



# AIMS

**African Institute for  
Mathematical Sciences  
CAMEROON**

AIMS – Cameroon  
Limbe, Crystal Gardens, South-West Region  
P.O. Box 608 Limbe, Cameroon

## **Assessing the available skills set for industrialization and economic diversification in Central Africa and avenues for improvement in the short term**

**Talk delivered by Prof. Mama Foupouagnigni, Centre President of the African  
Institute for Mathematical Sciences-Cameroon**

**During the Webinar (link: <https://bit.ly/webinar-1-ICE-2020>) on:**

**“Skills for Economic diversification in Central Africa: challenges and opportunities”,**

**organized on Friday 29 May 2020 from 10:00 to 13:00 (GMT+1)**

**by the Office for Central Africa of the Economic Commission for Africa**

### **I) Context and Rationale**

1. The economy of Central Africa countries (Angola, Burundi, Cameroon, Central African Republic, Chad, Congo, Democratic Republic of Congo, Equatorial Guinea, Gabon, São Tomé & Príncipe) is mostly based on exportation of unprocessed raw material they produce.
2. Central African countries are therefore exposed to external shocks as they have no control on the price of raw material in the international markets. In addition, they get only a very limited benefit (in terms of income and capacity building of the workforce for further sustainability) of the value chains generated by the transformation of their raw material, because most of the higher value activities are carried out elsewhere.
3. Producing what they don't consume and consuming what they don't produce is a serious limitation for their economy, for job opportunities and for their development in short.
4. Africa is the youngest and fast growing population in the world and in the report “The Generation 2030 Africa” of UNICEF, it is estimated that in 2050, about 40% of the world youth of up to 18 years of age will be from Africa. This is a great opportunity and also a big threat and challenge.
5. The challenges/opportunities of being the fast-growing population, the youngest population in the world and the lessons learned/being learned and the consequences of the Covid-19 pandemic are supporting facts for the absolute and urgent need for economic diversification and industrialisation in Central Africa.

### **II) Skills for economic diversification in Central Africa**

Economic diversification may include:

1. Industrialization for local transformation of raw material and local production of basic goods and services needed.
2. Digital Economy and all that go along with: Big Data, Information Security, ... etc.

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### 3. Knowledge-based economy

Economic diversification will require solid **hard and soft Skills**.

#### **Which type of hard and soft skills do we need?**

This is rather a delicate question: 1) we do not yet master the changing nature of future jobs; 2) most of the jobs to be occupied by young people engaging in primary schools at this time does not exist yet.

#### **Which type of hard skills do we foresee?**

I would say all relevant domains (depending on the main interest and the country comparative advantage). However, with some emphasis on STEM education as industrialization is mostly based on science and technology.

In addition, Central African countries would have to encourage ICT literacy and language skills as a complementary hard skills set irrespective of the technical domain of education or training. It would be an advantage for the citizens of Central African Countries to Learn a second language in addition to the one spoken in the sub-region like English, Portuguese, Spanish. This can be useful for intra-regional trade.

#### **Which type of soft skills do we foresee?**

Talking about soft skills I would list the following, depending on the level of job. We might need only the common ones like 1., 3., 4. and 8. for some Low level jobs, but for high level jobs, we will need more.

1. Critical thinking
2. Problem solving (attitude and technical)
3. Creativity
4. Communication skills (way to communicate)
5. Determination and persistence
6. Flexibility, reliability, adaptability and openness to learning and change
7. Entrepreneurial and Negotiation skills: Not only a job seeker but job creator.
8. Team spirit and Interpersonal skills (how you relate with people, relationship with people).
9. Proactiveness ; Leadership, Pan-Africanism, Commitment to the outcomes/results.



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### III) **Do we have the required skills for industrialisation and economic diversification in Central Africa?**

The answer is Yes and No:

#### **Yes**

1. Yes: Mastering of hard skills which sometimes is adapted to the need of the local community.
2. Central Africa has a large pool of highly talented and motivated graduates that are potentially re-orientable to contribute to economic diversification and industrialization.
3. Some institutions of Higher Learning have started delivering trainings that include both the hard and soft skills needed by the industry. For example in Cameroon, we have the Catholic University, UCAC-ICAM, AIMS, ....
4. The skills set of the Central African Diaspora: As illustration, there is more than 7.000 engineers and computer scientists from Cameroon working in the German economy. There are for sure many more in Europe and in the world, not only from Cameroon but also from other Central African countries. These human resources can be capitalized upon as soon as there is a clear strategy to attract, employ and retain them.

#### **No**

Unfortunately, most of our graduates are trained with some serious limitations:

1. Training focusing mostly on hard skills, with very limited if not no attention to soft skills;
2. Training using mainly rote learning: You memorize, then give it back without really reflecting, contextualizing, with learners that are only looking for the nominal qualifications for possible job in the civil service instead of focussing on the content of the training.
3. Without the necessary infrastructure for practice: Learners end up having a technical qualification but without practical skills.
4. Delivering training for a pletoric number of students in our lecture halla is of course challenging to the quality of training: How can we deliver quality training on campus to several thousands of students in their first year in one single specialty without the required number of human resources and needed infratructure?
5. Curriculum not including enough or not at all including soft skills and disconnected to the industry need.
6. Insufficient resources to preserve the required quality and standard.

### IV) **Avenues for improvement in the short term**

1. Inclusion and efficient implementation of the soft skills in the curriculum



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2. Lifelong capacity building (on soft skills) for current lecturers who have been trained differently and who now would be asked **not to** reproduce their own training (as it is commonly the case) but to adapt to the new requirements.
3. Putting in place in each university (and in some companies) inter-connected training centers for soft skills development (including ICT skills and Entrepreneurship) for graduates having already acquired very good to excellent hard skills: This will have to be tailored to the specific need. To be supported by Industry, Government and donors.
4. Establishing Partnerships with universities with experience in delivering soft skills training and providing high quality online training on soft skills for graduates and build cooperation for the graduate to access related resources already existing in partner universities.
5. Promote, enhance and institutionalize Industry-University partnership:
  - a. Industry to be part of the design and implementation of the curriculum (soft and technical skills part):
  - b. Industry to co-create with universities, specific training and research programs hosted by the university or/and the industry to address their need.
  - c. Industry to create and finance training and research centers within universities or within the companies. Industry to contribute/ participate in training the type of workers they need.
  - d. Industry to offer internship and Government to provide related fiscal incentive to the industry.
  - e. Making fully operational the office of cooperation and relationship with the business world in the universities: University to create technology transfer offices. Universities should not be sitting and waiting for industry to come, they should rather go to industry to start to initiate a win-win cooperation.
6. University in Central Africa to take initiative and request and sign effective win-win cooperation agreement with universities and companies abroad which can support their development in delivering effective training in hard and soft skills, ....
7. Our students to have clear carrier objective and life objective. They should be educated on this starting from the primary and the secondary schools.

## V) **An Example of Training Institutions whose graduate could easily support economic diversification: The African Institute for Mathematical Sciences**

The **African Institute for Mathematical Sciences (AIMS)** is a pan-African network of Centres of excellence for postgraduate education, research and public engagement in mathematical sciences. **AIMS is the Africa's first network of centres of excellence in mathematical sciences.**

### **Our Vision:**

To lead the transformation of Africa through innovative scientific training, technical advances and breakthrough discoveries which benefit the whole of society.

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## **Our Mission:**

To enable Africa's brightest students to flourish as independent thinkers, problem solvers and innovators capable of propelling Africa's future scientific, educational and economic self-sufficiency.

**Our Values:** Excellence, Respect, Pan Africanism and Integrity.

AIMS has 5 Centres: South Africa, Senegal, Ghana, Cameroon and Rwanda.

At AIMS, we select in average 300 students from a large pool of highly talented African students. Entry at AIMS is highly competitive as the success rate is less than 10%.

Reason why we focus on mathematical sciences: Development is about science and technology; mathematical science is the backbone of science and technology.

## **Example of Training Program which could serve the economic diversification: The AIMS Cooperative Master Education Program**

Here are some features:

- 27/7 learning environment in a residential campus fully equipped with laptop and very good quality internet connection.
- Training including soft skills: Scientific computing, entrepreneurship and professional development, problem solving, critical thinking,
- Gender sensitive: 1/3 at least should be from each gender.
- Top academic from all over the world including Nobel Laureates and Fields Medallists.
- 6 months' internship in industry utilising the soft and hard skills learned at AIMS to address by means of mathematical sciences some challenges faced by the host industry, in addition to getting acquainted with the business milieu.

## **Example of program that is contributing to increasing the pipeline of students including (females ones) deciding to study STEM subjects:**

### **The AIMS-Mastercard Foundation Teachers Training Project.**

- Aimed at improving the quality of teaching and learning of mathematics in Cameroon in the two sub-systems of education in Cameroon.
- Teaching mathematics differently not as only a knowledge, but also being gender sensitive and teach mathematics as tools for solving our daily life problems, as mathematics can be defined as: Human activity, Essential for ICT, Toolbox containing solutions to our daily life problem and Part of our culture.
- Initial commitment to train from 2015 June 2021: 1920 in-service mathematics teachers and 1200 pre-service teachers and sensitising of principals of government

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schools. Currently, 1024 in-service and 671 pre-service teachers have been trained while 584 principals and delegate have been sensitised.

## VI) Concluding remarks

- Central African countries have a highly qualified diaspora ready to contribute to the economic growth and also highly talented graduate with excellent hard skills that are potentially re-orientable to contribute to economic diversification and industrialization.
- During trainings, it is important to ensure mastery of high quality hard skills before adding the soft skills, since without hard skills, soft skills alone is very limited.. Also, they type of job might change drastically in short period and only the good mastering of hard skills can enable efficient adaptation and reorientation.
- The first change in the mind-set is to gradually start producing what we consume, and consume what we produce, value our talents and our products.
- There is a need for change of the mind-set: We are not ready to try things: we are happy using the last technology from abroad but we do not trust our youth, ourselves. It is important for us to have the courage and to put in place strategies to start from version zero and improve it gradually.
- We need to make use of the diaspora, stop considering them as opponents. There are many highly qualified Africans in the Diaspora who are willing to help, be it by returning or even from distance with regular visits.
- The educational system is to be changed.. It is important to review the whole educational system and bring in appropriate reforms with clear objectives to be achieved with appropriate funding and strategies; and to ensure appropriate governance with good level of integrity and accountability.
- It is important to take responsibility and not to wait for some colonial powers to come and tell us what we should do, and how to do it. We should take decisions and assume our responsibilities.

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