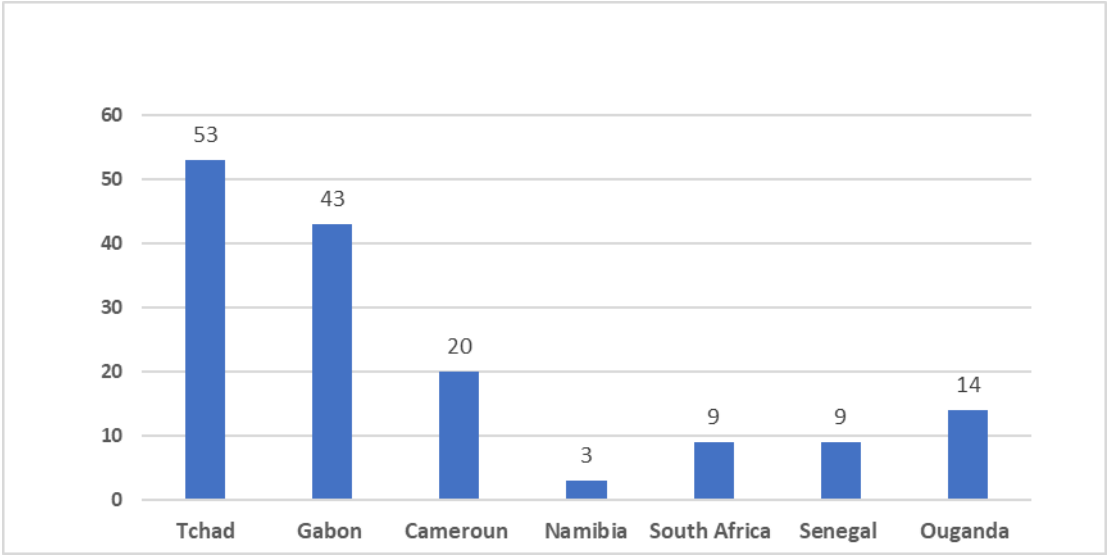
In Chad, for example, training structures are much more involved in supporting the tertiary sector, while the primary sector remains responsible for the largest share of GDP and the volume of jobs. It is therefore not surprising that the agricultural sector, in the broadest sense, and the industrial (manufacturing) sector are the least well-off in terms of skilled labour in the country.

Technical and vocational education and training (TVET) in many countries continues to be characterized by a number of teachers who are not only insufficient in number but whose skills have often not kept pace with technological advances in the real sector and industry in particular. The lack of a lifelong learning culture and the lack of skills maintenance lead to the obsolescence of skills development. Institutions and teaching materials, too, are often outdated and not only obsolete, but also insufficient in relation to the number of learners and jobs. They are also out of step with the equipment available in companies.

The mismatch between the supply of training and the needs of economic diversification is accentuated by training systems with programmes that are rarely updated on the basis of job references, in addition to a lack of appropriate teaching equipment. Partnerships between the "*education system and companies*" are almost non-existent, thus cancelling out the opportunities for work-linked training with the professional milieu. The immediate consequence of this is the lack of collaboration between the vocational training system and the productive sector, in general, and the industrial sector, in particular.

Consequently, 30% of foreign investors consider the lack of relevant skills among the labour force as a major constraint to investment in the sub-region **(Havas Horizons Study, 2015).**

Graph 14: Share (%) of employers perceiving skills mismatch as a constraint to business development in selected countries



Source: WEF, Human Capital Index 2016

The mismatch of skills to industry needs is perceived as an impediment to a good business climate for more than half of the employers in Chad and more than 40% of those in Gabon. These perceptions are accentuated in Central Africa compared to similar economies in West and East Africa.

II.5.5. Need for skills planning and opportunities for a sub-regional approach

Skills do not adjust mechanically to changes in the economy; their development requires proactive and ambitious planning. Therefore, employers and educators in the sub-region need new tools to understand new developments in labour markets and emerging skill requirements **(WEF, 2017).**

Most Central African countries are sorely lacking data from business skills surveys. They find it difficult to understand the level and nature of skills deficits experienced by employers as modern economies are called upon to have integrated, consistent and accountable skills planning. Better anticipation and monitoring of skills needs will make it possible to identify changes in the supply and demand for skills and to define, accordingly, new qualifications and training, and necessary changes to existing curricula.

The credibility of the skills planning system remains limited and its low impact stems from a lack of research capacity and economic analysis of the labour market and very limited access

to reliable data on skills supply and demand. Most countries in the sub-region depend on qualitative methods to anticipate and monitor skills needs, using business surveys, sectoral analyses, occupational research and job analysis, sometimes in combination with some quantitative analyses. It would be more appropriate to adopt a more standardized and rigorous approach to identifying and tracking industrial occupations and related skills **(Strietska-Ilina et al., 2011).**

Quality, real-time data on employment and skills structure remain difficult to obtain in Central Africa. There is a paucity of information on the number of existing jobs, newly created jobs and vacancies filled in specific sectors. Initiatives to address the skills gap cannot be effective when frustrated by data gaps. To maximize the effectiveness of future skills building opportunities, initiatives to improve data collection, including work on the informal sector, remain necessary **(WEF, 2017).**

A partnership between policymakers and labour economics research bodies should be encouraged, as in South Africa where the Department of Higher Education and Training, in collaboration with the consortium including the University of Cape Town (UCT) and the University of Witwatersrand, has set up a labour market intelligence project (LMIP). The project aims to develop credible systems for producing data and signals on skills needs and supply and demand in order to drive the harmonious development of the industry **(S.A. Department of Higher Education, 2019).**

Central Africa will need to strengthen sub-regional cooperation for information sharing and especially for adoption of a regional approach to skills forecasting methods and the use of the results for effective governance of skills development systems. A sub-regional cooperation platform will not only enhance peer learning, but will also consolidate understanding of the various policy levers for skills development and the influence of national or regional priorities and the socioeconomic context.

Such a platform will facilitate the anticipation of new trends in skills and related needs in certain sectors, with a particular focus on industry, the green economy and the digital economy (**UNESCO-EU, 2018).** It should be backed by permanent social dialogue for a better transfer of signals from the labour market to the bodies responsible for developing training programmes.

II.5.6. Coordination and integration of human resources development strategies

Countries will need to put in place integrated human resource development strategies based on democratizing education, encouraging private sector involvement in technical and vocational training, promoting growth and employment in emerging economic sectors, and

strengthening the integrated information system on skills and employment for better monitoring and evaluation of the sector.

The promotion of skills for enhanced growth and sustained economic diversification should aim to improve productivity by encouraging the upgrading of skills in both the formal and informal sectors and ensure that training is conducted in accordance with standards within the national framework **(S.A. Department of Higher Education, 2019).**

The establishment of Skills Planning Units should be encouraged to facilitate problems identification and analyze skills supply and demand in order to provide appropriate responses to the identified challenges.

The relationship between the level of development and the types of skills required by the economy underscores the urgency of aligning the ambitions of the education and training system with the policies of economic growth and diversification at national and sub-regional levels. The State remains the key player in monitoring changes in skills supply and demand on the labour market and in society as well as proposing responses to the identified challenges. As such, it must ensure the existence of efficient links between various public and private entities.

CHAPTER III: Demand for Skills and Industry Needs: An Analysis Based on Country Economic Diversification Strategies

The call for the diversification of economies in Central Africa implies demand for skills relating to the new niches identified by national and sub-regional industrialization strategies and policies. This chapter reviews the priority sectors identified by country economic diversification strategies, after explaining the degree of export concentration as an indication of low economic diversification. It also presents a map of the skills, competences and qualifications required by each of the priorities contained in country economic diversification plans.

III.1. Economic diversification and industrialization: analysis of the demand for skills in CA

The 33th session of the Intergovernmental Committee of Experts (ICE) for ECA/SRO-CA that held in Douala in September 2017 enabled the Governments of Central African countries to renew their commitments to diversify their economies that are grappling with external shocks, in particular the collapse of commodity prices on the world market.

The implementation of the *"Douala Consensus for Economic Diversification in Central Africa"* requires prioritizing industrial policies in national and/or regional development visions and strategies, in line with macroeconomic and sector policies. This approach should ultimately lead to a structural change, i.e. a break in the dominance of the primary sector (subsistence agriculture and extractive activities)[8] – which is the fundamental cause of volatile and unsustainable growth with little job creation potential and low impact on poverty - and promote the development of manufacturing industries. This perspective is also in line with implementation the African Union's Agenda 2063 and achievement of the Sustainable Development Goals (SDGs) which call for a review of growth strategies along the same line **(ECA, 2016).**

An analysis of the various strategy papers of the countries of the sub-region show that a good number of governments have already considered industrialization options as a means of averting the underdevelopment trap. **(Lavopa and Szirmai, 2018).** This approach presupposes an expansion of the modern sector of their economies as well as a technological upgrade that can increase productivity. However, improving productivity requires labour (education) and innovation (research and development) **(Doner, R. &**

[8]The Economist Intelligence Unit identifies several structural risk factors associated with the middle income trap; they include excessive dependence on exports of basic products or other goods with low value added, the quality of the educational system, the level of productive investment and low workforce efficiency.

Schneider, 2016) policies. Thus, it is necessary for Central African countries to acquire the skills required to achieve economic diversification goals.[9]

After reviewing the challenges relating to skills supply in Central Africa, this chapter will list the various skills required for the operationalization of industrialization projects and identify the challenges and opportunities relating to the availability of sufficient and qualified labour force required to achieve the sub-region's declared goals.

II.1.1. Industrial priorities of CEMAC countries: a look at national development/industrialization plans

An analysis of the strategy papers of the 11 ECCAS countries helps to identify the priority sectors which should serve as springboard for the industrialization of the various countries. **(see *Table 3*).** Save for the Central African Republic, all the countries have development national industrialization plans and/or strategies.[10] Indeed, the priority of the Government of the Central African Republic is, above all, the consolidation of peace and security, which are preconditions for any economic recovery. The National Recovery and Peacebuilding Plan (PNRCP) mainly seeks to make use of the exploitation of the country's natural resources by reviving agriculture and extractive industries. In the medium term, Central African authorities plan to diversify economic activities, in particular by promoting the local wood processing industry **(PNRCP, p.39).**

[9]In its diagnosis of the industrial sector, the National Development Plan highlights an unskilled local workforce that acts as a constraint on the economy.

[10]At the time of this analysis, several countries were engaged in the development or revision of new strategy papers (update). This is particularly the case of Cameroon, which is in the process of producing a new "Industrialization Master Plan", or of Congo, which is preparing its "Vision 2048".

Table 3: Strategy papers and Industrial policies of the Various Central African Countries

	ECCAS Country	Strategy paper	Year
1	Angola	Plano de Desenvolvimento Nacional 2018-2022	2018
2	Burundi	National Development Plan 2018-2027	
3	Cameroon	Industrialization Master Plan	2015
4	Central Africa Republic	National Recovery and Peacebuilding Plan	2017
5	Republic of Congo	National Development Plan 2018-2022	
6	Democratic Republic of Congo	National Strategic Development Plan 2018-2022	2018
		Poverty Reduction and Growth Strategy Paper - DSCRP 2	2011
7	Gabon	National Industrialization Strategy	2013
		Emerging Gabon Strategic Plan	2012
8	Equatorial Guinea	Equatorial Guinea 2020. Agenda for the Diversification of Sources of Growth - Volumes 1, 2	2007
9	Rwanda	Vision Rwanda 2050	2016
		Economic Development and Poverty Reduction Strategy II	2013
10	Chad	Industrialization and Economic Diversification Master Plan	2020[11]
	São Tomé and Príncipe	Strategic Thinking Sao Tome and Principe 2025	1998
		2030 Agenda Transformation	2015

Source: Summary of country industrialization strategies and economic diversification

The analysis of the "Industries - ECCAS Countries" matrix helps to establish the list of all the industries contained in the various strategy papers and to identify the industries that are part of each country's strategic options. With each country having its own nomenclature and industrial development perspective, such an exercise sometimes requires the grouping or splitting up of some activities in order to standardize classification.[12] Box 3 below describes the process in Chad.

[11]At the time of writing this report, the final version of the PDIDE was being validated.

[12]The primary objective being to identify the jobs associated with the various industries, the standardization adopted is based on the nomenclature

Box 3: Consolidation of economic activities into industries: Application to Chad's PDIDE

For example, Chad's PDIDE classifies industrial activities into 6 groups (A-F) and 12 industrial pillars (i) - (xii), namely:

A. Energy and water;
B. Agro-industries
C. Mining, extraction and metals;
D. Building and civil engineering works
E. Banking and finance;
F. Digital

The 12 pillars are;

(i) Meat, leather, milk;
(ii) Spirulina, sesame and shea;
(iii) Cotton and gum arabic;
(iv) Refining and petrochemicals;
(v) Gold mining;
(vi) Quarrying
(vii) Metal industry
(viii) Optical fibre network
(ix) Data centre, intelligence;
(x) Cement manufacture
(xi) Marble processing and quarries;
(xii) Brick manufacture.

With a view to a uniform presentation for all countries, the groups (in bold) and pillars have been grouped as follows:

Agriculture and agro-industry	**Agro-industries/**spirulina, sesame and shea; cotton and gum arabic
Banking and finance	**Banks and financing**
Construction, building, public works	**Building and civil engineering works/**cement manufacture; marble processing and quarries; brick manufacture
Livestock production	Meat, Milk
Energy (excluding oil)	**Energy and water**
Metallurgy/Mines	**Mining, extraction and metals/**gold mining; quarrying; metallurgical industry
Digital	**Digital/**optical fibre network; data centre, intelligence
Hydrocarbons/Refining/Petrochemicals	Refining and petrochemicals
Leather/textile	Leather

Pillar (i) meat, leather, milk has been split into 2: "meat, milk" classified under Livestock production, and "leather" under Leather/Textile.

For the entire CEEAC group, 15 industries were identified from the strategy papers, namely: (1) Agriculture/Agro-industry, (2) Banking and Finance, (3) Cultural and artistic goods and services, (3) Timber - Forestry, (4) Chemicals/Pharmaceuticals, (5) Building and civil engineering works, (6) Livestock production, (7) Energy (excluding oil), (8) Manufacturing, (9) Metallurgy/Mining, (10) Digital/ICT, (11) Fishery/aquaculture, (12) Hydrocarbons/Natural gas/Refining/Petrochemicals, (13) Textile/Leather, (14) Tourism/hospitality and (15) Transport and logistics.

III.1.2. Transversality of agriculture and related sub-sectors

In response to the African Union's declarations on agriculture,[13] all the 11 ECCAS countries aim to use Agriculture/Agro-industry to diversify their economies **(Table 2**). This is not surprising given Central Africa's agricultural potential. According to the FAO Regional Office for Africa, Central Africa is home to 240 million ha of tropical forest, the second largest in the world after the Amazon. The sub-region also boasts of a large part of Africa's arable land. Yet, countries in the sub-region spend an average of USD 500 billion per year on food imports while the DR Congo alone can feed two billion people.

Thanks to the sub-region's favourable agro-ecological conditions, agriculture and related industries can be the springboard for strong and inclusive economic growth and diversification. However, development initiatives in the sector must seek to ensure proper ecological risk management and promote sustainable and environment-friendly agriculture.

Agribusiness has been identified as the easiest way through which Africa can industrialize and transform its economy **(ACET, 2017).** The starting point for any structural transformation remains productivity gain in agriculture as well as the incorporation of the sector into a predominantly agricultural manufacturing and modern services industry. Despite this recognized potential, African agriculture generally suffers from low factor yields due to insufficient access to modern inputs and technologies (high-yield seeds, fertilizers, irrigation, mechanization, etc.) and low integration into consumer markets that are increasingly turned towards value-added food products.

The poor performance of this sector which employs the majority of the population justifies the need to train skills for a prosperous and dynamic agriculture in Central Africa. The major challenge remains that of attracting young people to the sector by providing them with skills in value added and resolutely market-oriented agriculture offering jobs that are rewarding in the eyes of this increasingly suspicious category.

All 11 countries in the sub-region aspire to modernize **livestock breeding** which they consider, moreover, as a sub-category of agriculture. Only Cameroon, Rwanda and Chad are considering developing **textile and leather** whose raw materials are hides and cotton. In addition, only 7 countries aim to develop **fishery and aquaculture**.

Despite the recognized driving role of **banking and finance**, only three countries place this sector at the centre of their industrialization ambition, namely Equatorial Guinea, Rwanda and Chad. **Cultural and artistic goods and services** constitute one of the thrusts of the industrialization plans of Burundi and the DRC.

[13]Maputo Declaration on Agriculture and Food Security (2003) and Malabo Declaration on Accelerated Agricultural Growth and Transformation (2014)

III.1.3. Timber and forestry, building and civil engineering works, and hydrocarbons sectors: opportunities for diversification

Sixty-four per cent of the countries of Central Africa (Seven countries out of elevn) intend to use **timber and forestry** for their industrialization. They are Angola, Cameroon, CAR, Congo, DRC, Gabon and Equatorial Guinea. With the exception of Angola, all of these countries belong to the Congo Basin. Covering an estimated area of 3.7 million km^2 (more than the surface areas of India and France put together), the Congo Basin is the second largest forest area after the Amazon rainforest.[14]

Thanks to its rich biodiversity, the Congo Basin constitutes an important medicinal plant reserve and, therefore, a huge reservoir of organic molecules whose properties have not yet been studied and mapped. They have the potential to cure many diseases, as evidenced by the success recorded by traditional pharmacopoeia. The current context marked by COVID19, whose effects could be felt over a few years, is an appeal for the sub-region to strengthen its **pharmaceutical industry.** An analysis of the various strategy papers shows that only Cameroon is part of this drive.

The coronavirus pandemic and its effects jeopardize the achievement of Africa's aspiration to "a High Standard of Living, Quality of Life and Well Being for All", a major goal of the African Union's Agenda 2063 which is closely linked to SDG3 on achieving health and well-being.

Central Africa could benefit from the pharmaceutical initiative of the African Continental Free Trade Area (AfCFTA), whose main objective is to ensure access to safe, affordable and high-quality medicines in Africa**.** The importance of developing local production capacity to reduce dependence on pharmaceutical product imports, in a context where traditional trading partners restrict exports of medicines, is only too obvious. The Initiative aims to encourage local production and foster the specialization of countries in key pharmaceutical production for the continent. The development of the productive capacity of the pharmaceutical industry must be supplemented by the enhancement of the required technical skills and other infrastructure in order to make intra-African trade more efficient.

On another note, Rwanda and Chad plan to develop the building and civil engineering works sector, which are branches of activity that are already showing their enormous potential to contribute to economic diversification in a rapidly urbanizing sub-region.

[14]In addition, thanks to the new revolutionary financing mechanisms, Gabon, which is part of this green space, will receive from Norway through the CAFI, USD 150 million in payments based on performance in the reduction of C02 emissions.

Given the sub-region's mineral and oil reserves, many countries are increasingly embarking on vertical and horizontal diversification in **mining and/or metallurgy,**[15] on the one hand, and/or **hydrocarbons, natural gas, refining and petrochemicals,**[16] on the other hand.

Due to climate change, a global megatrend of our time, international climate policies in favour of low carbon technologies have been widely adopted. This translates into a drop in demand for fossil fuels, thereby rendering carbon wealth extraction and processing unprofitable (UNU-INRA, 2019). Given that most of the strategic sectors for economic diversification and industrialization have close links with natural resources, it is therefore necessary to strengthen the green dimension in the production of goods and services, and in skills development.

III.1.4. Poor manufacturing performance and the missing links of strategic priorities

Considering the risk of blocking climate-related assets *("Stranded assets"),* economic diversification and increased intra-regional trade are becoming more urgent for Central Africa. Such diversification undoubtedly requires the development of **the manufacturing industry**.

However, the manufacturing industry is still embryonic in a sub-region that is even showing the tendency for "*Premature deindustrialization*" owing to weak and non-inclusive economic growth driven by primary products that are exposed to world price fluctuations. Also, the existing embryonic industry is characterized by very low total factor productivity due to the significant delay in technological development. Consolidation of the manufacturing sector in the sub-region requires massive investment in infrastructure and human capital, in order to promote rapid technological development **(ECA, 2018).**

With the notable exception of Burundi, Cameroon,[17] and Equatorial Guinea, most of the strategy papers of ECCAS countries do not include the **energy**, **transport and logistics**, **digital and ICT** sectors as industries in their own right. They are rather seen as economic diversification and structural transformation support infrastructure.[18] These sectors, however, have a job creation potential and, therefore, a demand for skills that must be addressed.

[15]They include: Angola, Burundi, Cameroon, CAR, DRC, Gabon, Rwanda and Chad.
[16]They are: Angola, Cameroon, Congo, RCA, DRC, Gabon, Equatorial Guinea and Chad.
[17]Cameroon's Industrialization Master Plan clearly describes the goal to transform the country into the hub of Central Africa, which has several landlocked countries.
[18]Cameroon's PDI identifies 3 "industrial sanctuaries", including energy and digital technology, while transport is included as "springboard for emergence" in the same way as basic infrastructure. For its part, the "Equatorial Guinea 2020" paper includes "oil and energy" and "transport and logistics" as two of the five economic sectors of its diversification strategy.

Table 4: Industrial sectors prioritized by the various ECCAS countries

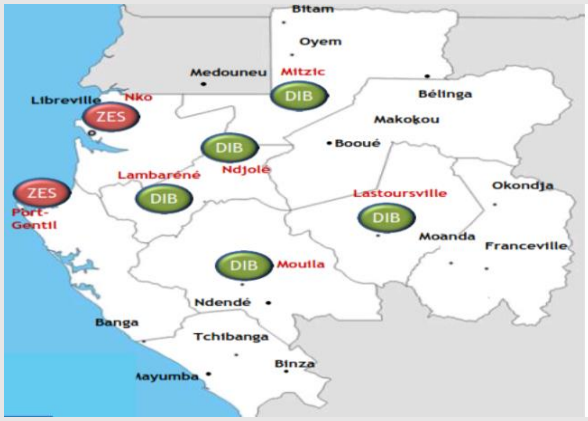
		Sector/Country	Angola	Burundi	Cameroon	CAR	Congo	DRC	Gabon	Equatorial Guinea	Rwanda	Chad	São Tomé and Príncipe	Total Industry
Industries	1	Agriculture and agro-industry	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	2	Banking and finance								✓	✓	✓		3
	3	Cultural and artistic goods and services		✓				✓						2
	4	Timber - Forestry	✓		✓	✓	✓	✓	✓	✓			✓	8
	5	Chemicals-Pharmaceuticals			✓									1
	6	Building and civil engineering works									✓	✓		2
	7	Livestock breeding	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	8	Energy (excluding oil)		✓	✓		✓					✓		4
	9	Manufacturing	✓	✓		✓					✓			4
	10	Metallurgy/Mining	✓	✓	✓	✓		✓	✓		✓	✓		8
		Digital/ICT		✓	✓						✓	✓		4
	12	Fishery/Aquaculture	✓	✓			✓	✓	✓	✓			✓	7
	13	Hydrocarbons/Gas/Refining/Petrochemicals	✓		✓	✓	✓	✓	✓	✓		✓		8
	14	Textiles and leather			✓						✓	✓		3
	15	Tourism/Hospitality and catering industry	✓	✓		✓	✓	✓	✓	✓	✓		✓	9
	16	Transport and logistics		✓	✓					✓				2
		Total/ Country	8	10	10	7	7	8	7	8	9	9	5	

Source: Summary of strategy papers presented in Table 3

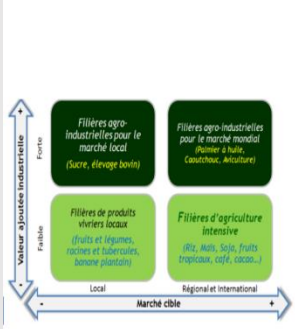
Box 4: National Industrialization Strategy (NIS) – The Case of Gabon

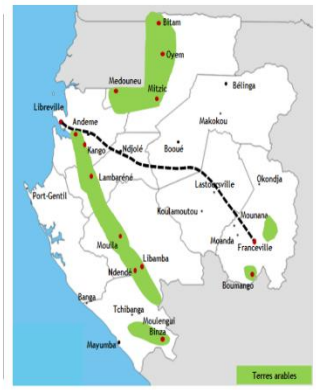
Gabon published its National Industrialization Strategy (NIS) in 2013.[19] This document presents the key sectors on which the Gabonese government intends to base its structural transformation. The NIS is based on four major sectors, namely:

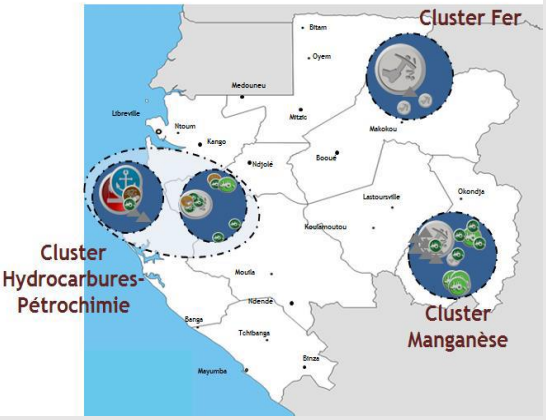
1. Five industrial areas and two Special Economic Zones devoted to timber across the country.[20]



2. Two areas for the development of fishery and aquaculture products around artisanal fishing,[21] aquaculture and trawl fishing.
3. Agro-Industrial Development Poles (PDAI) located in the country's five arable land areas, around agro-industrial sectors (sugar, cattle breeding) and food products (fruits and vegetables, roots and tubers, plantains, etc.) for the local market, on the one hand, and intensive agriculture (rice, corn, soya, tropical fruits, coffee, cocoa, etc.) and agro-industrial sectors for the world market (oil palm, rubber, poultry farming), on the other hand.







4. Gabon's oil and mining clusters: the Belinga iron cluster, the Port Gentil-Lambaréné hydrocarbons-petrochemicals cluster as well as the Moanda-Franceville ("Cité du manganèse") (manganese city) mining and metallurgical cluster.

The "Cité du manganèse" project is particularly interesting, as it clearly illustrates the concept of "industrial

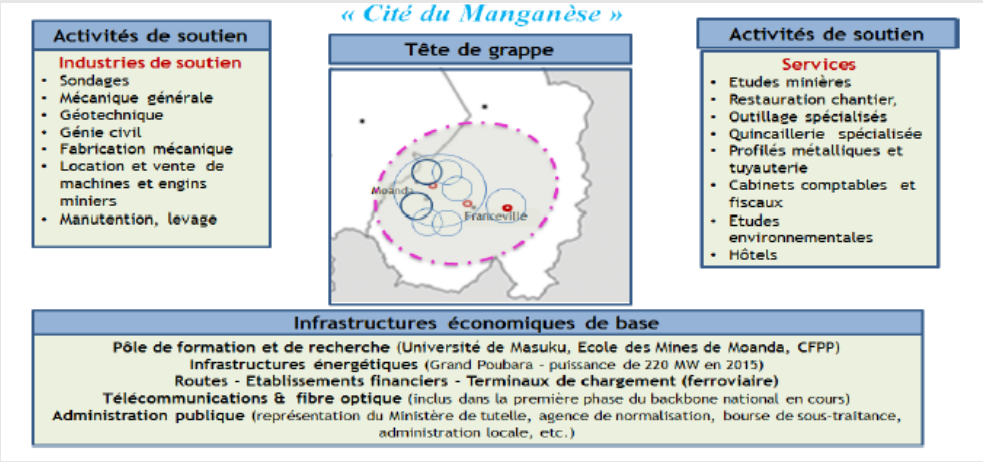
[19]Source: http://www.mines.gouv.ga/object.getObject.do?id=1148 . All the figures presented in Box 2 are taken from this document.

[20]This component of the NIS aims to strengthen the 2nd or even 3rd degree wood processing in Gabon. In addition, plans are underway to set up a laboratory for wooden construction materials in Booué, with a view to stepping up the use of wood in construction. However, the NIS notes that the dispersal of wood processing units and high transport cost are constraints to the development of this industry.

[21]The Libreville Artisanal Fishing Support Centre (CAPAL) will be set up as a centre for processing artisanal fishing products for the domestic market.

cluster" or "a business ecosystem": in fact, in addition to mining, "Cité du manganèse" intends to house support industries such as general mechanics, geotechnics, civil engineering, mechanical manufacturing, handling and rental/sale of mining equipment], as well as support services [e.g.: mining firms, environmental firms, accounting and tax firms, etc.]. The success of this initiative would depend in particular on the construction of basic infrastructure such as a training and research centre [Masuku University, Moanda School of Mining (under construction), vocational training centres, etc.].[22]

This geographic concentration would make it possible to achieve "external economies of scale" (EES), i.e. reduce its production and transaction costs for the sector in general, while offering better access to information and promoting vertical integration of firms and complementarity. The interdependence between complementary companies ensures that the success of some is shared by the others. In addition, the presence of a labour pool that meets the specific needs of the industry not only helps to prevent labour shortages, but also increases the employability of skilled workers.



However, the strategy developed for this sector could be enhanced by a more refined product-market analysis than the one presented in point 3 on PDAIs, by specifying the target markets, taking into account the competitive environment, according to Porter's Five Forces model (1990).

The following box briefly describes Gabon's approach to industrialization based on natural resources and SEZs, as recommended by the Douala Consensus. Indeed, the National Industrialization Strategy identifies both the minerals around which industrial clusters will be built (namely iron and manganese ores) and their geographic location.

The development of **transport** is also a major concern for States, to go by to the various country strategy papers. The development of road, river and lake transport infrastructure is expected to ensure better integration of the economies of the sub-region by facilitating the movement of people and goods. Such infrastructure is also one of the conditions for success in the **tourism and hospitality** sector on which 9 countries[23] at least rely for their economic diversification.

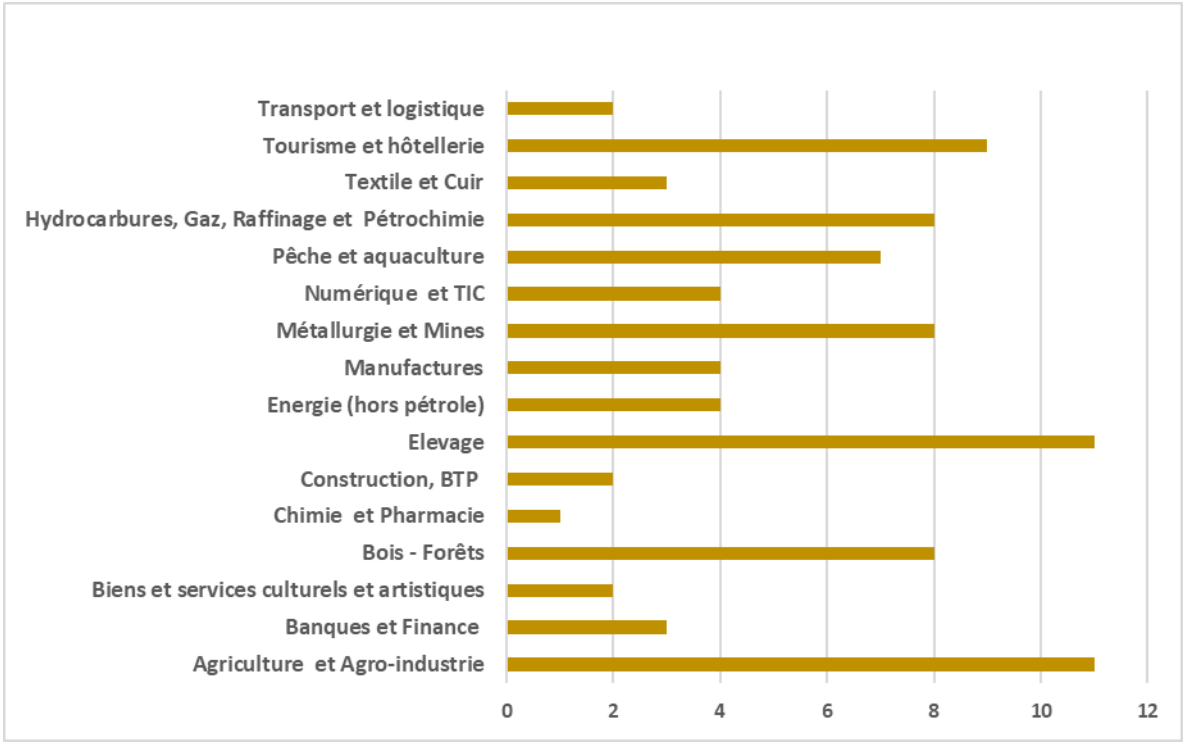
[22]Labour force training is a major challenge for Africa. In an interview with a senior executive of a multinational mining company operating in Central Africa, the latter spoke of the difficulty his company faced in recruiting 500 African welders during the construction of its factory. To overcome this problem, he had to resort to Sri Lankan welders. A similar situation was reported regarding the construction of oil pipelines from Chad to Cameroon.

[23]They are: Angola, Burundi, RCA, Congo, DRC, Gabon, Equatorial Guinea, Rwanda and Sao Tome and Principe.

It should be noted that most of the natural resources in Central Africa are trans-border and have a potential to develop sub-regional value chains. This reality strongly militates for a sub-regional industrialization and economic development master plan (PDIDE).

Given the transversality of many priority sectors identified for economic diversification, the skills development strategy should benefit from the economies of scale of sub-regional cooperation in terms of the development of training programmes, experience sharing and sub-regional economic zones. Sectors such as agriculture and agro-industry, timber and forestry, livestock breeding, hydrocarbons, gas, refining and petrochemicals, metallurgy and mining, fishery and aquaculture, and tourism and hospitality have been identified by more than half of the countries of the sub-region as priorities that offer sub-regional collaboration platforms for efficient and inclusive skills development in support of economic diversification.

Graph 15: Priority sectors: frequency within ECCAS countries



Source: Analysis of data from country strategy papers.

Although cross-cutting priority sectors between ECCAS/CEMAC countries include, in descending order, agriculture and agro-industry, livestock breeding, tourism and hospitality, the hydrocarbons, gas, refining and petrochemicals sector, metallurgy and mining, timber and forestry as well as fishery and aquaculture that can support community initiatives for skills development, CEMAC's[24] training institutions remain

[24]The sub-regional training institutions of CEMAC include: the CEMAC School of Hotel Management and Tourism (EHT), the Inter-State School of Customs (EIED), the Sub-Regional Institute of Statistics and Applied Economics (ISSEA), the Sub-Regional Multisectoral Institute of Applied Technology, Project Planning and

focused on applied economics, finance and statistics, customs studies, project planning and analysis as well as public health. The mismatch between training and national economic diversification priorities cannot therefore be solved through a sub-regional package of training programmes which itself is not aligned with clearly identified industrial priorities.

Sectors that are less common to countries include energy (excluding oil), textile and leather, chemicals and pharmaceuticals, cultural and administrative goods and services, and transport and logistics which are mentioned by only one or two countries as priorities for their economic diversification, although they also have a huge but ignored potential in terms of coordination and sub-regional collaboration.

Like Burundi, some States of the sub-region are already highlighting in their industrialization strategies the importance of sub-regional cooperation and partnerships which could only be driven by a regional PDIDE including the promotion of regional projects such as the creation of regional value chains and/or fragile special economic zones, as well as the development of related skills, which should constitute some of the major innovations.

Although the strategy papers underscore a clear desire of States to industrialize and diversify their economies, an analysis of the level of concentration of the countries' exports as well as the product-space study confirm the urgent need for a change in policies, given the enormous costs of inaction. The level of export concentration also helps to highlight the role of the development of skills linked to new growth sources and exports by supporting countries towards new trades.

III.2. Concentration of exports and "product-space" analysis: for a diversification and development of new trades and related skills

III.2.1. Structure of ECCAS exports: a high "products-markets" concentration

An analysis of the level of export concentration of ECCAS countries based on the weight as percentage of the main export products in total exports as well as the weight of the main export destinations on total exports highlights the sub-region's fragile situation.

Regarding the structure of exports by product, Angola and Chad have some of the highest concentration rates. Indeed, a single product alone, namely oil, accounted for 92% and 88% of the value of their respective total exports in 2017. We can therefore

Evaluation (ISTA), the Institute of Economics and Finance-Regional Pole (IEF-PR) and the Central African Inter-State Centre of Higher Education in Public Health.

fathom the severity of the economic shocks suffered by these two countries following the fall in oil prices in 2014.

Table 5: Structure of exports by ECCAS countries in 2017

Country	No. of products exported with a total percentage above 70%	Export products in 2017
Cameroon	6	Crude oil (31%); Sawn timber (14%); Cocoa beans (12%); Bananas (7.2%); Raw timber (5.1%); Raw cotton (4.2%) ...
DRC	4	Cobalt (26%); Refined copper (25%); Copper ore (13%); Cobalt oxides and hydroxides (10%)...
Gabon	2	Crude oil (61%); Manganese ore (21%)...
Chad	1	Crude oil (92%)...
Angola	1	Crude oil (88%) ...
Burundi	5	Gold (23%); Coffee (23%); Tea (16%); Niobium, Tantalum, Vanadium and Zirconium (7.2%); Raw lead (5.1%) ...
Central African Republic	5	Raw timber (43%); Sawn timber (12%); Diamonds (8.1%); Raw cotton (4.6%); Raw lead (3.5%) ...
Republic of Congo	2	Crude oil (78%); Copper (6.4%) ...
Equatorial Guinea	2	Crude oil (67%); Petroleum gas (20%)...
Sao Tome and Principe	1	Cocoa beans (75%)...

Source: OEC (https://oec.world/en/visualize)

Equatorial Guinea has a similar concentration rate (92.3%) for three products: two petroleum products [crude oil (67%); petroleum gas (20%)]; and raw timber (5%). Gabon follows with a ratio of 88.1% [crude oil (61%); manganese (21%); sawn timber (6.1%)].

A comparison of the development trajectories of the countries of the sub-region with the Asian Newly Industrialized Countries (NICs) (ASEAN) shows that the two groups of countries, starting from the same levels of concentration of exports in 1975, presented contrasting situations in 2010. Having opted for aggressive industrial policies backed by seasoned education and skills development strategies, the ASEAN NICs, 35 years later, presented more diversified and more sophisticated exports while the countries of Central Africa continued to concentrate on raw materials exports **(Box 5).**

This reality buttresses, if need be, the argument for economic diversification of the countries of Central Africa and the urgent need to support them towards new niches in

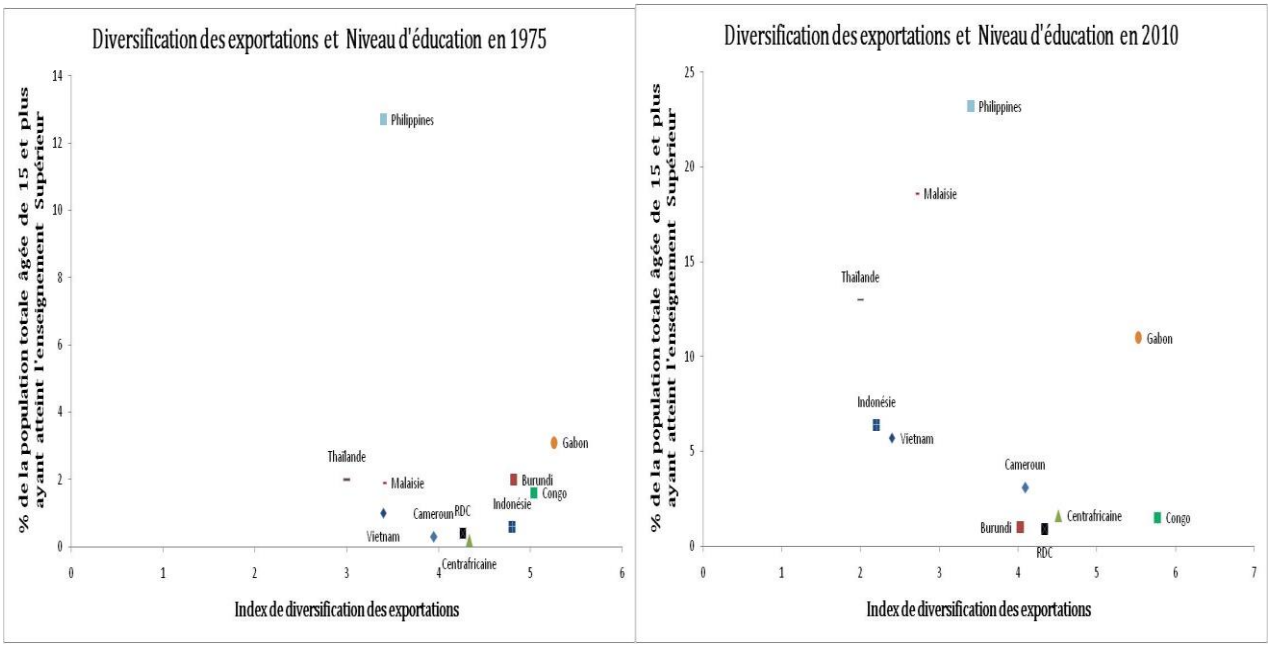
order to shield them against exogenous shocks from commodity markets on which the sub-region remained focused.

Box 5: Economic diversification trajectories: ASEAN NICs compared with ECCAS

Export diversification is measured by the Export Diversification Index (horizontal axis) constructed by the IMF. Thus, the more the diversification index of a country tends towards zero (0), the more the structure of its exports is diversified. Likewise, the further a country's diversification index moves away from zero (0), (i.e. higher), the more concentrated the structure of its exports. Regarding the level of education, it is measured by the percentage of the total population aged 15 years and above having attained higher or tertiary education (Barro and Lee, 2010) (vertical axis). For any country, a high percentage of the population in tertiary education means that the country has a high level of education (and vice versa) since one has to go through primary and secondary education to reach the tertiary level.

In 1975, the ASEAN NICs and ECCAS countries had a low level of education and a highly concentrated export structure, save for the Philippines where the level of education was high but with a concentrated export structure (absence of industrial policies).

Export Diversification and educational level: ASEAN NPI compared with ECCAS countries in 1975 and 2010



Source: *IMF, Export Diversification Index, Barro and Lee (2010): Educational attainment for total population (http://www.barrolee.com/update.htm#2018_6_June_Update).*

In 2010, ASEAN NICs presented a diversified exports structure, hence their shift to the beginning of the graph. The structure of Thailand's exports was the most diversified, followed by that of Indonesia, Vietnam, Malaysia and, lastly, the Philippines despite the latter's high level of education. Indeed, the Philippines was the last of the ASEAN NIPs owing to the stunted growth resulting from the fact that industrial policies were not implemented concurrently with educational system reforms. ECCAS countries remained at the same level as in 1975, with a concentrated export structure and a low level of education. Although Gabon certainly had the region's highest level of education, its educational system was not at the service of industrialization, because its export structure remained very concentrated. Such concentration of exports in basic products makes ECCAS countries very vulnerable to external shocks, especially in the event of a drastic drop in the prices of basic products on the international market.

III.2.2. Product-space analysis by the Centre for International Development (CID) and "*Quick wins*" of the sub-region

Research shows that countries tend to diversify by opting for neighboring and related products or those that require similar know-how to make use of existing capacity. Product-space analysis represents the relationship between over 800 goods using real world data.

Product-space analysis helps to define avenues for diversifying a country's economy based on the connectivity of its know-how.[25] Special emphasis is laid on natural resource-based exports, taking the Douala process into account.

Depending on data availability, analyses findings, presented through a graph by country, identify a series of circles, each of which corresponds to a product (classification level HS4).[26]. The dense part of the graph corresponds to all the products for which there is worldwide demand. According to analyses, countries should specialize in the production of such products. In this product space, the goods and services exported by each country correspond to the coloured circles. The size of each circle is proportional to the size of each product in total exports.

As seen in the previous section, the share of petroleum products (circles) remains preponderant in ECCAS petroleum-producing countries of (Angola, Congo, Equatorial Guinea and Chad). As can be seen, petroleum products are outside the gray path. This makes it possible to visualize the export concentration mentioned above, and to highlight the need for diversification of productive activities.

The graphs also show that ECCAS countries mainly export agricultural or mineral raw materials.[27] Not surprisingly, Central African States are ranked at the bottom of the Complexity Outlook Index (COI) calculated by the Centre for International Development (CID) at Harvard University.[28,29]

Compared to other Central African oil-exporting countries, Cameroon stands out for its level of diversification. Indeed, unlike Angola and the Republic of Congo, Cameroon

[25]Source: https://atlas.cid.harvard.edu/countries/45/product-space

[26]The HS4 level actually corresponds to a group of products; the most detailed level corresponding to a specific product is HS6.

[27]For some countries like Burundi, there are slightly more products in the shaded area; however, the exports in question are in most cases less than USD 50 000 per product. In all likelihood, this is no real industrial activity.

[28]This index measures the number of complex products close to a country's current production capacity. A high score reflects an abundance of near complex products that depend on capabilities similar to a country's existing production.

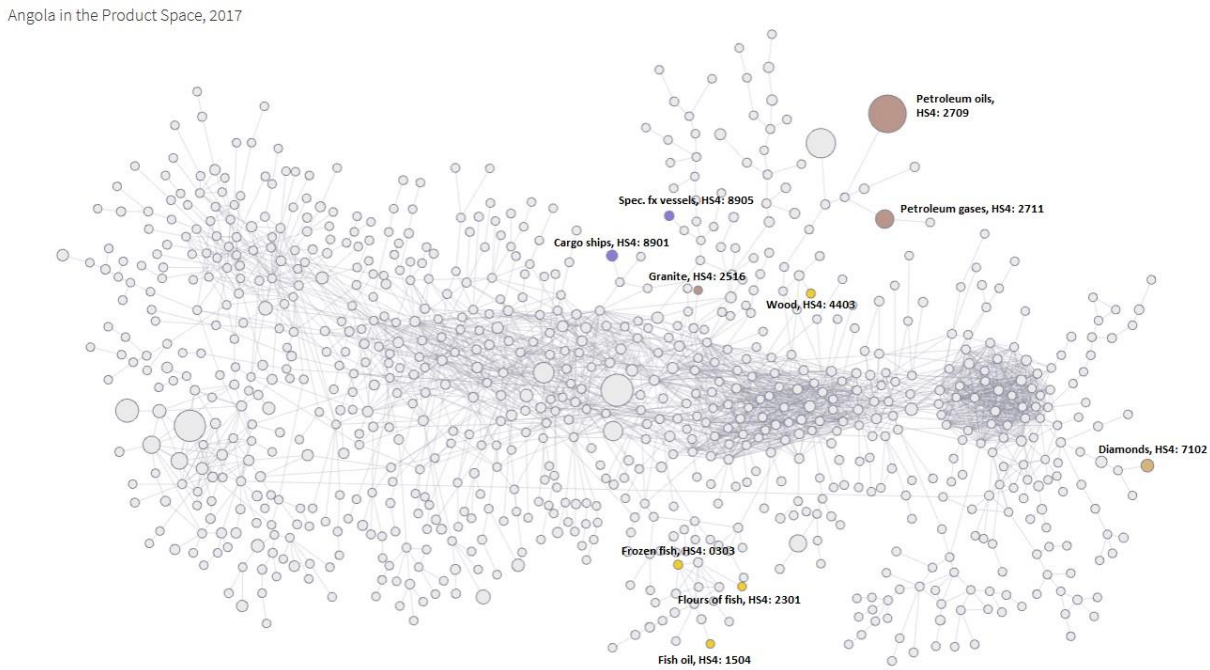
[29]Out of 133 countries, Central African States (for which data are available) are ranked as follows: Angola (124th), Cameroon (103rd), Congo (121st), DRC (116th) and Gabon (117 th).

exports products for which there is significant global demand. Naturally, it occupies the best position in CID's COI ranking (103rd) among ECCAS countries.

The analysis also shows that countries such as Cameroon, Congo-Brazzaville, DR Congo and the Central African Republic export raw and or little processed timber products under classifications HS4403, HS4407-9. In addition to these products, Gabon also exports plywood (HS4412), which probably reflects the country's ambition to develop the 2nd and 3rd generation wood processing through special economic zones (see Box 2 above).

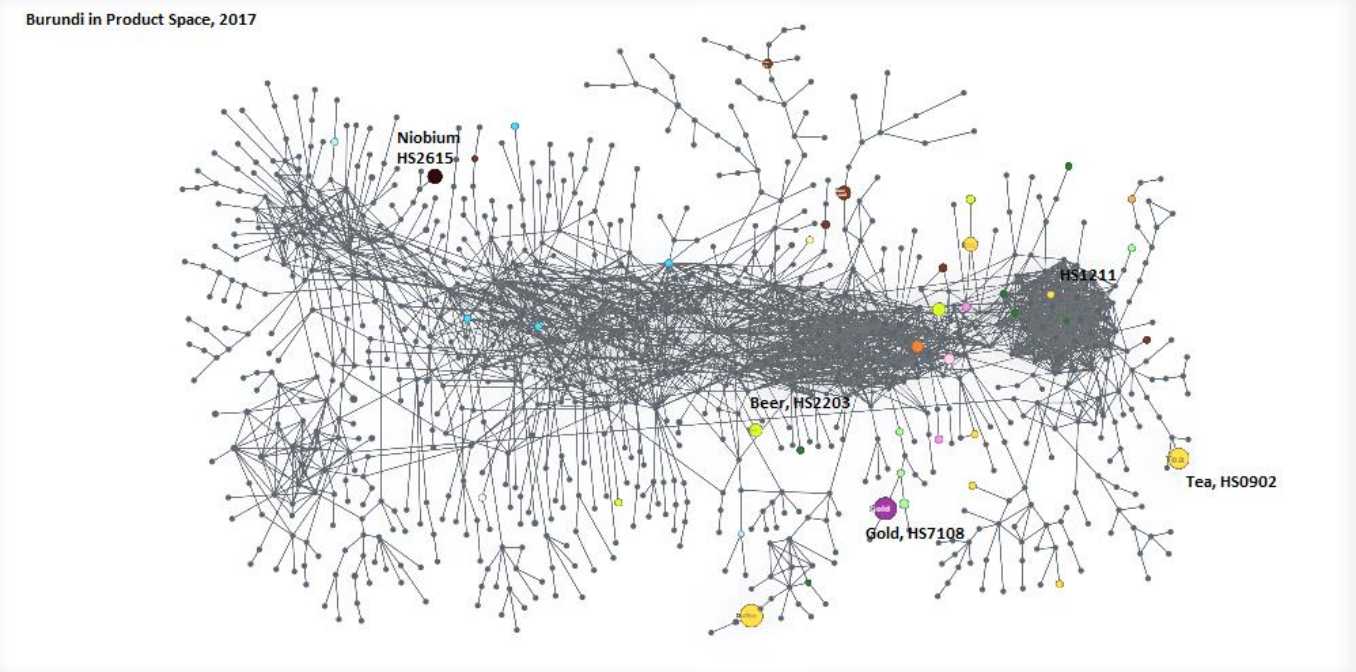
The product-space analysis indicates that this type of production may evolve towards the production of wooden construction products (HS4418) or prefabricated housing (HS9406) for which there is a solvent global demand.

A few countries in the Congo Basin, namely Burundi, Cameroon and the Republic of Congo, export plants used in perfume-making, pharmaceuticals and insecticides (HS1211). These products are in high demand on world markets. The COVID-19 pandemic has highlighted the need for these countries endowed with a rich biodiversity, which is an important source of medicinal products, to develop a pharmaceutical industry in order to treat their populations and, beyond that, export drugs throughout the African continent as well as on international markets.[30]



Source: *https://atlas.cid.harvard.edu/countries/2/paths*

[30]At the outbreak of the global coronavirus pandemic, there were protectionist outbursts in some countries, consisting in preventing exports of medical devices and giving priority to national citizens.



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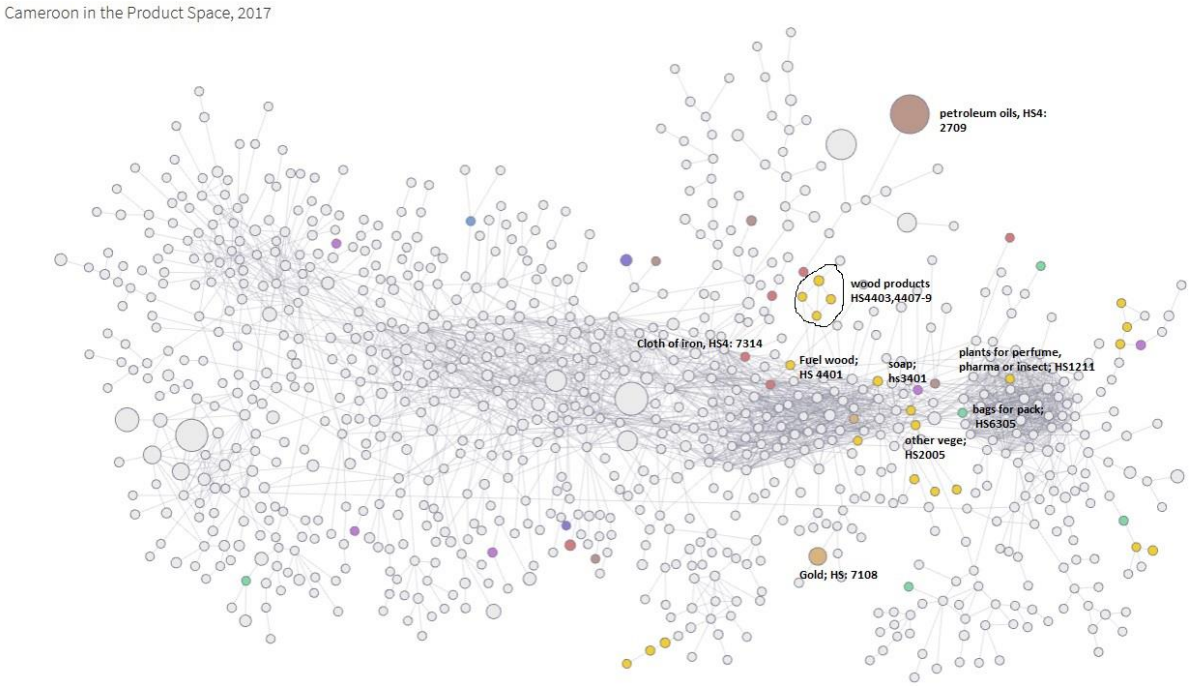

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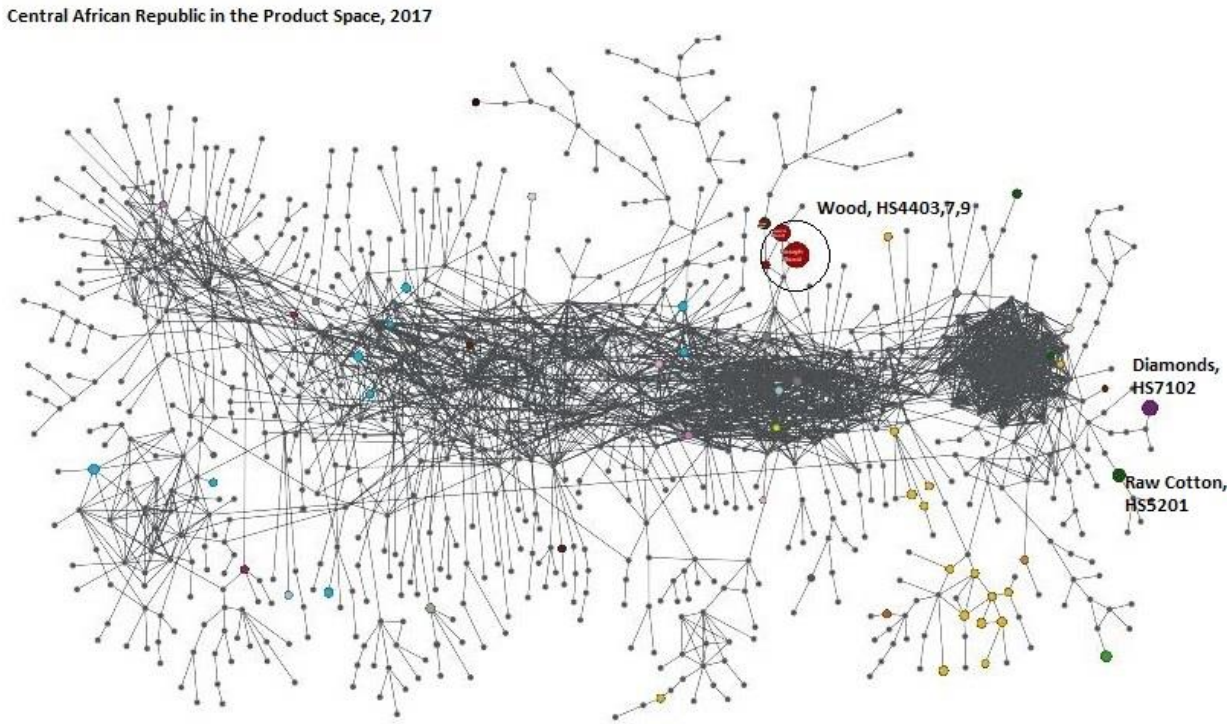

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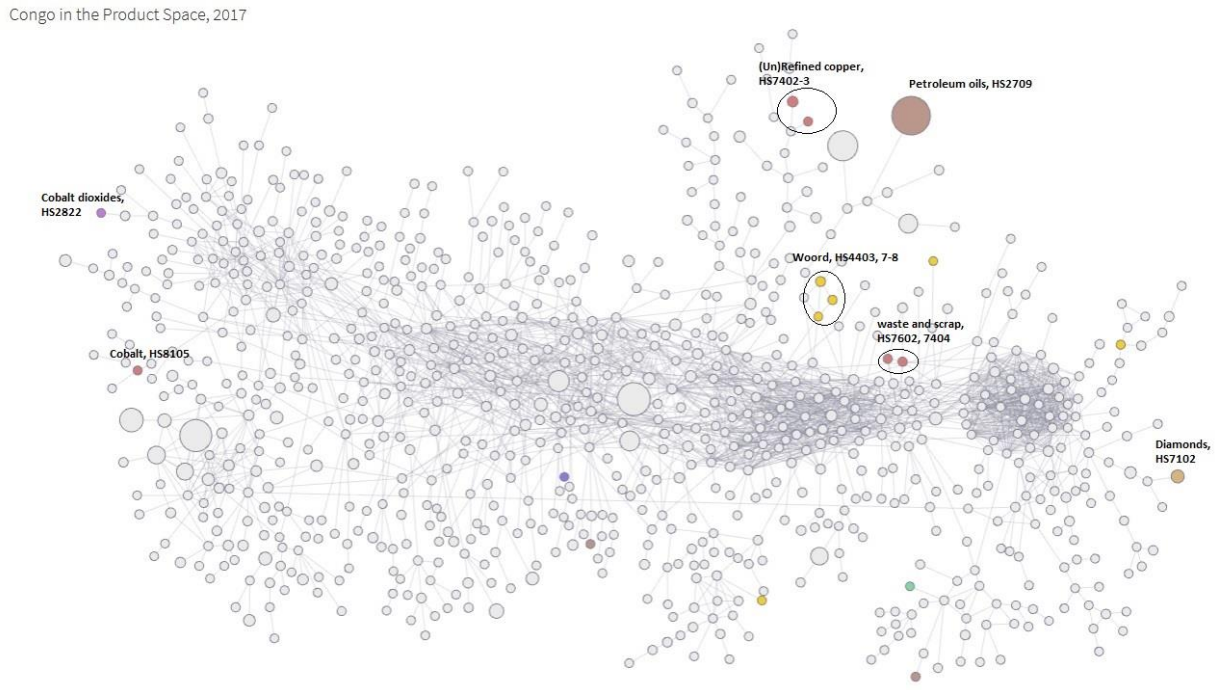
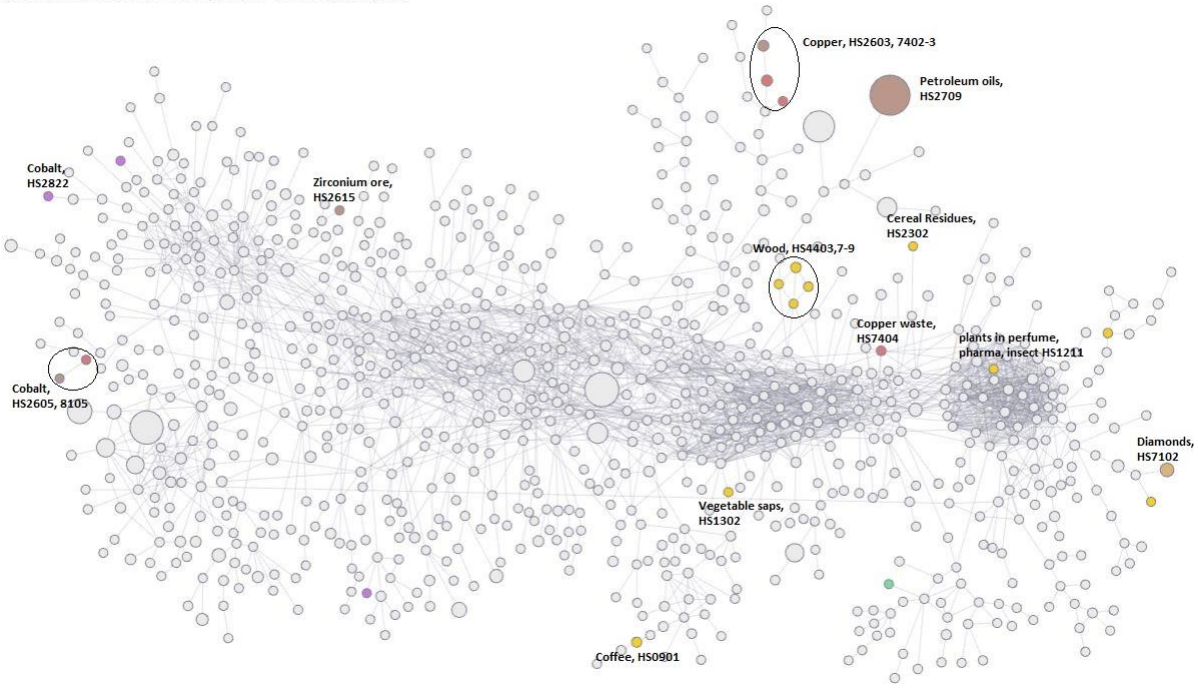


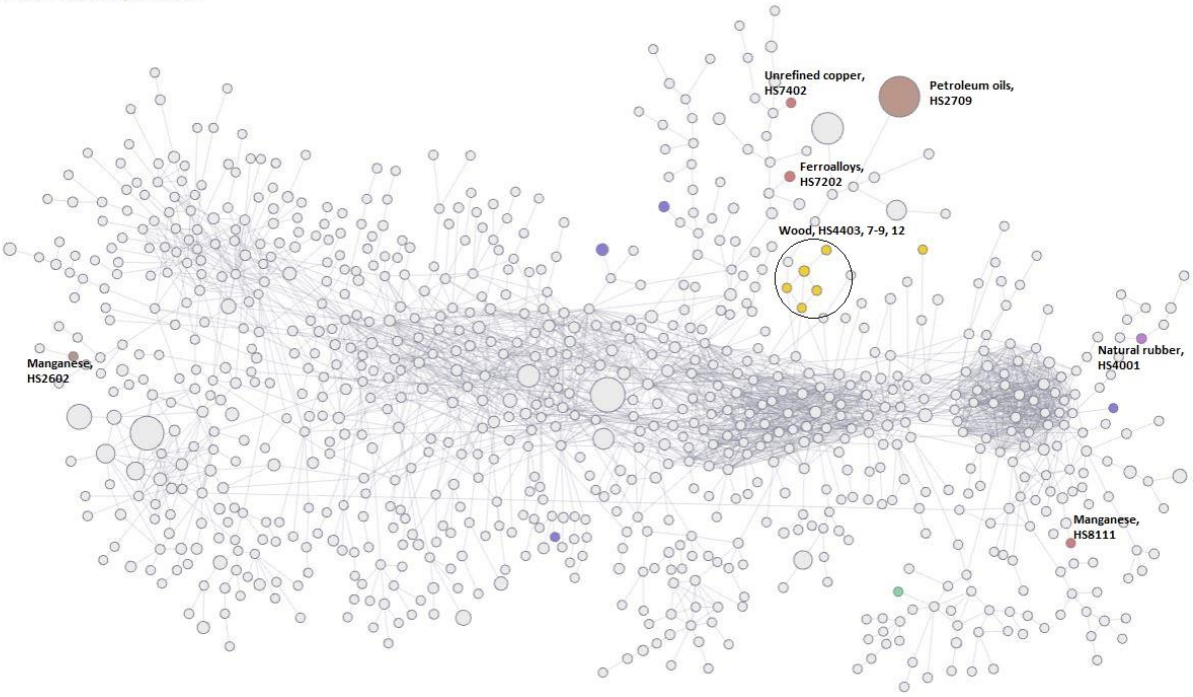
Source: *https://atlas.cid.harvard.edu/countries/47/paths*

Congo (Democratic Republic of the) in the Product Space, 2017



Source: https://atlas.cid.harvard.edu/countries/46/paths

Gabon in the Product Space, 2017



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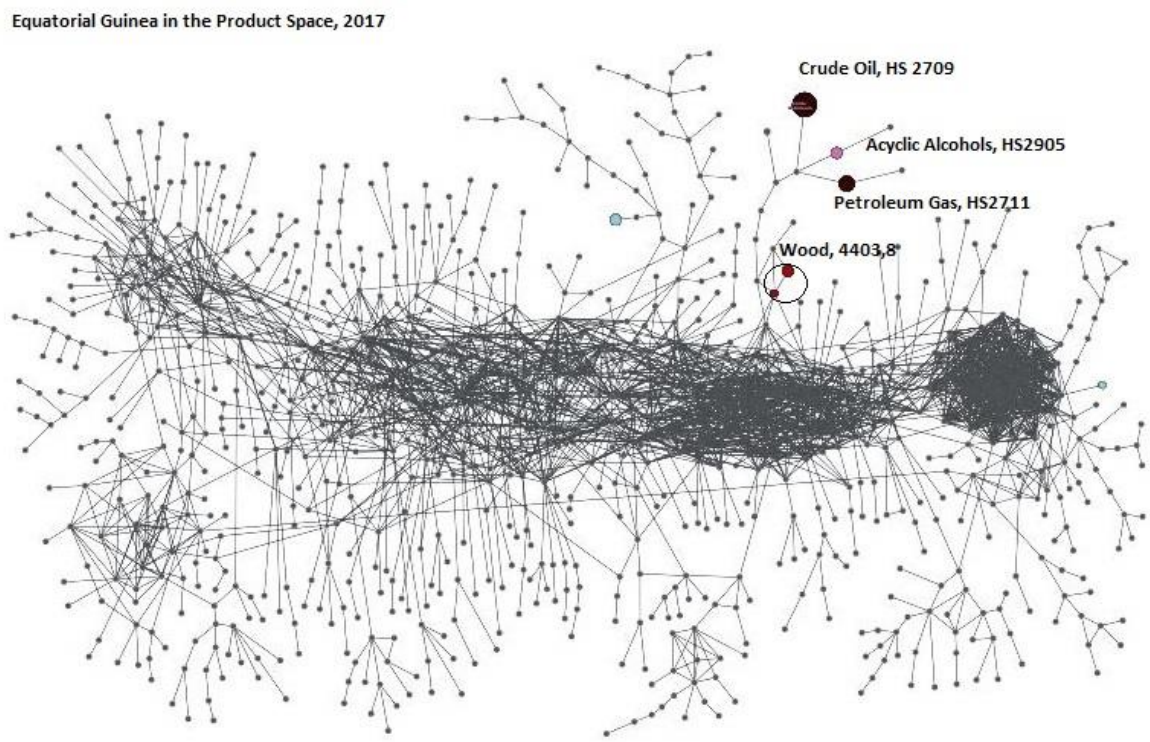

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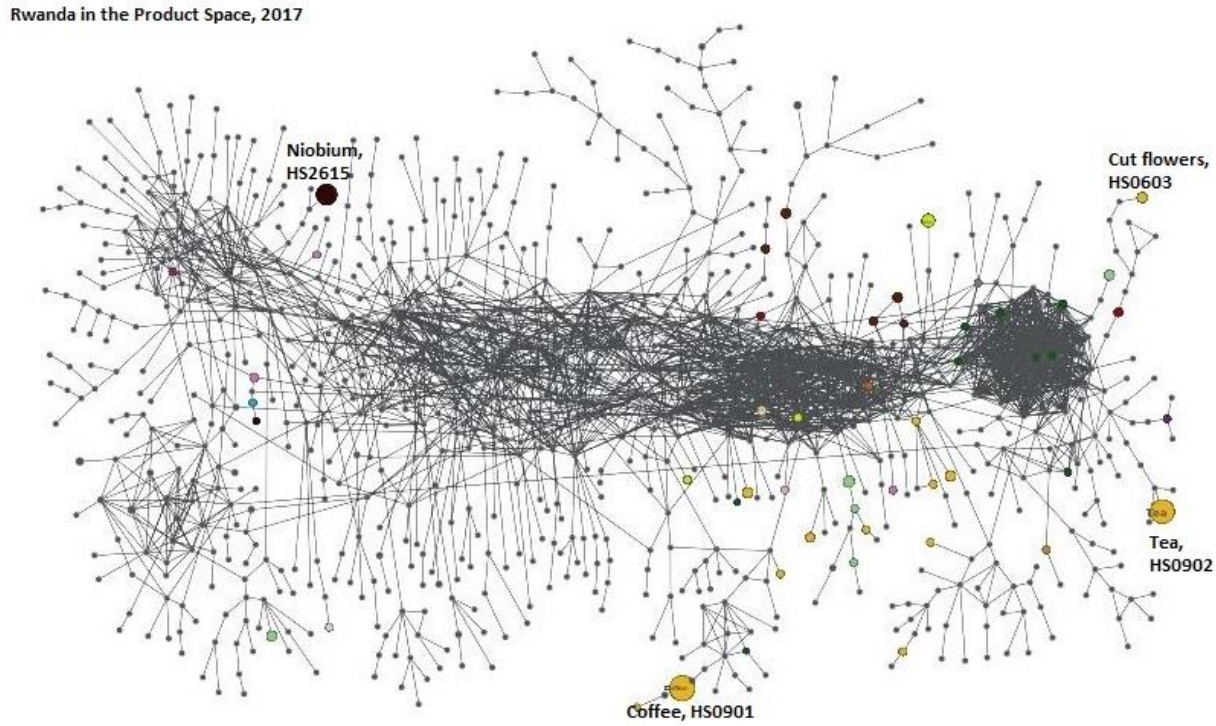

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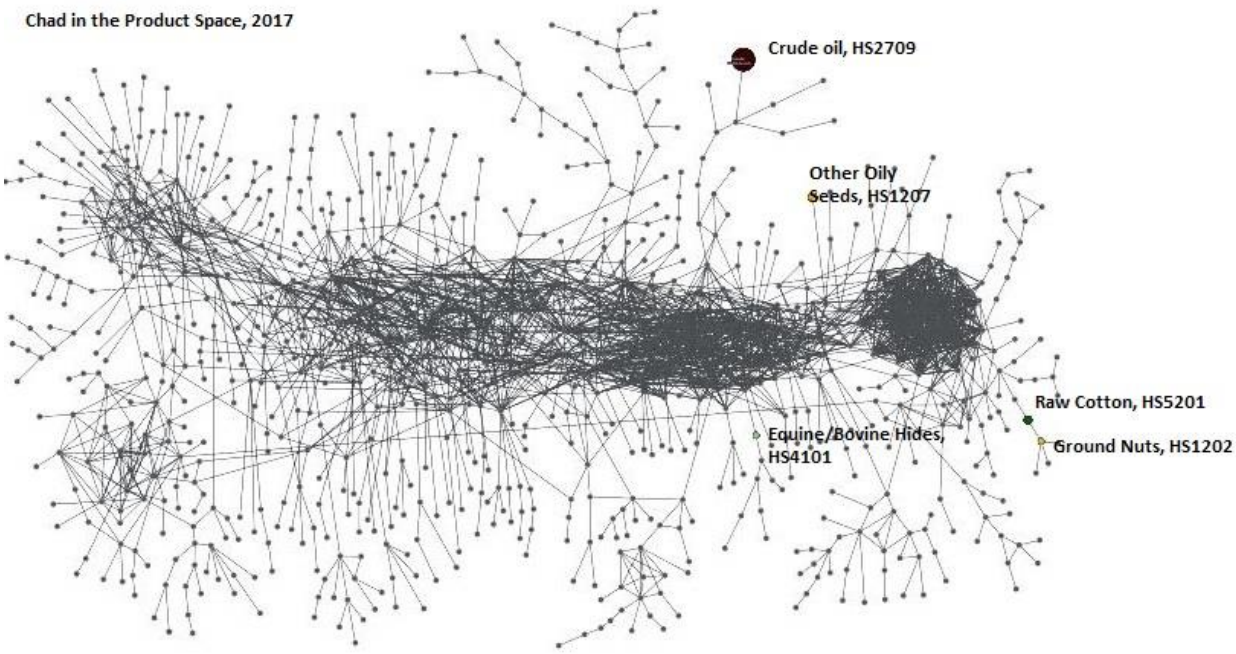

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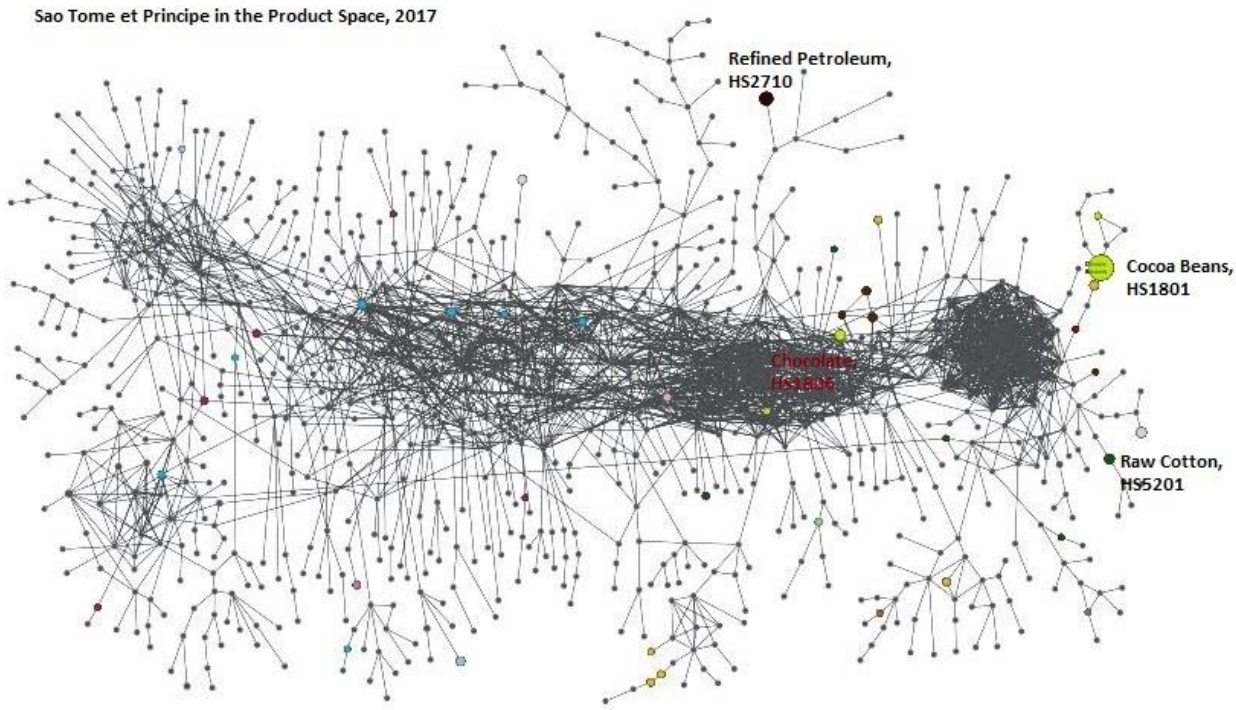


Source : https://oec.world/en/profile/country/stp/

Efforts to support the development of these new related trades and other new projects must include a proven skills dimension. The strategic priorities identified by the countries can serve as a basis for assessing skills needs and the efforts required to develop these skills for the countries and the sub-region.

III.3. Identification of country priority-related skills needs: number, types, duration and level (national, local, sub-regional) of training and opportunities

III.3.1. CA's needs assessment: mapping of skills, competences and qualifications

The approach of mapping skills, competences and qualifications required for occupations in the various industries consists in assessing operational areas, the structure and demand for jobs by industry segment.
After determining the minimum number of occupations required for an industry to become operational, the approach will consist in searching for occupational titles and describing each position within each segment, in relation to the specific needs of the industry.

The approach adopted considers minimum qualification, background or basic skills (without emphasizing the trends in the demand for skills according to technological progress or to space and time), personal skills and the minimum duration of training (classified as follows: on the job, medium or long term).

For a given occupation, the approach explored the method of collecting and analyzing job vacancies **(Zhao et al., 2015),** mainly by extracting key terms from the "job description" and "required skills" sections. The job posting information came from online portals of renowned job boards like indeed , I observe , trades-quebec, farmers, etc.
As a starting point, the Labor Market Partners Commission website (Quebec, Canada)[31] was also consulted. This site associates with each industry a minimum number of professions as well as the minimum skills, experience and training required.

[31]https://www.cpmt.gouv.qc.ca/reseau-des-partenaires/comites-sectoriels.asp

Then, corresponding queries were launched for each profession by industry on the website onetcent (O*NET) belonging to the Occupational Information Network project of the US Department of Labor **(O * NET Resource Center, 2015).**[32]

A second phase of the mapping exercise consisted in summarizing the skills within an industry in order to group together those with similar or identical training needs. This led to the classification of occupations according to educational level into the following categories: PhD; Master's (MSc, MBA), Bachelor's (BSc, Licence), DEC (Diploma of Collegial Studies), DEP (Diploma of Vocational Studies), DES (Diploma of Specialized Studies) and AEP (Certificate of Vocational Studies) or on-the-job training (duration of training less than one year). After classification, the percentage of occupations by educational qualification was then calculated based on the total number of occupations required to make the industry operational.

Prior to presenting the analysis findings, it is necessary to agree on what is meant by professional skills. These are skills that are both valued by employers and useful for performing various professional tasks. They are not only specific technical skills particular to specific jobs, but are also cognitive and non-cognitive, and improve workers' productivity. **(Banerji et al., 2010).** Professional skills comprise:

- The capacity to solve problems, to reflect and conduct critical analysis;
- The capacity to learn, acquire new knowledge, put into practice the lessons learned from experience and apply them in the search for innovations;
- The capacity to communicate, write, collect and use information in order to communicate with others, mastery of foreign languages and use of information and communication technologies;
- Personal skills: knowing how to take responsibility, demonstrate good judgement and manage risks;
- Social skills: knowing how to collaborate with others and motivate them in a team, manage client relationships, knowing how to demonstrate leadership, resolve conflicts and develop social networks.

In what follows, the words "occupation", "position", "job" and "employment" are used as synonyms.

[32]This source is used in research on occupational classifications; recently Dingel and Neiman (2020) used it in an article on jobs can be done at home.

III.3.2. Skills and qualifications by occupation within industries

Analysis of levels and average duration of training **(Table 5)** required for practice of the occupations within the various industries help to approximate the skills needs associated with the various industries, which are the biotechnology and pharmaceutical industries, chemicals, petrochemicals, oil and gas refining, energy, environment, agriculture and food, food trade, forestry and wood processing, tourism, metallurgy, transport, maritime and fishery. There are four levels of education, namely: (1) Doctorate/PhD, (2) post-secondary (DEC, BSc or MSc), (3) vocational (DEP, DES), and (4) On-the-job training/less than 1 year.[33] The **Erreur ! Source du renvoi introuvable.** in the appendix supplements the latter by also presenting the skills necessary for the exercise of the various listed professions.

III.3.2.1. Occupations and skills in the biotech, pharmaceutical, oil and gas and metallurgy sectors

A minimum of 64 occupations are required to make **the biotechnology and pharmaceutical industry** operational. About two thirds of occupations (i.e. 44 jobs in total) require a Bachelor's or Master's level university degree, with an average duration of 3.5 years. To practise these professions, basic knowledge in life sciences is necessary. The areas of training sought are: biochemistry, chemistry, biology, biotechnology, drug formulation, quality assurance and control, pharmaceutical, mechanical and environmental engineering and the science of clinical trials. Nine positions require on-the-job training lasting less than twelve months, for which skills sought range from industrial quality assurance, good clinical practice, good laboratory practice and equipment calibration to biosafety and standards. Six positions require an advanced university degree such as a doctorate (PhD), obtained after an average training of 5 years in chemical, medical biotechnology, pharmaceutical and biomedical engineering. Occupational requirements for skills obtained through vocational training (5 positions with a diploma in specialized studies and a vocational training diploma - of 2 years on average) are the lowest. For all qualification levels put together, the general skills required in order of importance for the operationalization of the industry are: analysis and synthesis, speed and precision, critical thinking, innovation, complex problem solving, troubleshooting, tenacity and persuasion.

For **chemical, petrochemical, gas and oil refining** industries, 55 positions were identified. Most occupations (34 positions, or 61.82% of the total) require proof of on-the-job training obtained within the year following graduation from high school or experience in a similar field.

[33]TVETs correspond to DEC, DEP, DES plus on-the-job training (on-the-job apprenticeship).

Table 6: Level and duration of training required for occupations within various industries

Biotechnology and Pharmaceuticals			
Training level	**Average duration (years)**	**Number of training programmes**	**Percentage (%)**
PhD/Doctorate	5	6	9.38
Post-sec. (DEC, BSc, MSc)	3.5	44	68.75
Vocational (DEP, DES)	2	5	7.81
On-the-job training / Less than 1 year	0.9	9	14/06
Total	/	**64**	100
Chemical, Petrochemical and Petroleum			
PhD/Doctorate	5	1	1.82
Post-sec. (DEC, BSc, MSc)	3	14	25.45
Vocational (DEP, DES)	2	6	10.91
On-the-job training / Less than 1 year	1	34	61.82
Total	/	**55**	100
Energy			
PhD/Doctorate	5	8	-19.51%
Post-sec. (DEC, BSc, MSc)	3.5	9	21.95
Vocational (DEP, DES)	2	13	31.71
On-the-job training / Less than 1 year	1		26.83
Total	/	**41**	100
Environment			
PhD/ Doctorate	5	3	9.68
Post-sec. (DEC, BSc, MSc)	3.5	22	70.97
Vocational (DEP, DES)	2	5	16.13
On-the-job training / Less than 1 year	1	1	3.22
Total	/	**31**	100
Agriculture and Agri-Food			
PhD/Doctorate	5	4	9.75
Post-sec. (DEC, BSc, MSc)	3.5	12	29.27
Vocational (DEP, DES)	2	3	7.32
On-the-job training /	0.8	22	53.66

Less than 1 year			
Total	/	**41**	100
Food Trade			
PhD/Doctorate	5	9	8.65
Post-sec. (DEC, BSc, MSc)	3.5	33	31.73
Vocational (DEP, DES)	2	26	25.00
On-the-job training / Less than 1 year	1	36	34.62
Total	/	**104**	100
Forestry and Wood Processing			
PhD/Doctorate	5	6	2.94
Post-sec. (DEC, BSc, MSc)	4	28	13.73
Vocational (DEP, DES)	2	52	25.49
On-the-job training / Less than 1 year	0.8	118	57.84
Total	/	**204**	100
Maritime Industry and Fishery			
PhD/Doctorate	5	1	4.76
Post-sec. (DEC, BSc, MSc)	3.5	14	66.67
Vocational (DEP, DES)	2	2	9.52
On-the-job training / Less than 1 year	0.8	4	19.05
Total	/	**21**	100
Tourism, Restaurants and Hospitality			
PhD/Doctorate	/	0	0
Post-sec. (DEC, BSc, MSc)	3	45	67.16
Vocational (DEP, DES)	2	6	8.96
On-the-job training / Less than 1 year	0.5	16	23.88
Total	/	**67**	100
Metallurgy			
PhD/Doctorate	5	2	5.56
Post-sec. (DEC, BSc, MSc)	4	27	75.00
Vocational (DEP, DES)	1	7	19.44
On-the-job training / Less than 1 year	/	0	0
Total	/	**36**	100
Transport			

PhD/Doctorate	/	0	0
Post-sec. (DEC, BSc, MSc)	3	5	10
Vocational (DEP, DES)	1.5	5	10
On-the-job training / Less than 1 year	0.7	40	80
Total	/	**50**	100

The values in blue are the highest while those in red represent the total number of occupations

The six occupations for which a high school diploma is needed require technical skills in mechanical engineering, building and civil engineering works, production and processing, environmental sciences and petroleum engineering. About a quarter of professions require a post-secondary diploma (DEC, BSc or MSc) while only 2% of positions require a high-level university degree (doctorate) with long experience. University education enables people to acquire additional skills in the fields of mechanical engineering, drilling, welding technology, architecture and design, applied chemistry and petroleum refinery. One tenth of trades requires specialized skills, acquired through vocational training lasting an average of 2 years after obtaining a high school diploma. Soft skills highly valued in the chemical, petrochemical, gas and oil refining industry include critical thinking, complex problem solving, systems analysis, coordination and tenacity.

With regard to **metallurgy,** a total of 36 occupations were enumerated, three quarters of which require a post-secondary diploma, one fifth require vocational training, and the remainder a doctorate. The technical skills targeted are metallurgy, civil, mechanical and chemical engineering, materials science, computer science, mining, process engineering, design, production, operating systems, design specifications, machine operation, welding, simulation and drawing. The most in-demand soft skills are teamwork, complex problem solving, innovation, critical thinking, negotiation, communication, analysis, time management and troubleshooting.

III.3.2.2. Energy sectors and their occupation and skills needs

In the **energy** sector, around one third of the occupations listed require vocational training (13 out of 41 positions) leading to the acquisition of fundamental skills such as geometry, industrial design and electricity, industrial computing, physics and applied mathematics, technology, optical fibre and architecture. More than a quarter of jobs in this industry (27%) do not require more than a high school diploma, as skills are acquired on the job (apprenticeship). However, about two-fifths of trades require post-secondary education (22%) or a doctorate (20%). The proper functioning of the sector requires soft skills such as creativity, 3D spatial perception, good vision and hearing, complex problem solving, reacting to exceptional situations, troubleshooting, speed and precision.

A total of 31 occupations were identified for **environment**. For the vast majority of them (22 jobs), a post-secondary diploma is required. Occupations requiring vocational training represent 16.13% of all jobs in this industry. These are typically jobs in sanitary maintenance, environmental protection, quality systems, management, urbanization, health, safety and prevention. Note that nearly 10% of occupations require a higher university degree (PhD) in fields such as geomatics, meteorology or environmental engineering. In this industry, only one position, that of cleaning operator, requires twelve-month on-the-job training in sanitary maintenance. Soft skills such as analysis and synthesis are needed to facilitate the role.

III.3.2.3. Occupations and skills in agriculture, agro-food, sylviculture and timber and forestry

Forty-one occupations were identified for the **food and agriculture** industries**.** For more than half of them, only short on-the-job training lasting about 10 months is needed. Such training aim to develop basic skills such as agricultural production, food processing techniques, beekeeping, arboriculture, egg production and management, animal production, sustainable agriculture, agricultural mechanization and food processing. On-the-field occupations also require physical endurance, self-reliance and ingenuity, perception of form, expediency, precision and analysis as key soft skills. Still, about 30% of jobs in this industry require a post-secondary degree. People in these positions are expected to have skills in agronomy, food processing, international standards and physical chemistry. Soft skills in demand for these jobs include logic, creative thinking, analysis, and synthesis. About a tenth of occupations in this industry require a doctorate, along with basic skills in agro-environmental engineering, agricultural construction, food science and engineering, applied agriculture and food systems. The lowest share of jobs is reserved for people who have completed a 2-year specialization or vocational training in agricultural machinery repair and maintenance, horticulture, garden maintenance, quality assurance and process control.

For the **food trade,** a total of 104 occupations were identified. For about a third of them, on-the-job training is sufficient. Skills in demand for field positions include food safety, hygiene, food and beverage management, good agricultural practices, data entry, accounting, machinery operation, production and processing. Another third require post-secondary training. Skills in demand for Bachelor's and Master's positions are food manufacturing, digital advertising, food technology, food science, logistics, daily sales forecasting, quality assurance and risk analysis – which are critical points for their mastery. While a quarter of the trades require vocational training, less than a tenth (8.65%) require a higher university degree (doctorate), with skills in biosciences, determination of the shelf life of products, food chemistry, supply chain network, production and distribution, food plant management and microbiology. The four most

in-demand soft skills at all skills levels are critical thinking, complex problem solving, results-seeking and versatility.

Regarding **forestry and wood processing**, 204 occupations were identified. Slightly over half of jobs (57.84%) require only on-the-job training, while only 3% of occupations require a doctorate. A quarter of jobs require vocational training in the following areas: machine operation, industrial manufacture of wood-based products, assembly techniques, laws and regulations, equipment control, wood grading and calibration, papermaking, wood cutting, skidding, furniture upholstery techniques, machinery, felling, sawing, sales techniques, etc. Lastly, 14% of occupations require a post-secondary diploma. Technical skills required for these occupations include wood science, forestry operations, chemical engineering, wood processing, forestry science, industrial manufacturing, forest parks and recreation, and plant biology.

III.3.2.4. Occupations and skills in fishery, tourism and other services

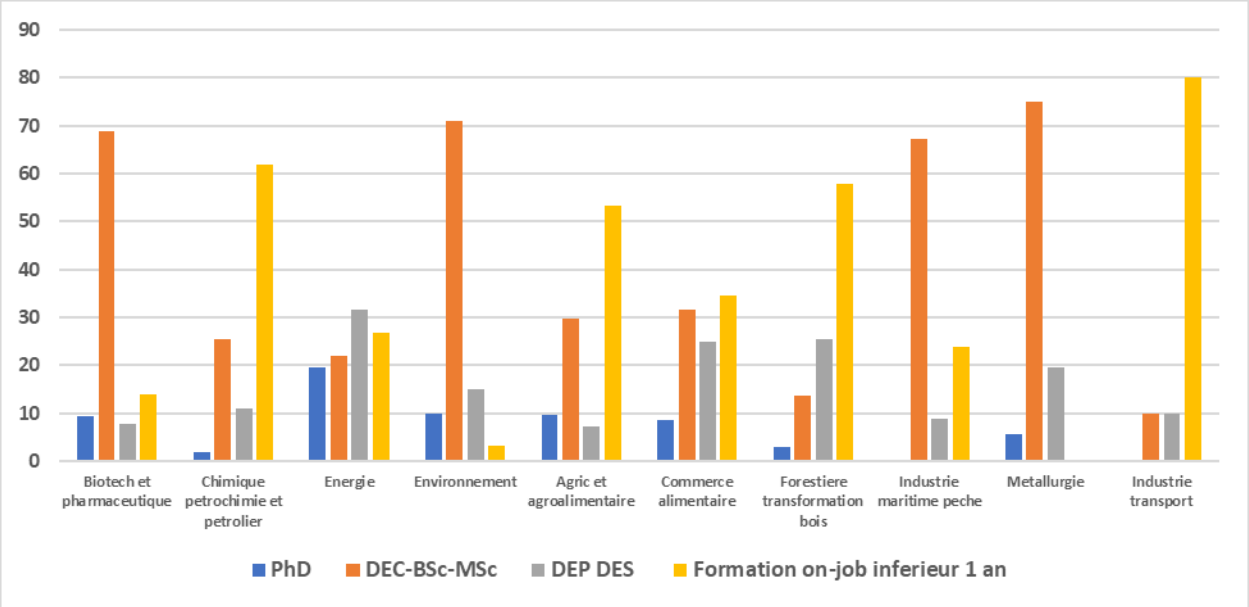
For the **maritime and fishery industry**, 21 occupations were identified, two-thirds of which require post-secondary training. Note that a fifth of trades in this industry do not require more than on-the-job training, contrary to the 10% that require a vocational diploma. Furthermore, the proportion of occupations requiring a doctorate is marginal (4.76%). Basic technical skills for employment in the sector are oceanography, navigation, maritime safety, heavy machinery, marine systems, ship loading and unloading, nautical sciences, automation, architecture, shipbuilding and mechanical engineering. Soft skills in demand are analysis, critical thinking, flexibility, communication and customer service.

In the **tourism**, **catering, and hospitality** sector 67 occupations were identified spread over only three skills levels, since no job specifically requires a doctorate as minimum qualification. However, about two-thirds of occupations require post-secondary training, while just under a quarter require on-the-job training. Less than 10% of jobs in the sector (8.96%) require vocational training. Technical skills targeted in training programmes at all levels are tourism, ecotourism, cartography, photography, hotel management, reception, e-commerce, cultural phenomena, cultural sociology, customer service, food sciences, culinary technology, hunting, fishing, wilderness travel, handling of hunting weapons, operation of conventional machinery, operation of automated production systems, communication, interpretation, animation and museology. The main soft skills that complement these technical skills are communication, maturity, hospitality, dexterity, analysis and synthesis.

For the **transport** sector**,** 50 occupations were identified, none of which requires a doctorate as minimum qualification. More than 80% of occupations are open to on-the-

job training, while the remaining 20% require either a post-secondary degree or vocational training (10% in each case). Technical skills in high demand include mechanical engineering, transport logistics, urban and intercity transport, air transport, mechanical repair and maintenance, navigation, aviation, use of mechanical systems, meteorology, geography, railway infrastructure, communication techniques, operation and use of radar systems, railway operating system, IT, management, finance, economy, rescue techniques, etc. The most in-demand soft skills are keen eyesight, very good hearing, attention to detail, solving complex problems, good judgment, critical reasoning, analysis and synthesis, autonomy, ingenuity, speed, precision and communication.

Graph 16: Summary of qualifications required by the various priority sectors of ECCAS PDIDEs

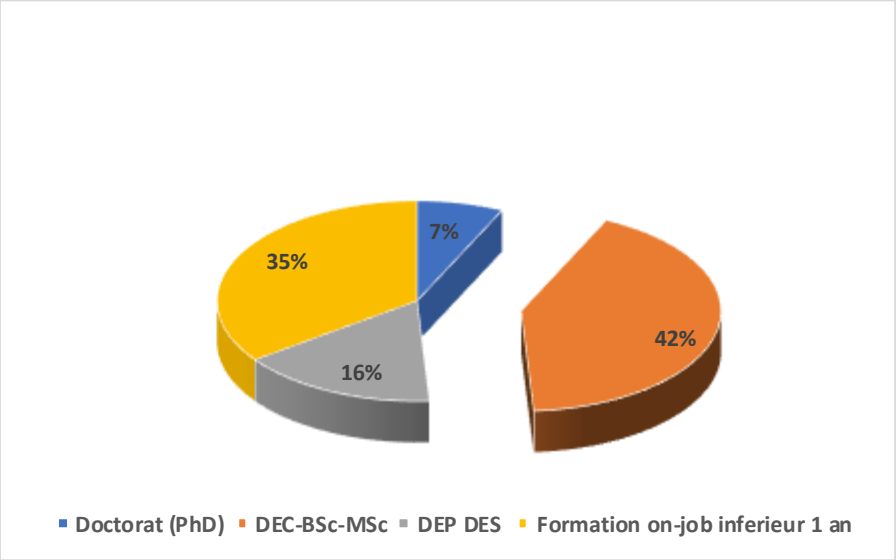


Source: Analysis of data from the Skills and Qualifications Audit

An analysis of the overview of skills and qualifications required for the development of the priority sectors of the PDIDEs of ECCAS countries shows the complexity of the task of building skills for industrialization in the various fields of activity. This goal first requires not only the development of primary, secondary and university educational institutions, but also and above all technical and vocational training as well as the promotion of the culture of continuing training in the workplace. Indeed, the intensity of demand for education varies greatly from one industry to another. While only a fifth of occupations in the energy industry require a doctorate degree, more than half of occupations in the agricultural and food sector, on the one hand, and forestry and wood processing, on the other hand, require only on-the-job training. This observation reveals the capacity of an industrialization strategy based on the agricultural and forestry and wood processing sectors to absorb an abundant but poorly trained workforce. There is a clear emergence

of the strategic role of industrial clusters in promoting mass training in the workplace and within neighbouring communities.

Graph 17: Prevalence of on-the-job training as a skills development strategy



Source: Analysis of data from the Skills and Qualifications Audit

In almost half of the priority industries, the required skills can be acquired on the job through apprenticeship. It is therefore necessary to consider innovative partnerships with international companies and SEZs for transfer of knowledge where necessary, and to encourage the culture of continuous training. The specific needs of local SMEs and SMIs should be taken into account in these arrangements.

The example of Singapore **(Box 6)** may well inspire the options of countries and industries in Central Africa in more than one way. It shows that the commitment of national leaders is one of the keys to the success of any skills development strategy. It is also the lesson that clearly emerges from the experience of Ethiopia's Industrial Policy **(Box 7)** in the textile and clothing sector for which mass workplace training and the acquisition of skills through the partnership with TVET have been encouraged and supported by the State and industry. SEZs have facilitated these innovative partnerships and remain at the centre of skills development strategies in these pioneer countries.

Box 6: Skills development for industrialization: the example of Singapore

To attract foreign direct investment in the country, Singapore's strategy in the 1960s consisted in setting up an international system of technical training through practice. The country has established international partnerships with renowned institutions with proven training systems, in order to learn how to conduct and adjust training, and amend methods to better meet national needs.

The first partnership was concluded with the Indian group Tata, leader in the engineering field and manufacturer of heavy vehicles and industrial machines. The partnership was materialized by the opening of a training centre in 1972 (equivalent to Tata Group training schools in India), which produced technicians employable by Tata. To that end, the Singaporean authorities funded up to 70% of the operating costs of the centre, in addition to offering scholarships to trainees, as well as buildings and land.

At the end of the training, the Tata Group recruited the best interns, while the others built up a pool of skills to develop an entire sector, with a view to attracting other engineering companies to Singapore. The operationalization of this strategy required the dispatch of experts to Singapore, which made it possible to train teachers and technical teams. The success of this project resided in the commitment of EDB to modernize hardware and software, and of participating companies to comply with the programme for at least three years.

This experience resulted in a practice of pooling training resources for the benefit of companies in an industrial sector. This strategy has enabled Singapore to acquire specific skills to develop its industrial fabric.
Source: Chiang (2012).

Box 7: Skills development as a strategic industrialization pillar: the case of Ethiopia's industrial policy on textiles and clothing

Ethiopia's industrial policy on the textiles and clothing sector includes five key strategies to foster export-oriented industrialization.
1. Focus on skills and productivity through specific institutes: The Government of Ethiopia is aware of the vital importance of skills and productivity. Priority sectors are particularly strengthened through the creation of capacity building and technological support institutes specific to each sector. TIDI10 was set up by the Ministry of Industry for the textile and clothing industry to support, coordinate and guide the private sector. It is organized to simulate the value chain, and is responsible for cotton, textiles, clothing and accessories, as well as other inputs. With a staff strength of approximately 300 employees, it implements a capacity building programme to improve the competitiveness of the private sector and provide investment promotion, advisory, training, research and marketing services.

The Government has generally invested heavily in education and training. TVET has been developed, new universities have been built, with emphasis on science and technology. Sector training facilities have been established at TIDI. The Ethiopian Institute of Textile and Fashion Technology (EiTEX) at Bahir Dar University plays an important role, with graduates in textile engineering, clothing engineering and fashion design occupying most of the management positions in textile and clothing companies. The Government also supports the recruitment of foreign supervisory and managerial staff in local companies through a matching grant programme, facilitates access to temporary work permits for

technical staff of foreign companies, helps exporting companies, recruits expatriate experts, organizes short-term training seminars for supervisors and managers and facilitates experience-sharing between companies.

2. Strategic attraction of FDI and participation in global value chains: Participation in global value chains and attracting foreign companies are considered as key elements in helping Ethiopia up the industrial development ladder. In particular, FDI is seen as a major channel for accessing global markets, capital, technologies and skills. Attracting FDI involves high-level politicians and bureaucrats - the two Prime Ministers, Meles Zenawi and Hailemariam Desalegn, have personally visited several priority countries to talk with potential investors. The aim is to persuade buyers from the EU and the US to source from Ethiopia, while reaching out to large, first-tier suppliers from countries such as China, India and Turkey, but also Bangladesh, Cambodia, Korea, Indonesia, and Vietnam, which are ahead of Ethiopia in industrialization and technology, but are facing cost constraints in the labour-intensive manufacturing sector. The strategy is to bring key buyers and suppliers to Ethiopia as leading stakeholders, which would enhance its profile and make it visible in the international supplier landscape. The strategic approach to attracting FDI is not just to focus on particular types of businesses, but also to set requirements on investors to try to ensure export orientation and integration or vertical links. One of Ethiopia major requirements is that foreign companies should export (80% of production), which guarantees incentives and political support; companies that are unable to meet their export targets lose such support.

3. Encourage companies to export while protecting the domestic market: All companies in the sector are strongly encouraged to export. Companies in the textiles and clothing sector must submit their export plans every year, show that they are striving to export and meet certain export targets to which certain incentives are associated. Foreign companies are only allowed to sell up to around 20% on the domestic market, but domestic companies are also given an incentive to export, which is also seen as a way of making companies competitive on the domestic market. The Government implements selective policies that influence the allocation of resources to priority sectors and exports, especially by regulating the banking sector and foreign exchange flows. These measures are supplemented by general export promotion programmes, including: a programme for retention of foreign exchange, customs duty coupon and rebate programmes and bonded warehouses to facilitate the duty-free importation of inputs required for the production of export products. In addition, priority sector exporting companies have access to a credit guarantee system to avoid working capital problems, corporate tax exemptions, serviced industrial parks and support through specific sector institutes. The Government of Ethiopia not only provides infrastructure, but also directly engages in providing support services at break-even prices through public logistics companies such as Ethiopian Airlines, Ethiopian Shipping Line, Dry Port Services and Maritime.

4. Use of serviced industrial parks to attract investment: Priority sector companies have access to land at favorable rental rates, especially in industrial zones. These zones play a major role in export-based industrialization, in particular by attracting FDI in priority sectors.

5. Development of value chain links between the clothing, textiles and cotton sectors.

Source: Whitfield, Staritz and Morris (2016)

CHAPTER IV: Developing SEZs and Industrial Clusters as Skills Development Anchors

Special economic zones and other industrial clusters, whose legitimacy remains the tendency to emulate the successful approaches of the Asian dragons, feature prominently in the new generation of industrial development strategies in Central Africa. In addition to the numerous benefits expected in terms the job creation and the promotion of innovations, the emergence of Special Economic Zones (SEZs) offers African governments in general, and those of Central Africa in particular, a clear opportunity to develop targeted approaches aimed at strengthening the skills base and gains regarding employment.

Central African economies have not yet succeeded in taking advantage of the opportunities offered by vocational and technical training systems due to low formal secondary and post-secondary enrolment rates. The involvement of SEZs as skills development levers can help to overcome some of these pitfalls.

The dynamic effects and impact of SEZs on technological progress and skills development, as well as their knock-on effects on the economy as a whole, are particularly important in a context characterized by a large young population and the continued relevance of the promotion of a lifelong learning culture **(WEF, 2017**).

By bridging the gap between enterprise and labour, public authorities and training providers at local, sector and regional levels, SEZs with the resulting agglomeration effects, can help to align training with corporate and labour market needs.

IV.1. SEZs: Definition, advantages of clustering and agglomeration economies

Generally, a SEZ has four characteristics: (1) it is a geographically delimited area, usually physically secured; (2) it has a single management or administration; (3) it offers benefits for investors physically within the zone; and (4) it has a separate customs area (duty-free benefits) and streamlined procedures. **(FIAS, 2008).**

The generic term "*Special Economic Zone*", however, covers a broad range of zones, such as free trade zones, export-processing zones, industrial parks, economic and technological development zones, high-tech zones, science and technology parks, free ports, enterprise zones, and others.

Special economic zones, which are based on the concept of clustering, are horizontal and vertical concentrations of companies specializing in specific lines of business collectively and

supported by a certain organization. This definition, which varies from one author to another, covers a wide variety of industrial arrangements **(MELE and the CCF Croatia, 2013).**

In general, characteristics that contribute to the "special" nature of these arrangements include, among others: (1) special regulatory regimes with zones operating normally under more liberal economic laws than those that prevail generally, on issues such as employment, land use and foreign investment; (2) public services including efficient customs, business registration and licensing systems, usually through traditional "one-stop-shop" mechanisms; (3) much better infrastructure including roads, energy, water, etc. compared with the average domestic environment; and (4) fiscal incentives allowing investors in the zone, especially its core investors, to benefit often from the free transfer of profits as well as other incentives in terms of taxes and subsidies.

Economic theorists identified the main advantages traditionally associated with "industrial districts" (clusters) at a very early stage. Marshall (1920) characterized these special economic entities by their triple advantage including better access to supplies and markets, labour market pooling and spill overs of technological know-how **(AfDB, 2017)**. This spatial concentration therefore enables firms to promote collective action to reduce the cost of transporting goods, people and ideas **(Carol Newman and John Page, 2017).**

This concentration has undeniable consequences in terms of competitiveness, innovation and skills development. The proximity of outputs and intermediate inputs leads to savings on procurement and marketing costs. The presence of a large number of firms in the same sector encourages them to invest in their skills, given their portability within the cluster, while the proximity to other producers offers a strong incentive to own the stock of technologies available in the network.

These areas, which are characterized by dense economic activity, thus tend to thrive compared with others due largely to the existence of agglomeration economies which emerge through productivity gains resulting from the spatial concentration of economic activities.

Industrial clusters are further defined by their production process, which can be divided into several critical stages implemented by several families of workshops, thus fitting perfectly into the logic of value chains. This characteristic is reflected in a significant reduction in the capital required to launch a business in each stage of production. This low initial financial constraint is reinforced by a regular recourse to inter-firm commercial credit, because of a strong social capital and geographical proximity. Industrial clusters can therefore more easily avoid heavy dependence on external capital.

Low financial barriers at entry encourage the deployment of enterprises hitherto constrained by heavy financial restrictions, including a large number of small- and medium-size enterprises and industries (SMEs/SMIs) which can then develop businesses in clusters and create huge job,

innovation and skills development opportunities for countries with alarming unemployment and underemployment rates.

These cluster-related characteristics and benefits have inspired many new generation industrial and economic diversification policies. They are therefore associated with the rapid industrialization of some pioneer countries such as China, Singapore, South Korea, etc. However, the popularity of these institutional arrangements often overshadows some of their limitations.

IV.2. Beyond the benefits of agglomeration: some genuine concerns

Despite their common feature which is agglomeration economies, SEZs differ fundamentally in terms of origin, barriers to entry, business structure and impact on the overall local economy.

While low barriers at entry often allow for a period of rapid initial cluster development, such an explosion of businesses in a very limited space very quickly creates bottlenecks and other negative externalities such as insecurity, lack of market space and inadequate infrastructure, justifying the need for State intervention.

Although SEZs or industrial parks continue to be hailed as an effective instrument for promoting industrialization and structural transformation for the Asian dragons and some *"economic miracles"* in Latin America, there is some disenchantment in sub-Saharan Africa which calls for a cautious assessment.

Most of these arrangements reveal a low intention of promoting domestic investment in the zone and are characterized by weak linkages with firms outside their areas. SEZs are thus often labelled as enclaves with weak connections to local value chains. Most African SEZs, which are based on high expectations in terms of worker and manager mobility within the cluster, continue to depend on foreign management, thus depriving domestic economies of the agglomeration economies that elsewhere translate into the transfer of skills **(Carol Newman and John Page, 2017).** Many of these zones have been flagged for their high dependence on unskilled labour, focus on operations with low technological and assembly mobilization and the crystallization of their activities in a single sector such as textiles or mining **(UNCTAD, 2019).** Recurrent concerns about the quality of jobs created, gender mainstreaming and other working conditions are often mentioned for some SEZs in Central Africa.

Though it may be too early to assess these institutional innovations, the few reservations about the role of SEZs as a tool for industrial policy in Africa have not discouraged African countries, many of which, including Cameroon, Ethiopia, Ghana, Nigeria, Rwanda and Tanzania, are reintroducing the concept of SEZs as an important vehicle for skills development.

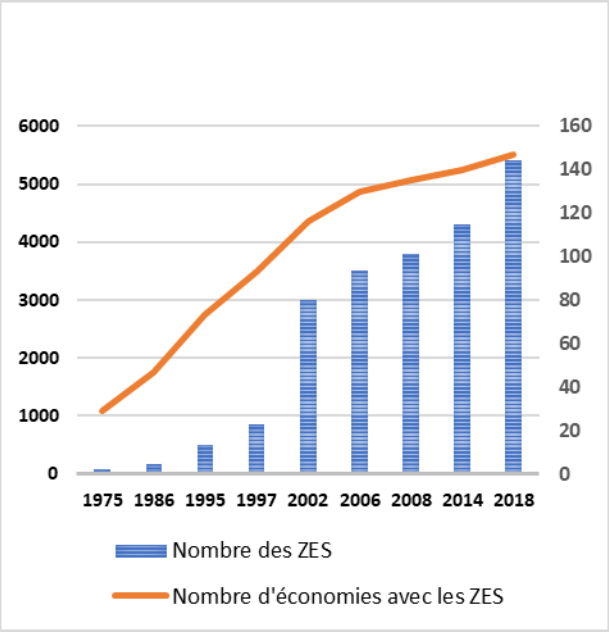
IV.3. Major trends in SEZs in Africa and role of CA

SEZs were adopted rather late in Africa compared with other developing regions. These zones gained momentum on the continent during the 1990s, reflecting the willingness of African States to replicate the industrial development model of the Asian dragons as well as their efforts to respond to the incentives offered by AGOA and the Multi-Fibre Arrangement (MFA) **(Carol Newman and John Page, 2017).** Mauritius was the first African country to establish an SEZ after introducing the SEZ Act in 1970. Other countries, including Ghana, Liberia and Senegal, followed in the 1970s.

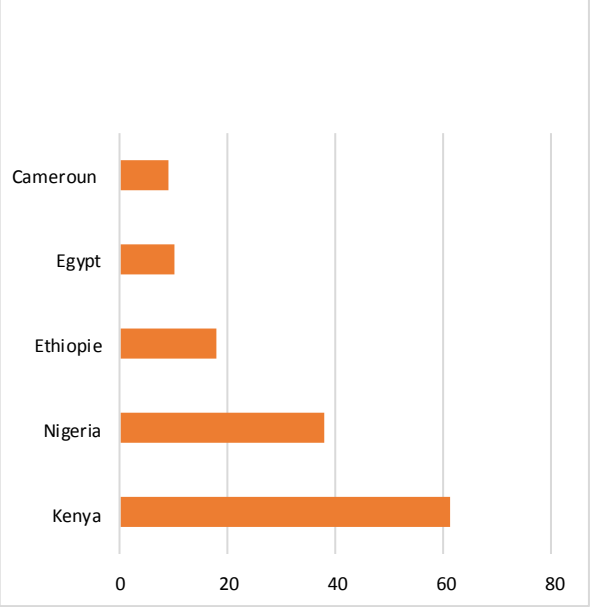
At present, about 237 SEZs have been established in Africa, although some are still under development. SEZs have been established in 38 of the continent's 54 economies, with a higher number in Kenya. SEZ programmes are very well developed in the continent's three largest economies – Nigeria, Egypt and South Africa – while most of the continent's smaller economies have established a framework for the establishment of SEZs only over the past 10 to 15 years.

These small economies therefore tend to have a relatively small number of such enclaves. Many least developed economies in Africa (e.g. DRC, Lesotho and Madagascar) do not yet have or have few SEZs already operational. Most of them are presently in the process of setting up at least one SEZ.

Graph 18: Global Trends in SEZ (1975-2018)



Graph 19: African Countries with More Special Economic Zones (in number) in 2019



Source: UNCTAD data, WIR 2019.

Major trends in the development of SEZs in Central Africa show that countries still do not have or have a small number of these tools compared with leading countries in West Africa (Nigeria) and East Africa (Kenya and Ethiopia). The practice of SEZs in Central Africa highlights a recent trend in both the number of SEZs and the number of countries that have embarked on a process that was intensified especially during the 2000s.

So far, only Cameroon is among the top 5 African leaders in terms of the number of SEZs established. The vitality of the ECCAS zone is clearly visible especially by the high number of SEZs being prepared.

Besides the infrastructural efficiency and business climate provided during this early phase of their development, SEZs offer clear opportunities for infusing the development of skills in these territorial enclaves.

The future of SEZs in Central Africa is bright. The sub-region hosts more than 12% of the SEZs planned and being developed in Africa. Cameroon has the largest number of SEZs in the pipeline, followed by DRC and Equatorial Guinea. In addition, Cameroon remains the sub-regional leader in terms of legally established SEZs within the ECCAS zone. Though other countries such as Congo and Chad have not been mentioned among those preparing to implement SEZs, their national industrialization and economic diversification policies confirm the adoption of SEZs as vehicles for the promotion of industrialization. Moreover, Congo has created a Ministry devoted solely to SEZs, underscoring its ambition of achieving industrialization and the means of doing so.

Table 7: Special Economic Zones in Africa: Share of Central Africa

Country	Number of SEZ (established legally)	Of which under Development	Number of SEZs being Planned
Global	**5 383**	**474**	**507**
Africa	**237**	**51**	**53**
Angola	1	0	
Burundi	0	0	1
Cameroon	9	0	5
DRC	1	0	4
Equatorial Guinea	2	1	1
Gabon	2	1	
Sao Tome and Principe	0	0	
Total Central Africa	**15**	**2**	**11**
Share of African Total	**6.34**	**3.92**	**20.75**

Source: UNCTAD data, 2019.

Most of the SEZs in the sub-region focus on the promotion of industries with a high export potential and are characterized by a low level of technological development. They centre on

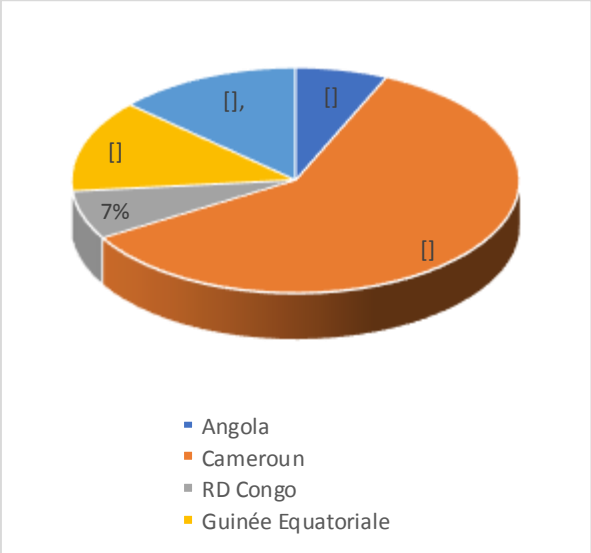
labour-intensive activities, although some countries are increasingly targeting diverse, high value-added and technologically advanced sectors.

Whereas past generations of SEZs in the sub-region were driven by public investment, the new generation is being developed and operationalized by the private sector backed by a strong political will.

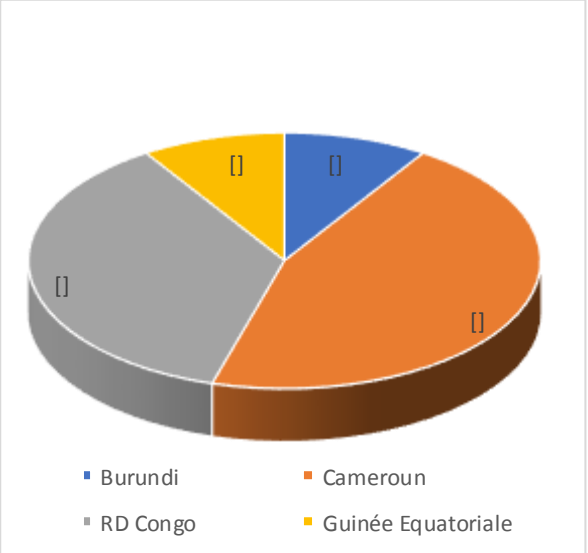
There is, however, a low inclination to promote cross-border SEZs in Central Africa, though such initiatives have been successful implemented in Southern Africa[34] and elsewhere. This is a great opportunity to strengthen the sub-regional dimension of these tools which are confined within the national borders of ECCAS/CEMAC member countries.

The deepening of regional integration within the framework of the Continental Free Trade Area offers an opportunity for developing and aligning cross-border SEZs with the development of regional economic corridors as well as developing related competencies.

Graph 20: Shares of countries in SEZs established by law in CA



Graph 21: CA's share in SEZs envisaged and being developed in 2019



Source: UNCTAD data, 2019.

[34]Economic cooperation through cross-border SEZs features prominently on the agenda of SADC and even EAC. The Musina/Makhado SEZ in South Africa, for example, is located strategically on the SADC North-South Corridor and near the South African-Zimbabwe border. It illustrates the outcomes of regional plans to promote investment and economic growth and to encourage skills development and job creation at the sub-regional level.

IV.4. SEZ Laws: Gateway to skills development

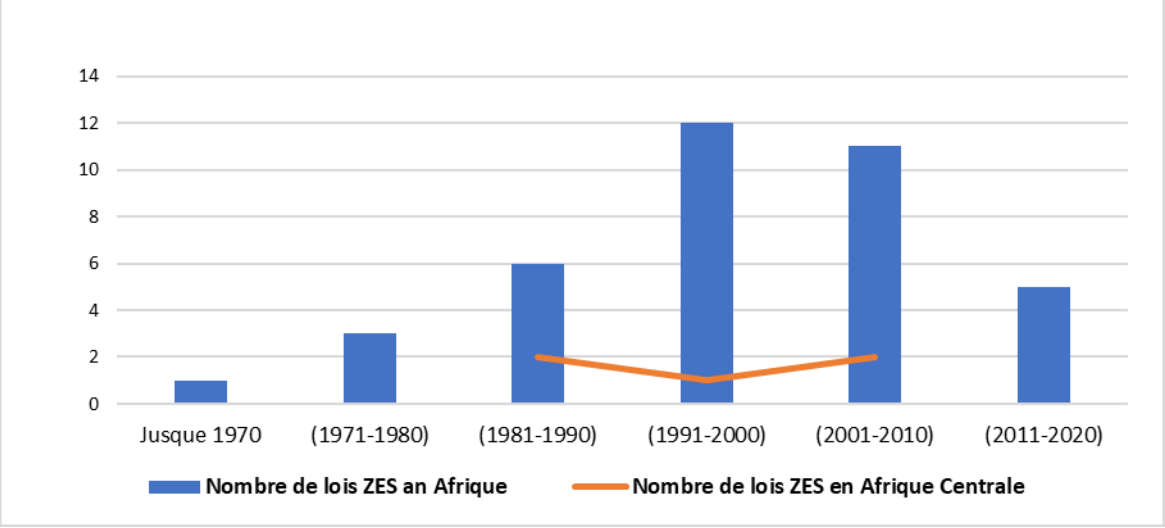
SEZs, like their constituent enterprises, are subject to labour, investment and environmental laws and regulations of their host countries. These laws stipulate not only the obligations of investors, but also the advantages granted to them and can serve as an effective gateway to knowledge and skills development within these levers of industrialization.

At present, about 115 countries have adopted nearly 127 SEZ laws at the global level. These laws are more prevalent in developing countries. Twenty-seven SEZ laws have been identified in Latin America and in the Caribbean economies (69% of countries in the region), 29 in Asia and Oceania (57%) and 37 in African countries (69% of countries). Moreover, 62% of all LDCs have SEZ laws, while such laws remain rare in developed economies where they focus on customs incentives and Government support, among other things **(UNCTAD, 2019).**

However, the establishment of legal frameworks for SEZs is still a recent phenomenon dating from the 1990s, as almost 70% of SEZs have been adopted as from 2000. This trend has accelerated over the last decade, with about 40% of all registered national legislation coming into force since 2010 and most of it in developing countries.

A similar trend is taking place in Central Africa where SEZ laws have only recently been enacted with the intensification of the phenomenon during the 1990s. Although such laws already existed in Africa at independence, the first cases in Central Africa were recorded in the 1980s.

Graph 22: Number of SEZ Laws in Africa and Central Africa



Source: UNCTAD WIR data, 2019.

It is acknowledged that workers with skills relevant to a particular sector tend to be concentrated in a zone with high sector job opportunities. Firms, in turn, tend to concentrate

in areas where there is a high number of workers with the required skills, thus confirming the role of SEZs in strengthening the adequacy of labour supply and demand. SEZs therefore facilitate the recruitment of new workers when labour demand increases. They support knowledge sharing considering that the informal exchange of ideas between workers and entrepreneurs is more likely when enterprises are located close to each other geographically **(Carol Newman and John Page, 2017).**

Dynamic SEZ laws can enhance skills development by providing incentives for a culture of continuing education, the promotion of innovations and innovative partnership with training institutions within their zones and in the local economy as a whole.

The on-going development of SEZ governance tools in many Central African countries provides an opportunity for addressing skills development-related aspects, a dimension often neglected by older generation laws.

IV.5. Skills development at the heart of networks and SEZs

It should be emphasized that the existence of good skills is also a fundamental condition for the emergence of business "clusters", operating as networks of firms that strengthen their performance advantages through their proximity.

Specialized skills can be developed both within and between companies, providing a competitive advantage to network participants. By playing a proactive role in developing these networks and promoting business-to-business cooperation, governments can help to stimulate skills upgrading programmes **(ILO, 2010).**

IV.5.1. SEZs as dynamic approaches to skills development

Whereas enterprises often struggle to find a critical mass of people with the skills needed to expand or adopt new technologies, Central African countries face the challenge of maintaining the relevance of the skills of newly hired workers as well as those of existing workers throughout their careers.

As an agglomeration of firms and services, SEZs can provide opportunities for lifelong learning and a framework for the re-acquisition and up-grading of skills by transiting to a more holistic approach where the bulk of learning and training takes place at the workplace. These zones provide a framework for better private sector mobilization and positioning at the centre of the development of skill pools for economic diversification.

To this end, SEZs should make more proactive choices and reforms embodied in more dynamic, innovative and ambitious laws in terms of the partnerships mobilized, geographical

coverage, a commitment to future skills and social inclusiveness, and driven by better coordination of development policies.

A. Inclusive partnerships for skills development

Central African employers should, in collaboration with governments, schools, universities and non-formal education providers, provide learning opportunities for their workers. This inclusive partnership could well be strengthened through SEZs.

There is therefore an urgent need to encourage constructive public-private sector dialogue on urgent and fundamental reforms of education systems and employment policies to prepare the labour force for the jobs of the future provided by SEZs.

In a context where vocational training is being perceived as strategic at national, corporate and individual levels **(ILO, 2010)**, the strong commitment of SEZs to skills development will help to strengthen education in their location areas, enshrine lifelong learning for the staff involved and align vocational training with skills development and growth strategies.

Such SEZ commitment to continuing training at the workplace and lifelong learning will enable workers and enterprises to adapt to the accelerated pace of technological change, which the traditional training system is trying to catch up with.

Inclusive partnerships between enterprises, chambers of commerce, business associations, trade unions, the educational sector and SEZ managers will help to promote clusters of enterprises that serve as true *"learning networks"* and "permanent innovation centres", guaranteeing the collective and sustainable productivity of actors. Thus, continuing education in SEZs could mitigate the weaknesses of vocational training, engineering, science and technology systems.

Such investment in skills development will enable SEZs to reap the triple benefit related to the agglomeration effect crystallized in sharing, harmony and learning. Sharing effects include the pooling of risks and benefits and the use of common infrastructure, while harmony effects are associated with the alignment of workers to job profiles. Learning effects refer to the dissemination of knowledge, as the location of firms with respect to their competitors can enable them to benefit from information sharing and, in so doing, to engage in collective actions aimed at addressing some common constraints resulting in efficiency gains **(Carol Newman and John Page, 2017).** The promotion of skills development can reduce mass unemployment, especially among young people, and also enhance the profitability of enterprises as well as their collective competitiveness.

The natural gap between training and work environments in the sub-region is still wide. Though the training environment often has an educational, academic and theoretical

character, the world of work remains dominated by the practical demands of competitive production processes, deadlines and work organization that are constraining by nature.

The world of work is changing rapidly, driven by innovation and by technological and market developments. The constant challenge for educational and training systems whose responsiveness remains weak is to keeping pace with such change. The involvement of SEZs as a framework for the continuous training of workers and other trainees and the strengthening of partnerships with training institutions will help to stimulate the responsiveness of educational and training systems to changes in the qualifications required by industry.

B. SEZs and regional integration: encouraging the cross-border movement of human resources and the transferability of skills

While the various SEZs in the sub-region are mainly national with very little sub-regional ambition, it is necessary to promote cross-border SEZs and strengthen the role of regional integration in the development of such spaces and in the acquisition of the skills needed to achieve economic diversification. This approach will support the sharing of experience in addressing major challenges to improve the relevance of education and training to the world of work, as well as to transition from decision-making principles to their application in SEZs.

International flows of migrant workers continue to increase, creating problems related to the equitable access to training as well as skills gaps that should be reduced in some countries without creating new ones elsewhere. Sub-regional harmonization of training programme content and skills recognition/accreditation will make these efforts more efficient and fruitful for both enterprises and workers **(WEF, 2017).**

Migration within and between countries requires special arrangements for the education and vocational training of immigrants, and for the recognition of the skills they bring along with them. They also necessitate the adoption of policies to retain human capital and avoid "*brain drain*". It should be underscored that restrictions on the movement of skilled labour will constrain growth and innovation.

To ensure efficient skills mobility, international certification should be brought to the forefront of discussions between public and industrial sector partners. Employers often prefer to hire workers whose skills have been certified through international assessment. Although international certification is relevant, it is still very costly and requires the mobilization of collective efforts at the sub-regional level **(E4D/SOGA, 2019).**

Training to be promoted at the sub-regional level should be integrated and cover, in addition to technical skills, language skills, work ethics and occupational health and safety issues. Sub-

regional training programmes should, as far as possible, be aligned with national standards and adapted to the real career options in the specific region where the training is provided.

Cross-cutting aptitudes and "soft skills", including the ability to engage and interact effectively with others, the ability to build consensus and lend assistance, and the ability to guide and lead when needed, play an increasingly important role in the workplace, where the transferability of competencies and the international migration of talent are also becoming important issues **(ILO, 2010)**.

Successful structural transformation, of which economic diversification remains a major component should facilitate the movement of workers and enterprises away from declining or low-productivity activities and sectors towards expanding and higher-productivity activities and sectors. The acquisition of new skills within SEZs, as well as the upgrading of existing ones and lifelong learning, can help workers to maintain their employability and enterprises to adapt and remain competitive.

C. Futuristic SEZs: anticipating future needs and forecasting skills

As a hub for industrial skills development, SEZs cannot simply train workers to meet their specific current needs. They should adopt a more dynamic approach. It is important to ensure that training programmes focus on lifelong skills development with a special focus on future market needs.

Anticipation and skills development are possible only when sustained dialogue between employers and trainers, coordination between government institutions, improved quality of labour market information, employment services and the study of occupational behaviour contribute, in an integrated manner, to the early identification of training needs **(ILO, 2010)**.

Many of the jobs that will be created over the next two decades are non-existent today and the need to update skills does not only apply to young people undergoing training in schools, universities and other training institutions, but also to the current generation of workers in the industrial sector and SEZs which promote them.

SEZs are expected to support innovation and develop the related future skills through a permanent culture of on-the-job training and collaboration with universities and research centres on innovative projects. They can act as innovation parks for various trades and train this new generation of workers spearheading the fourth industrial revolution.

To build this "pipeline" of skills needed to better mobilize tomorrow's technological advances, educators, researchers and industrialists should start encouraging critical thinking, creativity, cognitive flexibility and artificial intelligence.

As the use of digital technologies becomes more and more intensive in the jobs emerging worldwide and at all skill levels, the ECCAS zone will take advantage of the opportunities offered by this type of jobs, in the long term, only if it develops skills aimed at designing and creating local ICT solutions instead of focusing on the less sophisticated segments at the lower level of the global digital market **(WEF, 2017)**. Technologically advanced SEZs should play a key role in this regard and encourage networks of champions.

Future jobs and the skills associated with them are aligned with the needs of societies that are expected to become more sustainable. The *"greening"* of jobs is a cross-cutting process involving all sectors of the economy. Sectors that are central to SEZs are of particular interest in this respect. Domains including energy production and consumption, particularly renewable energies, public works and civil engineering, transport, heavy industry, agriculture and forestry offer anchor points for a sustainable economy and the development of associated green skills.

Central Africa continues to suffer from lack of adequate skills to trigger the rapid "greening" of the industrialization process. SEZs can serve as nodes to infuse training across the complementary array of skills required by a wide range of jobs, to enable further *"greening"* and to harness the growth potential of the economic and green jobs.

D. SEZs and training of the socially marginalized: inclusiveness and the reduction of inequalities

Inclusive skills development systems are those that ensure wide access to training opportunities for all, especially for groups facing major difficulties on the labour market, especially women, youths, low-skilled workers, workers with disabilities, indigenous populations and rural communities ...

Specific policies and measures are needed to facilitate access to training, skills development and employment through SEZs for individuals and groups facing all kinds of barriers, including poverty and low incomes, ethnicity, disability and migration.

There is an urgent need for SEZs to surmount the logistic, economic and cultural obstacles affecting women's access to their advantages and take into account their specific needs in the development of workplace learning and training in industrial clusters. Visibly, it is necessary to respond to the training needs of women returning to the labour market as well as older women who have not benefited from equal access to lifelong learning opportunities and who lack access to vocational, scientific and technological training **(ILO, 2010)**.

Special attention should be paid to encouraging female skills in STEM which is a weak in Central Africa and on the entire continent. For example, only 17% of the students pursuing

university degree programmes in science and technology in Kenya are women. This proportion is 24% in Tanzania, 18% in Uganda and 27% in Rwanda **(WEF, 2017)**.

SEZs are considered as an effective means of addressing the mass unemployment and social marginalization of youths. Though the improvement of the skills of young people as well as their long-term career prospects necessitates the implementation of actions on three fronts, namely: (1) doing everything possible to avoid school drop-out; (2) promoting the blending of work and study; and (3) offering all young people a "second chance" in obtaining a qualification, SEZs can play a direct and decisive role in the last two thrusts. They can also act indirectly to support the first thrust through social responsibility programmes and other targeted pro-education initiatives in their operational zones.

The contribution of migration to the industrial development of countries of origin and destination can be enhanced, inter alia, through bilateral and multilateral arrangements. In the context of the African Free Trade Area, it is important to provide equal opportunities to migrant workers and to meet their training needs and those of their children. SEZs, especially cross-border SEZs, can serve as adequate tools for affirmative policies on vocational training and integration to this end.

Many empirical studies on the impact of SEZs at the national level support the role played by clustering in building the capacity of firms in low-income countries. There is evidence that agglomeration economies develop from the transmission of innovative ideas between firms in the same "*district*", but also productivity gains, particularly between informal sector enterprises which can learn from formal actors.

Partnerships between SEZs, including informal sector actors, will help to broaden the benefits of the skills developed to sectors that employ the majority of poor people in Central Africa.

E. SEZ and coordination of skills development through tripartite dialogue

When applied effectively, the SEZ approach maintains a virtuous circle in which efficient provision of on-the-job training and support for technical education in the zone feeds innovation, investment, economic diversification and competitiveness, as well as social and occupational mobility and, hence, the creation of more, but also more productive and well-paying decent jobs.

An isolated sector policy cannot address this challenge. Educational and training policies are more effective when they are well coordinated with employment, social protection, industrial investment, infrastructure and trade, regional and local development policies and growth strategies. Industrial clusters are capable of incorporating sector-specific approaches to skills

development into long-term national growth strategies, thus cementing top-down (national) and bottom-up (sector) approaches to training.

SEZs are therefore ideal focal points for an integrated programmatic approach and should be designed within the broader framework of development plans that prioritize the development of human capital.

Social dialogue and collective bargaining at the local enterprise, special economic zone sector and/or national levels are very effective in creating incentives for investment in skills and know-how. These processes can generate a broad commitment to education and training and a culture of learning, strengthen support for the reform of training systems and provide channels for the continuous exchange of information between employers, workers and public authorities. Besides promoting knowledge building, social dialogue and collective bargaining can also help to ensure a fair and efficient distribution of the benefits of increased productivity and, thus, provide sustainable financing for continuing education and training at the micro, meso and macro levels **(ILO, 2010).**

Agreements between employers and workers are important levers for promoting workplace learning. These agreements which are usually developed within the firm, but also within the branch and the SEZ, ensure that skills upgrading generates productivity gains that benefit both employers and workers and become a permanent culture.

Tripartite dialogue and agreements can also serve as a framework for the sector-wide analysis of future skills needs and support the identification of areas requiring capacity building, as well as promote innovative strategies for the adequate financing of skills development systems in Central Africa.

Lifelong learning within SEZs can be supported by bipartite sector funds which are often financed by agreements between employers and employees, while close cooperation between them provides a better framework for aligning the demand for skills in different sectors with the supply of training, anticipating future labour market needs and assessing the relevance and effectiveness of skills development programmes.

IV.5.2. Optimum financing of skills development at the heart of SEZs: Learning lessons drawn from elsewhere

Initial education and training and lifelong learning benefit individuals, employers and society as a whole. According to economic principles, the costs of providing public and private service benefits should be borne by both public and private financing.

Although the government is still the main investor in skills development in Central Africa, the involvement of the industrial sector is necessary, not only to ensure sufficient, stable and sustainable financing for training, but also to guarantee its relevance.

(a) Private sector involvement: a partnership throughout the project and programme cycle

The strong involvement of the private sector and SEZs in skills development and financing is a guarantee that the qualifications obtained will be aligned with the needs of industries and, above all, that vocational training services will be in tune with market needs. The involvement of industry must therefore be guaranteed from the planning stage and cover the implementation and evaluation of programmes **(UNDP, 2014).**

Central Africa will need to learn from innovative countries that encourage private sector participation in skills development throughout the programme cycle through a partnership between enterprises, chambers of commerce and industry, SEZs, training institutions and other private associations. Pioneering countries such as Turkey are mobilizing the "*Business-State-Trade Union*" tripartite on industrial skills development issues and promoting market-driven solutions.

In many innovative countries, lifelong learning is backed by sector-based bi-partisan funds financed through collective agreements between sector employers and employees, which generally represent 0.5% to 1.0% of the wage bill of enterprises. These funds are increasingly being invested in areas such as research on new skill needs, career guidance information and appropriate training materials. This financing is very important for small- and medium-size enterprises and industries (SMEs/SMIs) which generally have no in-service training framework **(ILO, 2010)**.

The Turkish industry and its clusters finance a mosaic of skills development initiatives to support the inclusion of young people in the labour market and ensure the availability of skilled human resources in industry. For example, each year, BUTGEM, a private initiative based in Bursa, trains more than 3 000 young people in the domains of textiles, automotive equipment, ITC, etc. The rate of employment of the human resources trained through this channel is about 80%.

If they are left to themselves, private firms may face difficulties in investing in skills development due to the risk of market failure. Firms will be reluctant to train workers because the latter can easily be hired by competitors, considering the transferability of skills within the cluster. Governments are urged to provide necessary incentives for the effective participation of the industrial sector in skills development programmes through PPPs and other arrangements.

(b) Public-Private Partnerships (PPPs) and the role of training institutions and innovations

In some developed countries, especially in Europe, PPPs in SEZs enhance the efficiency and relevance of TVETs for the development of industrial skills, thus shielding the system from the pitfalls of insufficient and erratic public financing. The "Learning Factory" located in the Raufoss Industrial Park in Norway, for example, enables mechanical engineering and industrial engineering students to combine technical training and work in industry. The "Learning Factory" therefore enables students in vocational training institutions to have access to new technologies and to equipment pools that their training institutions' budget does not enable them to procure. The partnerships established between TVETs and digital SMEs on the development of innovations enable such training institutions to keep tabs on technological developments within the SME so as to adapt their training courses in partnership with the Oslo Metropolitan University in Norway. Such partnerships are also encouraged in Austria and Germany.

There is a need foster dialogue between industry and TVETs and to enable industry to play a leading role in curriculum development, financing and evaluation. SEZs which serve as networks of enterprises concentrated in a geographical area, can help to better mobilize the private sector in efforts to innovate and diversify skills development financing.

An efficient and inclusive financing of skills development systems should be based on innovations such as the promotion of training credit to give another opportunity to unqualified individuals and on the institutionalization of the obligations of enterprises and SEZs to finance comprehensive training programmes for labour-intensive industries. SEZs can also support advanced technical training institutions and other STEMs through targeted scholarship programmes and other support for corporate innovation-related research projects.

(c) Funds supported by tax incentives for skills development

Initiatives have been made here and there to create funds for the financing of training, which are replenished by a proactive and targeted tax system. The ECCAS zone stands to gain by aligning itself with this trend by integrating it into its SEZ policies, thereby meeting the huge need for pre-employment training, supporting continuous training and promoting equity by integrating some disadvantaged groups (young people, women, etc.) into the job market. Pioneering countries in this respect include Turkey, South Africa and Brazil.

Tax credits are another ideal tool for encouraging firms to finance training costs. They can be designed and operationalized efficiently within an industrial cluster. In Argentina, SMEs can finance training projects for up to 8% of the total payroll through this mechanism. They can also obtain reimbursement for expenses incurred in carrying out competency assessment and certification as a complement to training proper.

Employers and their SEZs can therefore be exempt from payroll taxes or taxed at a reduced rate depending on the training they offer to their employees and subcontractors, both internally and externally. Under other arrangements, employers can provide assistance to training institutions or mobilize service providers for training financed by one or more employers and SEZs. Thus, small firms can benefit from joint training for greater economies of scale and an expansion of the skills and innovation park.

South Asian countries, including Malaysia and Singapore, have adopted financing strategies including targeted taxes allocated to specialized funds for financing skills development. The success of such initiatives requires greater business involvement in the design, governance and implementation of the tax and fund set up. These initiatives should target entrepreneurs and sectors with large skills deficits, work with SMEs and establish linkages with the informal sector. These tax initiatives are best targeted within SEZs and new policies related to these industrial clusters should encourage such best practices.

IV.5.3. SEZs as linkages with the local economy and SME skills development

The performance of SEZs as an instrument for long-term industrial development depends mainly on the nature of their linkages with the local economy. They are expected to strengthen the production capacity of local enterprises and act as a catalyst for them.

This is why there is a multitude of small- and medium-size enterprises around SEZs. In Vietnam, large enterprises are surrounded by thousands of small businesses in two industrial clusters in Hanoi and Ho Chi Minh City. Thousands of small metal sector enterprises are clustered around Kumasi in Ghana and Arusha in Tanzania, both of which operate as furniture supply clusters. Such enterprises benefit from the existence of agglomeration economies and the substantial productivity gains emerging from such location with each other **(Carol Newman and John Page, 2017)**.

SEZs are sources of synergies and economies of scale which maintain links with the local economy. Specialized and vertically integrated zones provide a broad spectrum for synergies with local SMEs, while multi-business zones can include cost-sharing arrangements. In large multi-business zones, intelligent co-location strategies can induce industries with a high potential for collaboration to be more physically close to each other and to local SMEs **(UNCTAD, 2019).**

(a) SMEs poorly integrated into global markets in the face of SEZs that are not open to their local environment

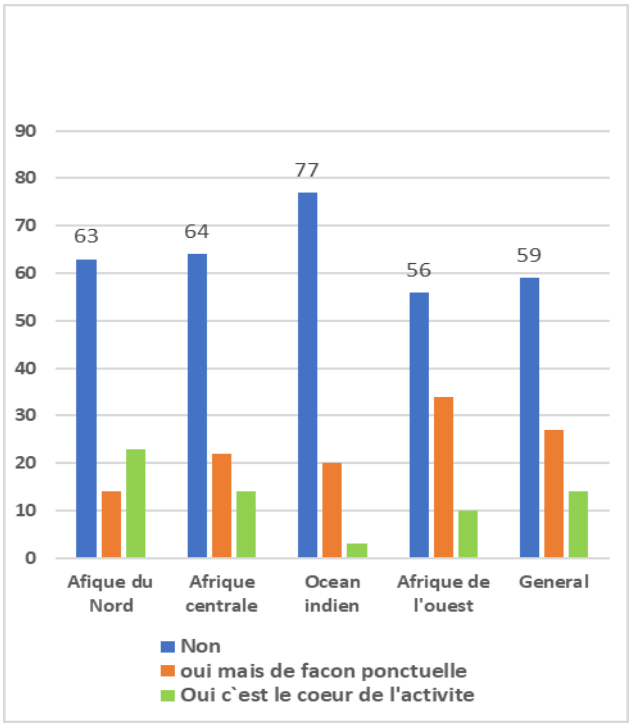
Although many African industrial clusters, often export-oriented, have failed to integrate into local economies and rarely buy from local suppliers, the new generation of SEZ development policies emphasises the strategic role of cluster integration with local firms through strong backward and forward linkages that provide learning opportunities for local economic actors. These expectations underscore the need to consider SEZ policies as part of broad industrial policies and development strategies.

Central Africa's economic fabric is still dominated by SMEs and very small enterprises (VSEs). They make up more than 95% of enterprises in Cameroon and are concentrated in the services sector, particularly in the informal trade sector, reflecting the failure of structural transformation efforts which have not been able to increase the share of manufacturing value added in GDP, despite the visible reduction in the agricultural population.

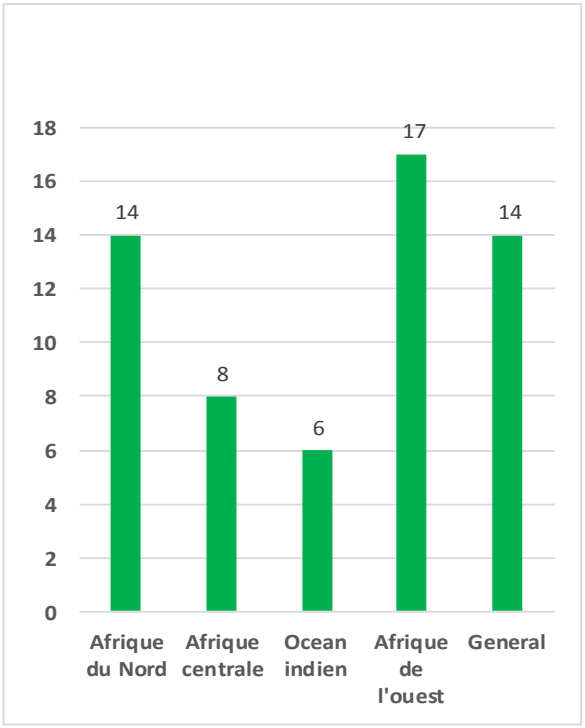
The share of SMIs in the mosaic of SMEs is still very low, while their linkages with international companies as well as their export-oriented capacity are still limited. About 65% of SMEs in Central Africa have not established partnerships with international firms, while this share is 56% in West Africa, compared with a general average of a little less than 60% in the African and Indian Ocean regions. The share of export turnover is therefore smaller (8%) in Central Africa, a little less than half of the share of exports of SMEs in West Africa (17%) and the general average for the Africa and Indian Ocean regions (14%) in 2019. This situation therefore deprives the sub-region of opportunities for learning and technology transfer driven by foreign direct investments and international trade interactions.

This low level of integration of local SMEs with international enterprises, as suppliers and customers, can be offset by enhancing collaboration between SEZs and enterprises in the sub-region and strengthening local content products.

Graph 23: International partnership practices of African SME's (%)



Graph 24: Share of SME export turnover (%)



Sources: CGAP data, 2018.

Affirmative new generation policies consider SEZs as catalysts for the development of local activities upstream and downstream of their activities, preventing industrial clusters from operating as isolated enclaves of prosperity. They are encouraged to establish linkages with local value chains in order to develop local entrepreneurial capacities and skills.

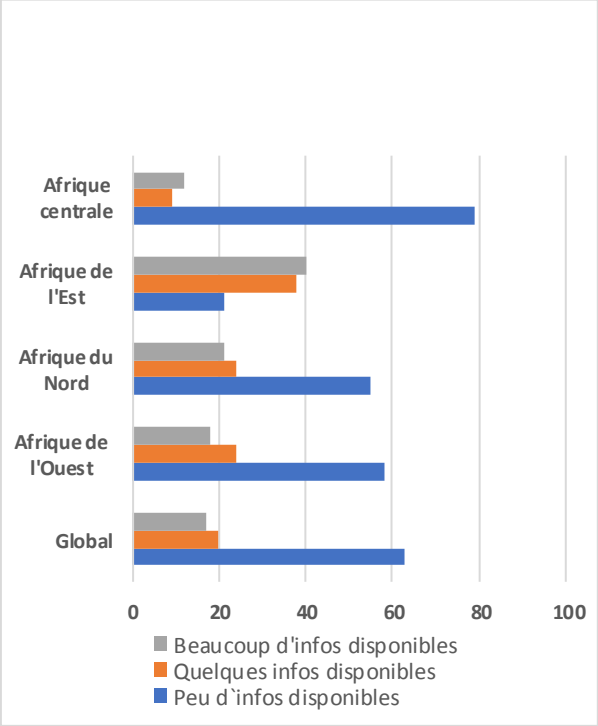
(b) Affirmative SEZ policies for local content in response to the SME information deficit

Active policies to promote local content, obliging FDIs in Central Africa's SEZs, hitherto disconnected from local value chains, to build bridges with local suppliers and subcontractors, confirm the role of clusters in strengthening the production capacity and technical skills of SMEs and VSEs in the sub-region. Encouraging labour mobility, at the technical and managerial level, between the two categories of enterprises helps to strengthen these efforts, for SEZs whose older generation was characterized by the import of skills and a low level of the Africanization of executives. The mobility of skills reinforces the new economic role of SEZs.

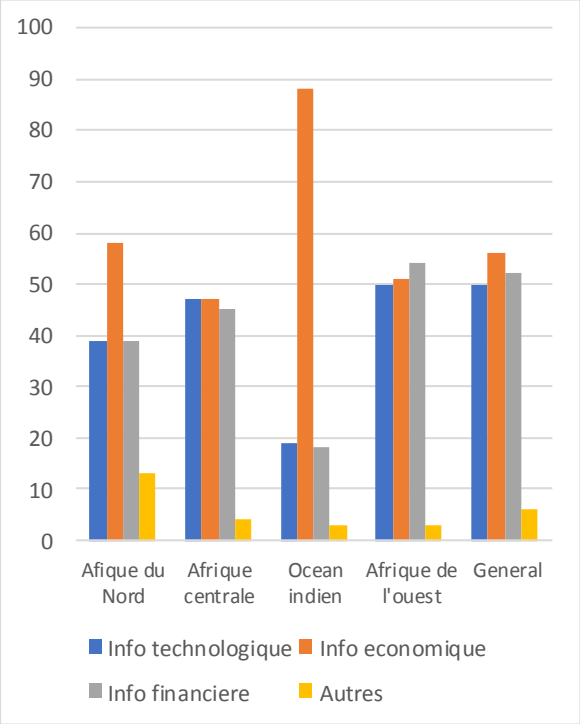
The possibility of establishing links with SEZs offers local enterprises the opportunity to join networks of innovators in view of the financial benefits of sharing costs and risks, as well as the opportunities of benefiting from collective investments in training and in the sharing of other technical and economic information.

Central African SMEs and VSEs have huge gaps in terms of access to information on external markets and related quality standards. Since local enterprises are not exposed to the international market, they are less aware of external business opportunities and constraints compared with similar entities in other African sub-regions and the Indian Ocean. More than 45% of enterprises think that they need to build information capacity in terms of technology, economics and finance.

Graph 25: Available information on external standards and markets for African SMEs by sub-region



Graph 26: Declared information needs of African SMEs by sub-regions (%)



Source: CGAP data, 2019.

SEZs provide a great opportunity for local SMEs and VSEs to bridge the information gap, leveraging the cluster (meso-economic level) and export experience of such hubs. Establishing strong links with SEZs will enable SMEs at the micro level to initiate technological activities to improve their production process. SEZs will accelerate technological learning for local enterprises, enabling them to build their capacity and, thus improve their economic performance and their hinterland. The adoption of a proactive policy to promote local products and supply, as part of a broader ambition to build the production capacity of local SMEs/SMIs, will strengthen the positive externalities that are expected to be created by the new generation of industrial clusters.

The transfer of technology and development of the skills of SMEs not only take place through the mobility of skilled manpower between enterprises, but also through the sharing of information via trade journals, meetings, fairs, demonstrations and various frameworks for discussions between actors, as well as interactions between users and producers, which often take place within SEZs.

Other advantages of the integration of local SMEs/SMIs in clusters besides economies of scale, coverage and knowledge creation and acquisition include changes in the attitudes of employees and managers towards the role of investment in human capital through workplace learning and technology transfer (**Marjolein C. J. Caniëls & Henny A. Romijn, 2002**). Such changes help to mobilize enterprises around efforts to improve productivity which is the basis for the development of budding industries like it was the case with the Japanese manufacturing industry before the Second World War **(Box 8).**

More elaborate partnerships include cooperation and the development of joint research and innovation programmes where joint SMI-SEZ teams engage in processes and new products, thus providing local actors with opportunities to learn and contribute to building up the network's capacity and competences.

Box 8: System for the continuous improvement of the productivity and quality of products and

Before "Made in Japan" gained worldwide recognition for the superior quality of its products, the Japanese manufacturing industry that emerged in the aftermath of the Second World War was known for its cheap and inferior products. It is difficult for any budding industry to produce high quality products in the early stages of its development. Thus, for any industry to maintain competitiveness at both the local and international levels, it must have a system for ensuring the continuous improvement of productivity and product quality. To this end, the American **William Edwards Deming**, a *quality management specialist*, was invited to Japan in the 1950s to present his "*statistical quality management method*" to improve the productivity of the Japanese manufacturing industry. Thus, in front of 45 members of the *Nippon Keidanren (Federation of Japanese Economic Organizations)*, W. E. Deming presented the *Shewhart cycle (named after the author: Walter Andrew Shewhart)*: **Plan → Develop → Control → Adjust**. This cycle was modified to become the Deming cycle or Deming circle: **Plan → Do → Check→ Act**. This marked the birth of the Kaizen method which literally means in English: "Kai = Change" and "Zen = For the better", that is, "Change for the better" or "Continuous improvement" and in French: "amélioration continue". From that time on, quality and productivity improvement activities developed in Japanese industries. The country experienced strong and rapid economic growth in the 1960s as its manufacturing sector outpaced that of the United States.

Figure 1 : Characteristics and results of Kaizen

Thus, in Japan, in both large companies such as *Toyota*, and in small workshops, the Kaizen is put into practice in order to ensure the continuous improvement of Japanese products. Due to its success, Kaizen is increasingly being internationalized as Japan's assistance for the economic development of developing countries Japan's assistance, through Kaizen, aims to increase the productivity and quality of the manufactured products of budding industries in developing countries through initiatives concerning the company as a whole, beginning by changing the mindset of employees. JICA has supported Kaizen projects in the industrial sectors of about 30 countries until 2018, including 8 African countries since 2006 *(Cameroon, Tunisia, Egypt, Kenya, Ethiopia, Tanzania, Ghana and Zambia). Since then, Kaizen has been implemented in more than 200 companies, with the resulting improvement in productivity of 37.2% on average and a 55.2% reduction in waste on average* (JICA, 2016). Kaizen, which was initially developed for the manufacturing industry, is now applied in many sectors such as hospitals, public bodies and schools.

Conclusion and Recommendations

The economic diversification and industrial development envisaged by Central Africa should be driven by a skilled and active labour force. The ambitions reflected in the industrialization and economic diversification policies (PDIDE) of countries and the sub-region require targeted investments to improve access to quality basic education, but also and above all to strengthen skills in applied science, engineering and technology. To support successful structural transformation, countries are urged to promote *"balanced and cross-cutting"* investment in the educational system for the development of existing and future skills.

Though Central Africa has made significant progress towards achieving universal primary education, the challenges of post-primary education underscore the urgent need to reflect on the extension, inclusiveness, quality and diversification of fields of study, while higher education is facing difficulties to overcome decades of *"marginalization"* by development agencies and advocates the diversification of fields of study to ensure better coverage and attractiveness of technical and engineering training, as well as better alignment with industrial sector needs.
Educational systems in the sub-region are characterized by weak lifelong learning ecosystems to support the ambitions specified in various country strategy papers and sector priorities.

To support its ambition of achieving economic diversification, the sub-region should build a pipeline of future skills, promote a learning society and, thus, strengthen its production capacity. Future curricula should encourage critical thinking and creativity while accelerating the acquisition of digital and science, technology, engineering and mathematics (STEM) skills so as to take advantage of the fourth revolution and harness the opportunities offered by ever-expanding markets.
Bridging the gap between training and employment will help to increase youth employability and thus consolidate the contribution of a predominantly young population to economic diversification, inclusive industrialization and growth.

States should explore new avenues of training, particularly the strengthening of existing services in terms of technical and vocational programmes, improve access to technical education and promote the expansion of continuous training opportunities in and outside the workplace by mobilizing new communication technologies. Technical and vocational educational systems are expected to strengthen their "quality assurance" and introduce effective approaches to training assessment and certification, while improving their attractiveness, relevance and inclusiveness.
The framework of continuous training encompasses a wide range of actors with complementary responsibilities. Improving quality requires the development of innovative partnerships between all stakeholders (State, local authorities, professional associations, trade unions, donors, businesses, etc.) based on a demand-driven and market-driven approach that

enables the private sector to participate in the definition and provision of training and the accreditation, financing and evaluation of related programmes.

The setting up of an accreditation system and the mutual recognition of professional qualifications and certification at the sub-regional level could promote the mobility of labour and the transferability of skills in a sub-region that should become more integrated.

Improving the attractiveness and efficiency of the technical and vocational training system to facilitate access by all workers, whether employed or unemployed, remains a priority, while heavy dependence on external financing continues to hamper the sustainability of national skills development strategies and programmes.

Central Africa can better take advantage of opportunities for knowledge and skills expansion by strengthening the participation of local SMEs/SMIs in global value chains by better integrating SEZs which have been identified as a lever for the industrialization of the sub-region. The sub-region will draw lessons from the "success stories" in other countries (Singapore, Morocco, South Korea, Tunisia, Japan, China, India, Ethiopia, South Africa...) which have implemented industrial clusters and combined substantial investment in basic education quality with targeted vocational training, while strengthening higher education, science, technology and innovation in the definition, implementation and evaluation of skills development strategies to support industrialization.

Current educational systems that focus on the development of cognitive skills are called upon to integrate behavioural competencies that strengthen workers' ability to collaborate, innovate, self-direct and solve concrete problems. The gap between formal education and the labour market should be bridged through innovative learning practices, research and development, knowledge sharing, training, re-training and learning which should be cross-cutting and simultaneous throughout the worker's life cycle. SEZs provide an ideal framework for these innovations and their adequate financing.

A good skills development system should be able to anticipate skills needs and audit existing services using both quantitative and qualitative approaches. It will need to involve employers and employees in decision-making on the provision of training that is consistent with industrial sector needs; maintain the quality and relevance of training; make it accessible to all segments of society; and promote the sustainable governance of skills development and deployment.

To be efficient, the skills development strategy in Central Africa should not be designed in isolation. It must be placed within the wider context of economic and social policies. To fully harness the potential of education and training, complementary health, nutrition and social security policies should place skills development at the heart of comprehensive policies for the promotion of human capital. Such an approach encourages the coordination of macroeconomic and sector-based, national and sub-regional skills development policies as well as permanent dialogue between the public and private sectors to that end.

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