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Policy Brief

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Research & Development towards innovation in Cameroonian companies :

The lost or misplaced key

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History and the observation of facts show that any company that wants to stand the test of time and/or grow must periodically upgrade its products in conformity with market trends and the offer presented by competition. Without this continuous attunement, the company cannot guarantee its development and may even disappear[1]. Thus, to thrive, the company must constantly pay attention to its environment, keep abreast of its evolution and adapt accordingly.

In this context, the role of research & development is to collect and analyze the most relevant data, thus gaining a better knowledge of what is being produced today and what is being anticipated.

With these data, the company can develop new techniques (processes) and new products. This approach enables the company to enhance its operations and its technology, and ultimately the quality of its products and the level of sales. According to economic theory, innovation is one the major gateways to profit. Innovation is used to propose the most appealing products to consumers who will therefore select that particular product (and not a competitor's product).

Research & Development for innovation comprises all the processes which, starting from the basic research or an invention, guarantee its industrial feasibility. It refers to the stages from research laboratory to industrial production in the factory that makes mass consumption possible. It is the industrial and commercial application of a discovery or an invention by the company.

1. OVERVIEW OF R&D-I PRACTICE IN CAMEROONIAN COMPANIES

On the scientific research front, Cameroon's situation is paradoxical. While there is a structured and diversified national research system, with quite often eulogistic results, the country however falters during the implementation and the popularization of these development results. With only 0.2% of the national budget allocated to the Ministry of Scientific Research and Innovation in 2024, the latter, in its strategy aligned to the NDS30, ambitions to translate into development actions the many results obtained by researchers, to co-build technical, economic, or organizational innovations with private operators and civil society players in order to create new sources of wealth and to revitalize the development support role of Cameroonian research.

1 Thus:
- A car manufacturer frequently produces new models,
- The chef of a restaurant diversifies his menu and constantly refreshes his dishes and recipe
- The banker or an insurer proposes new benefits and services to clients in line with modern constraints.

According to the Global innovation index, from 2018 to 2024, Cameroon moved from the 111th position to the 123rd out of 133 countries classified. In 2024, the country was ranked 123rd out of 133[2] countries. Taking all these facts into account, the ranking over the past 05 years seems to regress and lag behind both regarding the means raised (Innovation-Input) and regarding results (Innovation-Outputs). **SOMETHING MUST BE DONE!** Strong actions must be taken to BREAK AWAY from these stances. These actions should be initiated by the Government and taken up by the private sector.

Table 1 : Cameroon's evolution in the Global innovation index GII ranking from 2020 to 2024

Years	Global Innovation Index	Innovation Inputs	Innovation Outputs
2020	119/133	120/133	119/133
2021	123/133	124/133	117/133
2022	121/133	124/133	114/133
2023	123/133	123/133	117/133
2024	123/133	120/133	120/133

Source : WIPO

When comparing Cameroon with countries that have similar economic and geographic features, the country's performance in the ranking of the Global innovation index in 2024 is less appealing. Cameroon occupies the 34th position out of 38 lower middle-income countries, and the 19th position out of 27 Sub-Saharan countries.

1.1. Manufacturing companies' Contribution to emergence according to GECAM

One of the approaches recommended is to highlight the significant increase in the export of high added value goods. This requires the notable integration of R&I considering the current characteristics of our exports mainly made of raw materials and crude products. In fact, Cameroon's export rate (ratio of exports to gross added value of the economy) is still weak, bordering 23%. The average coverage rate of imports (exports/imports) is close to 110%, which implies that exports barely cover imports.

There are 12 key significant export products, with hydrocarbons and their by-products representing a big share (CTS/NIS/Performance study). However, the NDS30 projects that Cameroon could cover 1 to 2% of the global market.

Table 2 : Cameroon's main export products in 2023

	Description	(Quantity in thousands of tons)	(Value in billions of FCFA)
1	Petroleum crude oils	3 083 816.9	1 127 084.3
2	Liquefied natural gas	1 372 507.8	421 377.4
3	Timber and wood products	1 364 628.2	288 295.6
4	Banana (including plantains)	209 231.5	31 402.1
5	Raw cocoa bean	180 095.6	359 143.9
6	Fuels and lubricants	173 668.5	66 503
7	Raw cotton	127 506	147 893
8	Laundry bar soap	66 590.9	51 570.2
9	Wood veneer sheets	55 023.5	21 664.5
10	Cocoa paste	49 411.1	97 470.2

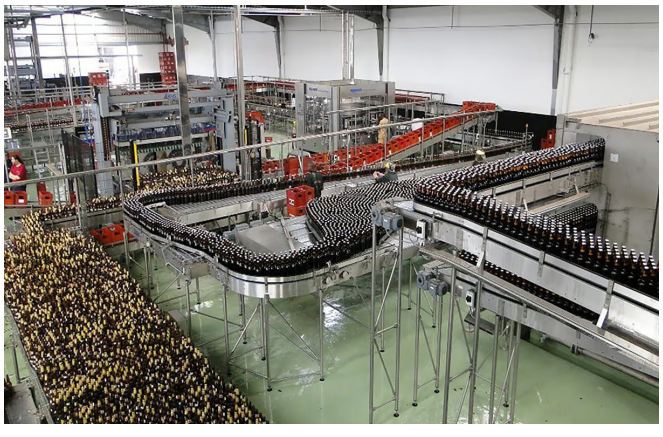
Source : NIS, Cameroon's foreign trade in 2023

1.2. Agro-industry in Cameroon

The development of normalization by ANOR is a key factor that takes into account quality. Several norms have already been published in the area of agriculture and agro-industry: *corn flour, pineapple juice, juices and fruit nectars, cannery, milk and dairy products, beef, food supplements, fish and fisheries products, pesticides residues, irradiated foods, honey, tomato paste, canned carrots,*...Most of them are imported. However, reciprocity also comes into play regarding the quality norms of exported products. This trend is being substantiated by the development of brands and products with a designation of origin - such as the Penja pepper. Research and certification should be taken into account when defining and controlling norms (as done by ANRP concerning irradiation).

2 https://www.wipo.int/edocs/pubdocs/en/

However, R&D-I seems to face two (02) major constraints, as revealed by the study conducted by CAMERCAP-PARC[3], iThe first constraint is access to funding, which impedes the contribution of companies to innovation and to research funding. The second constraint is access to innovation.



1.3. Financial constraints

Companies that want to innovate must have financial resources. This is a fact.

When it comes to developing a technological, commercial and managerial innovation the company should consider the corresponding innovation as an intangible asset that increases its capital. It is a "capital" financing. This capital acquisition can be funded with own funds or by turning to the financial market. Companies may adopt the following formulas:

a). State subsidies for innovation destined to innovative companies (new or old).

This formula is well established in northern and emerging countries (see Benchmarking). With Benchmarking, we have seen the State subsidizing innovative companies justified by tax impacts, the territory's attractiveness and by the employment generated by this innovation. This form of financing is very timid in Cameroon. Incubators fall into this category as well as the call for projects on competitive funds launched within the framework of the C2D PAR.

b). Banks and international development agencies

They grant loans to Cameroon or to companies at preferential conditions (rates, grace periods...). Selection criteria are related to the national development criteria but funding must also meet economic criteria (such as internal profitability rate). The main financial partners are: *(i) the World Bank, (ii) the African Development Bank, (ii) the Central African States Development Bank, (iv) Agence française de Développement, (v) the KFW, etc.*

This funding is negotiated with States or directly with companies. As a general rule, the duration of the loan can be long, up to 20 years and often comes with a grace period.

c). Using commercial banks

After a period of insolvency, the Cameroonian banking sector is now in a phase of excess liquidity. It is tapping the deposits and the savings of physical and legal persons but is releasing fewer loans to the economy. Due to a risk aversion, commercial banks readily grant short term loans to their clients depending on the amounts of deposit and their saving capacity. They are reluctant to grant investment loans because it is a long-term commitment fraught with uncertainties. Most often, banks demand significant collaterals which small companies cannot present (unless they resort to family solidarity). Rates are also very high. State collateral could be envisaged but it would be difficult to put in place. To fill this gap, the Government created the BC-PME on August 16, 2014. But since then, this bank is struggling to take off the ground due to lack of capital and an inefficient management.

However, a banking pool was created recently under the aegis of GICAM to provide funding and support to VSE and SMEs. The budget stands at CFA50 billion francs and is granted by a pool of banks. It is associated to the training of business managers to create a "cast of leaders" and has "insurance" through a risk guarantee fund.

Another interesting experience is that of ARIZ by Agence francaise de Développement which is a mechanism to help commercial banks provide funding to VSE, SMEs and microfinance institutions by jointly sharing the risk with them.

d). Venture capital and new funding sources

The marginalization of SMEs in the commercial bank financing, due to lack of collateral or because of their weak financial standing, can be redressed by a potentially more suitable alternative. Venture capital is funding the equity financing for companies that innovate in order to achieve high profitability. In theory, venture capital makes it possible to reconcile the fragility of companies, which closes the doors of the traditional banking sector, and the importance of SMEs in the economy, in a context of government withdrawal. Venture capital invests in the company's capital, hence in its management through its Board of Directors (even if this requires changing the company's status). This entry is based on the quality of the company's project, its governance and its risks. It is of course expected that the capital invested must generate profit.

3 Study on the needs, capacities and constraints of the private sector in the sustainable development area with focus on the job market..


This funding mode mostly geared towards innovative companies raises two major issues that hinder a significant usage of this funding type in Cameroon. "Venture capital is wary of risks." Collateral-free, like in with the funding by commercial banks, the capital that is paid-in can only be monetized by the company's performances. Risks on governance, market and natural risks are therefore unpleasant. This restricts the implementation of this type of funding (without, all the same, excluding them) for the following :

- Companies under creation if their economic model is not yet adequately robust;
- Companies in the agriculture field, if the project is deemed too sensitive to natural and commercial hazards, in the absence of relevant guarantees; this compels the companies to put forth strong arguments on how they intend to face these risks.

e). Crowdfunding

Crowdfunding, or participatory financing, is a major opportunity to address the funding challenges faced by entrepreneurs, SMEs and community projects. It is based on the mobilization of financial contributions via digital platforms.

Crowdfunding is experiencing a notable expansion and some African countries stand out for their progress in this area. South Africa, Kenya and Nigeria have developed local platforms to facilitate the collection of funds for various community and entrepreneurship projects. This has compensated the shortcomings of the conventional financial systems.

While it is rapidly growing in the world, crowdfunding is still not fully used in Cameroon, as conventional financing remains inaccessible to a large part of the population. In fact, as revealed by our study, very few SMEs turn to participatory financing to fund their innovation, but also to fund the whole of their company.

Table 3 : Support sources for start-ups and for SMEs (%)

Type of support	Start-up (%)	SME (%)
Own funds	54.44	18.34
Loan	15.56	5.92
State and NGO	15.56	57.99
Participatory financing	12.78	17.75
Donations	1.67	0.00
TOTAL	**100**	**100**

Source : CAMERCAP-PARC, IEDD study 2023

Moreover, apart from community projects funded by the diaspora (construction of a school in the North-West), some Cameroonian start-ups have resorted to crowdfunding to raise funds. This is the case of Kiro'o Games in 2022.

1.4. Constraints to accessing innovation

To expand and capture new markets, the company must innovate. To stand the competition that prevails among companies, innovation is a resource for the latter just like funding, manpower, information or raw material. Innovation improves the competitiveness of companies. The main reasons are as follows :

- The life cycle of products tends to shrink. The accelerated renewal of products and processes makes innovation indispensable;
- The realization of research tends to be more rapid;
- People look out for more performing, competitive and reliable products;
- Countries are progressively investing in research, 2 to 3% of GDP in developed countries, and 1% in emergent countries.

However, this investment is risky for the company, and this is what has led to the reluctance of the financial sector towards research and some entrepreneurs. Innovating is hoping for the success and the durability of the company, but in case of failure, it can lead to loses likely to be fatal. If a company does not innovate it may see its activities stagnate or even disappear from the market.

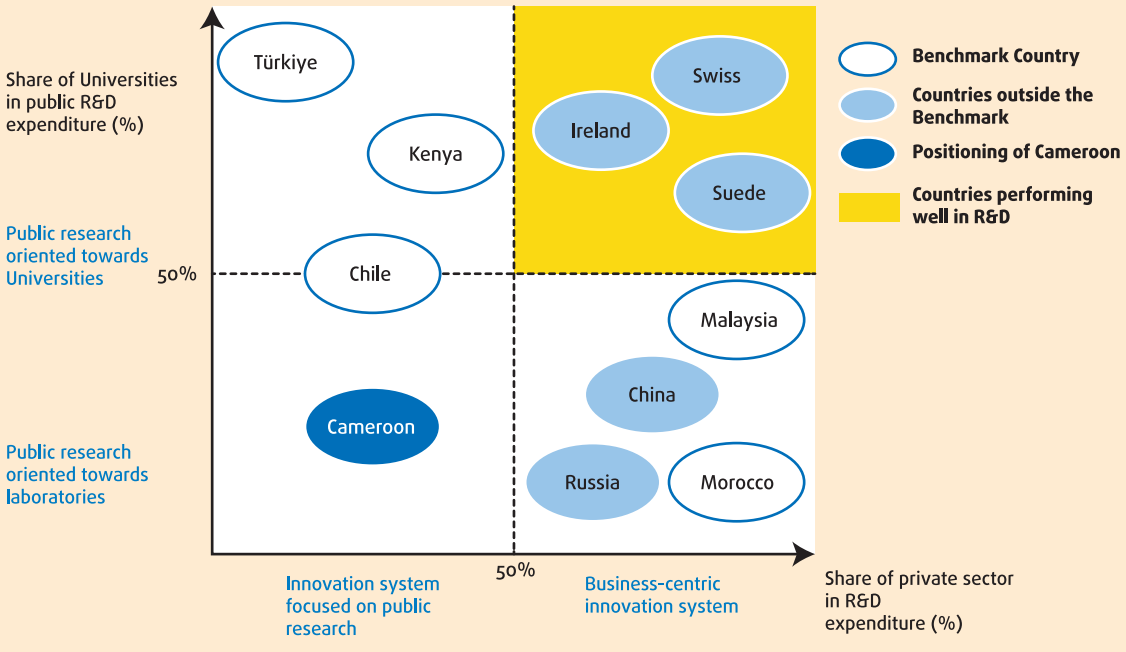
1.5. Research-company relation in Cameroon

In Cameroon, the funding of the R&D is borne by public and private sectors. This shows the public or private nature of the research.

The private sector directs its R&D expenditures towards laboratory or universities, depending on their vision. A benchmarking study to describe the research and innovation systems according to the share of universities in the public expenditures of R&D and the share of the private sector in the overall spending of R&D, has been conducted in Cameroon, Chili, Kenya, Turkey and Morocco (see figure).

According to this study, in Cameroon, the share of universities in the public expenditure of R&D is lower than 50% and the share of the private sector in the overall share of the private sector in the overall expenditure lower than 50%; its innovation system is focused on public research directed towards laboratories (Institutes and public centers), which cannot adequately support growth.

Figure 1 : Characteristics of the innovation system in some countries



Source : MINEPAT (2019): Review of development policies 2010-2018

Our discussions with the companies that we met reveal that the latter hold the following grudges against public research in Cameroon :

- Research takes the lead of research programmes and does not publish results;
- Research is partitioned; a discipline does not collaborate with another (for example among researches on chemistry and environment);
- Patented items are not recognized ;
- Research does not take the market and users' needs into consideration.

Pour de nombreux chercheurs interrogés, les tMany researchers interviewed believe that research studies are first and foremost intended for a scientific appreciation (diploma, scientific publication, participation in seminars and conferences) that conditions their career. The economic appreciation is regarded as a "sub-product" that is not or inadequately recognized and that does not have any bearing on their career or their international reputation.

Research programmes are intended to answer a research question and to fill a knowledge gap. They are enhanced by academic publications or by interventions during international research seminars. The introduction of economic criteria or responses to the needs of companies is not a priority criterion.

Research results are also often viewed as public goods intended for a universal, free and seamless dissemination. The protection of intellectual property, required within the framework of industrial appreciation, is not known by researchers or is viewed as costly, binding and is neither part of the common practice of researchers nor their personal ethics.

We have observed that Cameroonian research is not cautious on this issue and is eager to disclose its studies without any safeguard. But, according to most potential users of research results that we met, the management of intellectual property is at the core of innovation. Researchers say they do not have adequate support to canvass new companies, and neither do they have the means nor the time to do so. More often than not, it is happenstance that leads to the first steps in collaboration, without any real institutionalization or formalization. The two positions of the company and research are the source of misunderstanding and mutual ignorance of the business world (and the market) and research.

2. A FEW EXAMPLES IN AFRICA AND IN THE WORLD

The future of the world and of science is inconceivable without African people. Sub-Saharan Africa alone, home to 1.4 billion people, experiences a major demographic momentum: 50% of this population will be aged below 25 years in 2050. The benefits of education, training and research could turn this human capital into a real development generation force, which can drive the economies of African countries. But, there is most often no official data on investments in research and development in Sub-Saharan Africa. Nevertheless, some institutions, such as Unesco, reveal that averagely (in 2021), investments in research and development in Sub-Saharan Africa do not exceed 0.4% of the gross domestic product (GDP), comparatively to a global average that stands at 1.7%. Sub-Saharan African countries are still far from the 1% target by 2020 set by the African Union. It is time to invest on equipment and major research projects in Africa, like the construction of vaccines production or technology transfer centers in South Africa and eventually in Senegal. We need to invest in a scientific Africa in order to empower the continent to select research priorities that meet the challenges encountered by its people and practice science in a language that will foster production and the local assimilation of results. We also need to invest for a linguistic and cultural diversity in every research field. Language is more than just a medium for knowledge: both are mutually engaged in continuous dialogue on the form and the content. But, in a monolingual scientific context, this dialogue is weakened. That is why we must support the deployment of science in all its linguistic diversity, including French.

Table 4 : Spending in Research and Development (% GDP)

Countries	2000	2015	2018	2019	2020	2021
Brazil	1.04	1.37	1.16	1.21	1.14	//
Egypt, Arab Rep.	0.19	0.71	0.68	0.79	0.915	0.91
France	2.09	2.22	2.19	2.19	2.28	2.21
Germany	2.40	2.93	3.11	3.16	3.12	3.14
India	0.75	0.69	0.66	0.65	0.64	//
Japan	2.85	3.24	3.21	3.21	3.268	3.29
South Africa	//	0.73	0.68	0.61	0.60	//
Tunisia	//	0.59	0.71	0.74	//	//
United States	2.61	2.78	3.01	3.17	3.46	3.45
China	0.89	2.05	2.14	2.24	2.40	2.43
United Kingdom	1.60	2.27	2.70	2.66	2.93	2.91
Cameroon	//	//	//	//	//	//
Sub-Saharan Africa	//	//	//	//	//	//

Source : World development Indicators (2023)

Researchers and companies are still facing huge funding challenges. However, it often goes beyond mere reductions. Subsidies often involve priorities and specific agendas, leaving crucial research fields inadequately funded and discouraging students from engaging in research career.

It is therefore worth noting that no African country has achieved 20% of companies that have allocated funding to R&D. Still on this issue, it should be noted that data are hard to obtain; this further complicates the implementation of policies to boost innovation.

3. FROM IMITATION TO INNOVATION: THE CHALLENGES OF A PROGRESSIVE APPROACH, FOR R&D-I TO CONTRIBUTE TO THE SUSTAINABLE DEVELOPMENT PROCESS

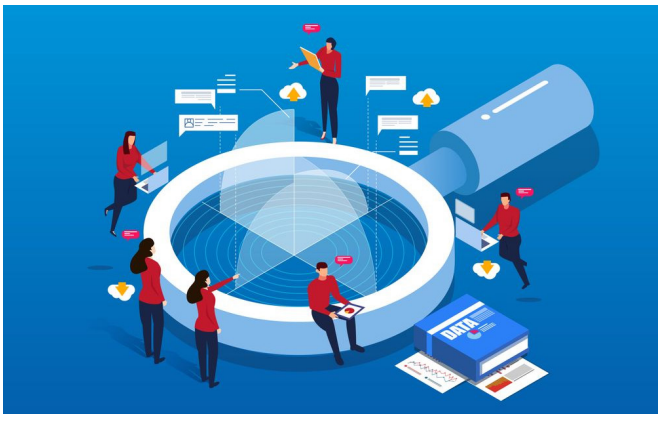
3.1. Types of research

There are two types of research, basic research and applied research:

Basic research is the range of experimental or theoretical studies mainly carried out to acquire new scientific or technical knowledge, without a specific order being made at the time of the research.

Applied research is a set of original studies carried out to acquire scientific or technical knowledge and develop practical applications. It implies taking into account existing knowledge and their extension in order to address specific issues.

Basic research and applied research are closely related as one cannot go without the other. While basic research is carried out within universities and specialized laboratories and research centers, development-applied research is carried out within companies because it aims to address the immediate and direct need of the client/consumer. Consequently, the budgets of Cameroonian companies should incorporate this requirement.



3.2. The challenges of research and development in Cameroonian companies

The impact of "Research and Development" function is perceived across the whole company :

- On the production front, the R&D function will improve the efficiency of production when it comes to procedures innovation;
- On the commercial front, the "Research and Development" function first of all has a cost. It is an investment whose results are random. Conversely, if innovation is a success, the recipe of the enterprise will be higher.
- On the strategic front, the "Research and Development" function enables the enterprise to develop its peculiarity and stand out from competitors.

The "**Research and Development**" function requires mobilizing huge capital and having enough time and personnel. But, the results of research (or feasibility) programmes are often random. Therefore, the issue of funding these activities logically arises, especially for SMEs that do not often have adequate capital and which, therefore, seem to tackle the most pressing issues by relegating R&D to the back of the closet.

Companies therefore need to find capital. Although the largest part of research is funded today with private funds (that is by companies themselves) referred to as private funding, the State should equally play a key role, referred to as public funding

For the Research and Development function not to be reserved only to major companies, many funding assistance schemes have been developed.

We have observed that to survive the company must improve its products and make new ones. This is indispensable because the life of the product is not linear but, just like a human being, has a life cycle.

In theory, a product has a specific life cycle. After a "research and development" period, the product is rolled out on the market: *launching phase*. A great number of clients test it and the product's market share gains importance: *growth phase*. The market eventually stabilizes and the product becomes mature: *maturity phase*. After a certain time, overwhelmed by development and the arrival of better competitors, the product declines and is eventually withdrawn: decline phase.

It should be noted that most products disappear right from the launching phase. Others reach periodical maturity phases where decline may result in promotion to win back clients. The life cycle of a product is therefore defined as a series of phases (launching, growth, maturity and decline) characterized by growth rates that are different from the turnover (sales and profits).

Innovation is an indispensable factor for the growth of a company. It consists in researching and developing new products to replace those that have reached maturity or the decline phase in the life cycle. A company must therefore ensure that its products are found in the various phases of their life cycle. Ideally, the life cycles must therefore overlap as follows.

To ensure profitability and survival, the company must constantly innovate, hence the importance of the "Research and Development" function.

Innovation can be achieved through: (i) The launching of a new product (with lesser price or higher quality), (ii) The lunching of a substitution product (replacement), (iii) A modification of the product's packaging. For instance, the enterprise simply "dresses" an old product in a way that it looks like a new product, (iv) Upgrading the product itself, depending on technical evolution. Etc■

CONCLUSION

The innovation system in Cameroon is still displaying the characteristics of less performing systems. In fact, the use of the R&D-I in companies remains marginal in Cameroon. According to the general enterprise census (RGE 2016), the analysis of absorptions and practices related to R&I in companies, provides some data on the penetration of ICTs in companies based in Cameroon. Only 10.7% of companies use computer. However, there is a breakthrough of transactions via mobile phones (22.5%) that could be justified by the relatively easy access to the equipment. The other digital platforms (intranet network, internet, e-commerce) are almost non-existent, apart from major companies which achieve productivity thanks to these platforms (banks, insurances, transport, hotel and catering, mass distribution, etc.) or SMEs whose existence is related to ITCs (online services, video games, media and web content, e-commerce, etc.)

The deficit of absorption and practices of the R&D-I equally concerns technologies implemented in the production systems of companies. According to ONUDI, industries are classified in three categories following the technological profile: 1) low technology industries characterized by labour intensive production process and low capital intensive; 2) average technology industries which are mainly high capital intensive resource processing activities; and 3) high technology industries which are mainly high capital and technology intensive.

Based on this classification, the analysis of Cameroonian industries shows that most of them are found in the group of low technology sector. It is mainly agro-food industries, textile and dressmaking industries, wood and by-products industries.

The industrial fabric comprises a few enterprises of the chemical industry belonging to the average technology group. Nevertheless, the technological content of products coming from this chemical industry is still weak. These products are mainly household and toilet necessities (soap, beauty lotion, etc.)

It has been proven for a long time that the R&D-I is the growth driver of modern economies. This is why this sector plays an important role in the budgets of States and companies in the developed and emergent world. In this perspective, what are the efforts dedicated to R&D-I in Cameroon and in the DRC. How many Great and average Cameroonian companies have R&D-I departments? Beyond words, the results are not very appealing. The outcomes, the effects and the impacts are still to be proven in Cameroon and in the DRC, as well as in the rest of Sub-Saharan Africa (outside South Africa).

We dare think and dream that the private sector (employers' union) will create a fund that will be managed by the private sector or a foundation (OSC) to sponsor the R&D-I.

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