

Hurdles of Technology Transfer in Cameroon's Petroleum Industry.

NGOHITEH RELINDIS MALAH Espouse FOKA

PhD Candidate in Law, Faculty of Law and Political Science, University of Dschang (Cameroon)

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ABSTRACT

Technology (know-how) is a vital tool for the advancement and sustenance of any country especially in its petroleum sector as huge capital and technology is required to carry out crude oil extraction. In almost all African countries possessing petroleum, extraction is by multinational oil companies owned by developed countries. This is due to the fact that they possess the required technology. As such, many of these African states have included local content requirements in their petroleum legislations and one of such policies is technology transfers to enable them learn to extract their own resources. But over the years, these African states have still been unable to extract their own resources because of the lack of or obsolete technology acquired. Consequently, they still turn to multinational oil companies who are protected by international standards restricting performance requirements. Thus the desire of Cameroon and many other Africa states to tap from foreign technology has to an extent been a failure. Technologies are grouped into tangible technology such as tools, parts and finished goods, and intangible technology including patents, know-how and trade secrets. The transfer of these technologies can be achieved bilaterally, multilaterally, through commercial or non-commercial means by the use of Foreign Direct Investment (FDI) or licensing. Even though oil companies are not ready to part with their intellectual property (technology), Cameroon and many African states have hurdles preventing the assimilation, absorption and adaptation of their technology.

Key words: Hurdles, Transfer, technology, technology transfer, Petroleum extraction, technology development, assimilation, absorption, adaptation, innovation and diffusion.

INTRODUCTION

Learning by doing is the most effective capacity building in host states which is achievable through technology transfer. But what operates in most extraction industries is that the core of the technology is not assess able to nationals of the host country. This is due to the lack of the necessary skills and also to the fact that foreign corporations are not willing to let off their hard acquired technology to host countries for fear of future competition in the field. Article 8 of the Cameroon Investment Charter,^[1] lays it down as the duty of the state to promote the acquisition of appropriate technologies and skills needed to use the technology, and facilitate the dissemination of such technologies. In this light, the state has- therefore -instituted various legal policies at the national level to foster transfer of technology. Also, in a cabinet meeting between the then Prime Minister Philemon Yang and Minister of Mines and Technological Development and that of Post and Telecommunication, in addressing the technological needs of Cameroon, the Prime Minister instructed that “*Technology transfer be included in all international contracts as an obligation*”^[2]

The concern of developing countries as regard transfer of technology (TT) has been a long struggle over the years. This long struggle can be traced far back as 1985 with the drafting of the international code of conduct on technology transfer by the United Nation Conference on Trade and Development (UNCTAD)

which till date has not been implemented^[3]. In the Doha Ministerial Conference 2001, it was agreed that an examination be carried out in a working group under the leadership of the General Council on the relationship between trade and transfer of technology and possible recommendations be made on how to improve TT to developing countries. Though the work had begun, no recommendation has yet been made.^[4] Article 7 of the Agreement on Trade-Related aspects of Intellectual Properties (TRIPS), stipulates that the promotion and enforcement of intellectual property rights should contribute to the promotion of technological innovation and the transfer and dissemination of technology to the mutual advantage of producers and users of technological knowledge in a manner conducive to social and economic welfare, and to a balance of rights and obligations.

Of importance in the enhancement of- technology transfer is Article 8(1) of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) which permits countries to take measures "...to promote the public interest in sectors of vital importance to their socio-economic and technological development..." The TRIPS Agreement also includes other provisions aimed at preventing abuses that would limit technology transfer. Article 8(2) thus recognizes that countries may wish to adopt policies that prevent abuse of IPR and is to the effect that: "Appropriate *measures, provided that they are consistent with the provisions of this Agreement, may be needed to prevent the abuse of intellectual property rights by right holders or the resort to practices which unreasonably restrain trade or adversely affect the international transfer of technology.*"^[5]

By virtue of Article 66(2) of TRIPS which represent the most direct declaration for transfer of technology, it provides incentives to encourage technology transfer from developed countries to developing countries are provided for in the following words:

"Developed country Members shall provide incentives to enterprises and institutions in their territories for the purpose of promoting and encouraging technology transfer to least-developed country Members in order to enable them to create a sound and viable technological base."

There is no single accepted definition of "technology" or "technology transfer" rather, the terms often differs based on the particular purpose and context in which they are used. But a definition of technology transfer adopted for the purpose of the United Nations Framework Convention on Climate Change, which may also be instructive for other contexts, is that it is "a broad set of processes covering the flows of know-how, experience and equipment for mitigating and adapting to climate change amongst different stakeholders such as governments, private sector entities, financial institutions, NGOs and research/education institutions. ..."^[6] The broad and inclusive term "transfer" encompasses diffusion of technologies and technology cooperation across and within countries. It covers the transfer of environmentally sound technology processes between developed countries, developing countries and countries with economies in transition.

It comprises the process of learning to understand, utilize and replicate the technology, including the capacity to choose it and adapt it to local conditions and integrate it with indigenous technologies.^[7] It is also the transfer of systematic knowledge for the manufacturing of a product, for the application of a process or for rendering of a service and does not extend to the transaction involving the mere sale or mere lease of goods.^[8] In the broad sense, technology is the means which man undertakes to change or influence his environment. It is the collection of physical processes that transforms input into outputs as well as knowledge and skills.^[9]

The transfer denotes the voluntary conveyance of property right or ownership in a property from one person to another through direct or indirect means for a fee. The transfer is intended to pass all the rights over the property to the new owner. That is, any mode of disposing of or parting with an asset or an interest in an asset for either a fee or as a gift as laid down in *Edge Group Inc. v. Champion Mortg. Co*^[10]. Transfer is a

way of disposing an asset in the form of sale, gift, lease or licenses. Technology transfer itself encompasses the transfer of physical assets, knowledge, and human capabilities to enhance the efficient organization and extraction of crude oil.

Local content requirements can produce benefits when technologies from or needed by the project spill over into the domestic economy and increase competitiveness of domestic suppliers. For such technology and knowledge transfers to occur, there must be adequate absorptive capacity in the host country and community as well as a bridgeable gap between foreign and domestic technologies.^[11] The methods of transfer of technology vary from direct to indirect methods. The direct methods entails sale or assignment of the technology, technology licensing Agreement, management and service contracts and through machinery supply contracts while indirect technology can be transferred by multinational corporations through foreign direct investment, education and training and joint venture.^[12]

The Governing Body of the International Labour Office's approval of the Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy at its 204th Session in November, 1977 and subsequently amended at its 279th Session in November, 2000, 295th Session March 2006, 329th Session March 2017 and its recent amendment in its 346 session in October to November, 2022 has paved the way for multinational corporations to empower host nations especially through technology transfer.^[13] Multinational therefore have a great role to play in the transfer of technology to developing countries although the appropriate technologies are not being transferred.^[14]

The technology transfer to Cameroon's petroleum sector is a vital necessity which cannot be under-looked. The petroleum^[15] sector as a whole is divided into two main streams as follows, the upstream which is the focus of this article, comprising of exploration , oil prospecting (appraisal stage), drilling/ production and decommissioning of crude oil (E&P)^[16], and downstream consisting of refining, processing, distribution and marketing of the petroleum.

It is worth noting that over 6000 products are made from Crude oil when refined into petroleum.^[17] They include gasoline, diesel fuel, jet fuels, lubricating oils, waxes, petroleum jelly, transparent tapes, nail polish, fertilizers, life jackets, CD players, helmets, cassettes, tires, dresses, ink, food preservatives, paint, feed stock (for making chemical, plastics, synthetic materials), kerosene and gases.^[18]

Since the extraction of this precious non-renewable resource requires heavy technology, it is therefore incumbent for the host country to own such technology which can be transferred through Foreign Direct Investment (FDI). Technology transfer is crucial for technological innovation in the petroleum sector since it helps bring scientific and technical research, as well as the skills and practices that go with it.

HURDLES TO TECHNOLOGY TRANSFER IN CAMEROON

According to Profesor Bande Onimode, technology transfer by Multinational Corporations (MNCs) through Foreign Direct Investment (FDI) is a myth in Africa. He stated that:

"...but the idea of technology transfer from MNCs to Africa is a myth. Conceptually, technology may be transported, adapted and reproduced locally, but it cannot be transferred in isolation because it is bound up with concrete production process and bears definite relations of production. Thus no technology is transferred when oil MNCs employ local labour to pump oil. Much of technology transferred to Africa is inappropriate. Also, the monopoly domination and restrictions of technology by MNCs under the industrial property system of patents, licensing and so on, impose definite limits on technology transfer. Technology is now a powerful instrument of ideological domination by developed nations. As Max stated, those who control the means of material production also control the means of mental production."^[19]

A successful technology transfer goes through the stages of technology development, assimilation and absorption of technological knowledge, adaptation to local conditions, innovation of the transferred technology and finally diffusion of the transferred technology.^[20] Technological diffusion is the spillover of technological information or knowledge associated with the introduction of a new technology into a country or enterprise. Technology diffusion can be intentional or unintentional. Intentional diffusion occurs through government policies or act by an enterprise to spread the acquired technology to other parties, meanwhile unintentional diffusion is when there is a leakage of a technology from the original owner to others through internal labour migration.^[21] Where technology has been successfully transferred, the diffusion of it becomes a problem.

Despite the efforts made by the Cameroon government to ensure the transfer of technology through its policies, these efforts have not yielded the required results due to:

Inadequate legal Environment for acquisition, absorption and development of technology

The absence of a coherent and coordinated approach to the number of interrelated aspects that define a national science and technology policy is the main cause for inadequate technological capability in developing countries especially Cameroon. The various policies on technology transfer adopted by Cameroon have not been effectively implemented. For instance, section 2 (11) of Law no. 2019/008 of 25 April 2019 to Institute the Petroleum code, lay emphasis on local content and specifically requires technology transfer. Section 87(2) (a) mentions an aspect of technology transfer which is through vocational and technical training of Cameroonians by the petroleum contract holders(MNCs).^[22]In the same light, Law no. 2012/006 of 19 April 2012 to Institute the Gas code in Cameroon in its section 62, requires that the development of gas resources must be accompanied by a local content component that specifies the benefit of the gas project for Cameroon's economic, social, industrial and technical development. Of most importance is section 67 which requires companies to submit to the state and execute according to their priorities, a technology and knowledge transfer program related to their activities in a bid to encourage, facilitate and enable the gradual replacement of expatriate personnel at gas companies with local personnel ^[23].

The Cameroon Investment Charter does not expressly require as an obligation for effective transfer of appropriate technology by all investor especially to the SMEs, as such most technologies are mainly transported and when the investors (foreign) finish their projects in Cameroon, only the project is transferred with no know-how left for subsequent absorption of the project. It is for this reason that most projects executed by foreign investors when they need maintenance, only they are called upon since Cameroonians were not actually transferred the required technology. Thus the method of build-own and transfer (BOT) which Cameroon adopts does not transfer the know-how but just the project or equipment. A compulsory transfer of technology law in Cameroon is very relevant for Cameroon's development. Lesson can be learned from Nigeria who in 1979 created the National Office for Technology Acquisition and Promotion, in-charge of ensuring transfer of appropriate technology in Nigeria's oil sector and subsequent follow-up for its implementation.

Limited infrastructure and market

Due to limited infrastructures and a ready internal market to absorb and sustain technology from MNCs, developing countries including Cameroon have been unable to successfully ensure the transfer of technology. As a result of inadequate infrastructural support for the imported technology, investments which must encompass the new technology cannot yield expected gains since the support infrastructure is weak. These infrastructures include electricity, telecommunications, water and transportation. An investor always find it difficult to effectively communicate or get raw materials on time due to poor road networks

which discourages technology transfer. [24]

Insufficient technical systems such as hardware, technological education, capabilities to effectively perform research and development and transmit the result to the market and the ability to maintain technology and organizational structures have rendered transfer of technology (TOT) inefficient in developing nations. Most technologies are developed in foreign countries and must be adapted in host countries for it to perform and be sustained, without which developing countries will continually depend on foreign technology.

According to Blackeney, the capacity of a technology recipient to participate in international trade is considerably circumscribed because of several circumstances; where it lacks sufficient diversity in resource endowment to permit alteration of production sectors in response to changes in relative prices; where poor educational standards do not permit the easy transfer of labour from one sector to another; and where capital is limited to carry out investment, development will be farfetched from such a country. [25] International trade is necessary for the recipient of technology to use its new technology to the fullest extent in order to boost its economy. But this is not the case in developing countries. Their markets are often not sufficient to support high scale production. Even when developing countries participate in international trade, most of their products are often dumped due to low quality resulting from limited technical know-how. [26]

Acquisition of Obsolete Technology

The limited ability of developing countries to identify their technological needs always causes them to go in for obsolete or inappropriate technologies which cannot be adapted to suit local conditions. This inability is due to inadequate information or imperfect information provided by the technology supplier or the need to buy cheap technologies. For instance some refrigerators, computers, tractors, pressing iron come in different capacities (voltages) which does not suit local needs as such need to be adapted to the needs in Cameroon. [27] When such obsolete tangible technologies are acquired, they virtually become of no use.

Limited technical know how to operate acquired technology

A famous writer once said “*The African person is not yet a technology person. That sounds crude, but it is unfortunately true. He may be a user and beneficiary of global technologies. Technology and let alone clean technology is not in his thought process. African development workers, policy makers and investors can choose technologies for specific purposes but they remain outside those decisions and activities which influence the direction or trend in technology development. There are quite a few technology development centers and Research and development institutions with the most advanced ones located in South Africa. The bulk of these are tinkering on rural technologies for processing produce and for energy utilization with aid money. No technology internalization has occurred in the majority of cases.*” [28]

Local people in developing countries are not used to modern technology and in most cases, the application of technology is limited, if there is any. Given this situation, there is lack of technical knowhow to maintain and sustain most of the technology that is available. If modern technology is transferred, it will revamp the peoples’ maintenance culture so as to be able to sustain the new technology. In addition, some people are stuck to obsolete technologies because they still function, could be maintained easily and are less expensive. But it limits the production capability when compared to developed countries. As such technical schools in Cameroon have a great role to play in spurring up technical knowledge. [29]

Difficulty of transferring research results to the economic sector

Research and development according to OECD is classified into three, basic research, applied research and experimental research. Basic research is theoretical work undertaken primarily to acquire new knowledge without any practical application or use in view. Applied research is also original investigation in order to

get new knowledge and it is directed towards a specific practical aim, while experimental research is systematic work on existing knowledge gained from research which is directed to producing a new material, products or device, or to install new processes.^[30] Research and development are key components to innovation leading to transfer of technology. Innovation results from research and development which leads to the production and distribution of new technologies in the form of products or services.^[31] Most technologies in the oil sector in Africa and Cameroon in particular are developed in the research and development facilities in the home countries of the MNCs, making it difficult to learn them and transfer research results to the economic sectors.

In this light, in a cabinet meeting with the then Prime Minister Philemon Yang and the Minister of Mines, Industries and Technological development, one of the problems raised by the Minister of Mines, industry and technological development as a cause for low technological development in Cameroon was the difficulty in transferring research results from research centers to the economic sectors for onward transformation into finished and marketable good. This is the case of internal transfer of technology from research centers to the production sectors. In Kenya,^[32] this problem has been resolved by granting incentives to universities to focus more on patenting rather than publication as is the case with Cameroon universities. This thus encourages more research and development for better innovations^[33] that can be commercialized. Kenya has instituted technology transfer centers in all its universities with the mandate to generate, transfer, diffuse and commercialize all research result to Small and Medium Size Enterprises within the country for onward transformation into goods and services.^[34]

More still, the lack of culture of innovation among Cameroonians is a big barrier to the process of transfer of technology internally and internationally.^[35] Innovation is vital tool for technological advancement for any country as it is the engine that drives the economy of a country and as a major generator of employment, it should be encouraged. Innovation is the space between a technical problem and a solution in a society. For instance a country cannot solve agricultural problems by simply using technical manual tools. A new technology is required which can only be derived from an innovative work. Research and Development (R&D) capacity is the key determinant of the quality, level of sophistication and successful absorption of transferred technology as such, more R&D be encouraged through incentives to various industries to be able to develop new technologies for Cameroon's emergence.

Weak bargaining power

The monopolistic power of technology owners (MNCs) coupled with the weak bargaining power of developing countries (technology recipients) has led to the transfer of obsolete technologies. Economic and political instability alongside inadequate management and negotiating skills has placed developing countries at the mercies of developed nations with respect to the type of technology being transferred. These MNCs often bring only technology necessary for a particular project for fear of creating a new competitor if their new technologies are transferred to developing countries. Despite several attempts made to promote TOT to developing countries, these have not yielded the desired results. The failure of developed countries till date to adopt the International code of conduct for the Transfer of Technology to Developing countries is a clear example.^[36] But Africa states can enhance technology transfer through effective implementation of local content provisions contained in most of their sectorial laws, such as those in the petroleum, gas and mining laws.

BITS Clauses prohibiting performance requirements.

Even though there are several factors among African countries which hinders the transfer of technology, clauses contained in most Bilateral Investment Treaties serve as barriers to such transfer. According to Lorenzo, performance requirements are stipulations imposed on investors, requiring them to meet specific

goals with respect to their operations in the host country.[\[37\]](#)

As a means to optimize their productivity and ensure economic advancements, many African states have included performance requirements policies such as technology transfer, education and training and domestic procurement in what constitute local content.[\[38\]](#) These have not yielded the required results due to many barriers but in place by the BITS.[\[39\]](#) The measure put to restrict performance requirement is a stumbling block to the transfer of technology to Cameroon's petroleum sector as investor cannot effectively transfer appropriate technology to that sector.[\[40\]](#)

At the level of International Investment Agreements, Bilateral Investment Agreement prohibits technology transfer, training, employment conditions including foreign labour, procurement of goods and services, propriety knowledge and research and development as performance requirements.[\[41\]](#) This is illustrated in the case of *Mobil Investments Canada Inc. and Murphy Oil Corporation v the Government of Canada*[\[42\]](#), where the American investors, Mobil Investments Canada Inc. (Mobil) and Murphy Oil Corporation (Murphy), invested in the Hibernia and Terra Nova oil field development projects in Newfoundland (NL) and Labrador, Canada. The case was brought against Canada alleging that the enforcement of guidelines on research and expenditure by the Canadian Newfoundland and the Labrador Offshore Petroleum Board constituted a breach of the performance Requirement (PR) provision. The Guidelines required investors to spend a fixed percentage of project revenues on research and development (R&D) and education and training.

In this case, Canada argued that the requirement to carry out R&D or E&T in the province did not compel the investors to purchase, use, or accord a preference to any particular domestic goods or services. There were alternative ways to comply. However, the Tribunal was not convinced because, in reality, the implementation of the Guidelines would require local expenditures. And certain actions could not be implemented without according a preference to services provided in the province. The tribunal ruled that the guidelines were inconsistent with the provisions of performance requirement as prohibited under Article 1106(1)(c) of the North America Free Trade Agreement (NAFTA).[\[43\]](#) By imposing the requirement for investors to carry out research, the Government of Canada was in breach of the fair and equitable requirement and performance requirement prohibited provisions.

The exploitation of the natural resources of a country is an attractive field for foreign investors. Many countries regard their resources not just as a financial benefit in and of themselves, but as a starting point to foster industrial development. Conditioning the grant of the concessions required to exploit resources on the use of local content is one of the means employed in this respect.[\[44\]](#) In the case of *Turkey v. Rice*,[\[45\]](#) the Panel held that the domestic purchase requirement can clearly be considered as a 'requirement', within the meaning of Article III(4) of the GATT 1994, as it is a condition that importers may voluntarily accept in order to obtain an advantage from the Turkish government, that is the ability to import rice at reduced tariff rates violates the provision on performance requirements.[\[46\]](#) The international community therefore prohibits performance requirement thus hindering technology transfer as it is one of the requirements.

Measures to facilitate effective transfer of technology in Cameroon.

Creating a conducive regulatory environment is crucial to enhance technology transfer. Though there is no perfect measure, factors such as national technology policies, tax incentives, human capital development and identification of appropriate technologies are worth addressing in order to facilitate TT in Cameroon.

Improvement of the national technology policies.

Cameroon and other African countries in order to obtain appropriate technologies have to formulate adequate national technology policies as an integral part of their national development programs. Such

policies can include the determination of technological priorities, mobilization of natural resources, dissemination or diffusion of existing technologies, identification of sectors requiring imported technologies and promotion of the culture of innovation through research and development. The establishment of national technology planning centers which direct and coordinate the development of appropriate technology for economic growth is of relevance.

It is true that the then Prime Minister Philemon Yang^[47] in a cabinet meeting gave an order for technology transfer to be made obligatory to all international investment contracts with Cameroon, this if implemented will spur the technological development of Cameroon as well as economic development. Cameroon in its numerous efforts to promote technology transfer has created technology support centers as well as the establishment of a project called Promotion of local Materials to Improve Living Standards for the Population (MIPROMALO) with the aim of training technology transfer agents. Following this project, 20 Technology Transfer centers were created.^[48] Much still needs to be done to improve the technological level of Cameroon for effective transfer, absorption and diffusion of technology to achieve the desired economic growth.

Human capital development

The process of TT requires people irrespective of the method of transfer. Qualified and informed personnel are needed to identify the technology needs, source of technology, nature, and cost and select the most appropriate method of transfer for the country and ensure diffusion of the transferred technology to the economy. Technology transfer, human capital and development are all interwoven, one complementing the other.^[49] Technology also seen as the movement of ideas carried by people also greatly promotes domestic transfer and more training should be carried out at the level of each enterprise within Cameroon to disseminate such technologies embodied in human capital to sectors lacking it. The education and provision of public research systems in Cameroon especially in technical field will encourage the spread of technical know-how and easy transmission of research results from research centers to the economic sectors for onward transformation into goods and services. The continuous revision and adjustments of education systems will ensure that new and emerging technologies are upgraded.

Incentives for technology Development

Taxation affects technology transfer by reducing earnings for the transferor and increasing costs for the transferee. Some of the technology related earnings such as licensing fees, rents and royalties associated with technical and professional fees discourages transfer of technology. High tax rate on employee's earnings discourages expatriate workers whose salaries may be higher. The formulation of a tax policy with regard to technology transfer involves balancing conflicting objectives of countries wanting to raise revenue through taxes and also trying to facilitate the acquisition of technology. It is important to balance the extent to which the importing country may tax the various transactions involved in TT and its needs to raise revenue without deterring such transfers.

Most countries have instituted investment incentive laws in order to promote various forms of investments including transfer of technology such as Law No 2013/004 of 18 April laying down private Investment Incentives in Cameroon as amended by Law No 2017/015 of 12 July 2017. This law is applicable to Cameroonian of foreign, natural or legal persons.^[50] Investment incentives are benefits granted by government authorities to a resident or non-resident natural or legal person, to promote and/or develop a specific activity.^[51] As regard tax and custom incentives,^[52] they are provided for in the establishment and although the law on incentives provides for tax credit to investors who combat pollution and develops public interest activities in rural area,^[53] it would have as well included the obligation to transfer technology, training of personnel as a requirement to benefit from this tax credit. Technology Transfer and innovative

sectors in Cameroon falls within one of the priority sectors which benefits from incentives; as such investors are motivated to invest in technology transfer activities in Cameroon.^[54]

Proper identification of appropriate technology

The identification of appropriate technology available in international markets to meet specific technology needs is one of the main challenges faced by developing countries, Cameroon inclusive.^[55] This is due to inadequate information of the technology in question which thus makes it difficult to determine its appropriateness. For this reason a public-private sector partnership be encouraged to involve the state in most of the technology negotiation and transfer process so as to transfer technology which is environmentally friendly in Cameroon.

Promoting public-private partnerships (PPP)

Public-private partnerships present a unique opportunity for combining the entrepreneurial, innovative and efficiency of private firms and the flexibility of public institutions to deliver services especially in neglected areas such as technology transfer. The private sector creates jobs, trains local personnel and transfers know-how and technology. However, private companies, especially Small and Medium Size Enterprises (SMEs) oil companies, frequently find it unable to compete on the international stage and often lack the skills and the local contacts. This is where the PPP program becomes important in effectively and efficiently meeting the objective of both public and private sectors.^[56]

Industrial placement policy

Industrial placement also known as industrial work placement is an extended period of work experience undertaken by workers as well as students looking to improve on their skills. Thus the state should make it a policy for workers to undertake industrial placement in specialized fields in foreign countries to acquire the technology needed which will be diffused into Cameroon. This means of transfer of technology is less costly as it only entails empowering the worker with the required technology as needed. Though a fee is paid, it will not be as expensive as getting an expert to come train workers in Cameroon.

CONCLUSION

The drafting of the code of conduct on technology transfer to developing countries by the UNCTAD and its non-implementation till date is a blow and a wake-up call for all African states. Despite several international instruments advocating for technology transfer from developed to developing nations, amidst the desire not to let go of their intellectual property, African states including Cameroon need to revisit their laws, policies and infrastructures to be able to accommodate the new technology and diffuse to other sectors for advancement.

FOOTNOTE

[1] Law N^o 2002/004 of 19 April 2002 instituting the Cameroon Investment Charter as amended by Law N^o 2004

[2] Cameroon tribune ct 2016, Cameroon-tribune.com, Thursday 26 July 2015, p6.

[3] The United Nation draft code on technology transfer which contained 9 chapters has as main focus the promotion of technology transfer to developing countries so as to empower them.

[4] Doha Ministerial Conference, (2001), "Information on the work of the working group," available at http://www.wto.org/english/tratop-e/devel_e/dev_wkgpb_trade_transfer_technology_ehtm.pdf,

as cited by Ngohteh Relindis Malah, (2019), Master Thesis on An analysis of legal policies on investment and transfer of technology in Cameroon, University of Dschang, unpublished, p25.

[5] Maskus Keith E., (2004), *Encouraging International Technology Transfer*, Issue paper No 7 ICTSD-UNCTAD publication, pp 34-37.

[6] Intergovernmental Panel on Climate Change, (2000), Special Report: Methodological and Technical Issues in Technology Transfer – Summary for Policy Makers 1, <https://www.ipcc.ch.org>. Accessed on 12/7/2020

[7] *Ibid.*

[8] Section 1(2) of the United Nation Conference on the International code of conduct on the Transfer of Technology 1985. Despite the drafting of this code, it has never been implemented based on Resolution A/RES/48/167 of 17 February 1994 recognizing that conditions do not currently exist to reach full agreement on the implementation of the draft code on technology transfer.

[9] Pierrette Essamo Mekongo, (2017), “Technology Transfer in Cameroon”, Cameroon Business Today, @www.cameroonbusinesstoday.cm, *Juornald’informationetd’analyses economic*, vol 1, p1.

[10] See also *Compuware Corp. v. Innovatec Communs., LLC*, 2005 U.S Dist. LEXIS 45621, 26-27 (E.D. Wis. Aug, 24, 2005

[11] *Ibid*, Ngohteh Relindis, Masters Thesis, unpublished, p54.

[12] Vernon R, (1990), “Trade and technology Transfer in Developing Countries”, vol 1, issue 3. *Westview Special Studies in Science, technology and public policy*, pp 34-54.

[13] ILO (2022), Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy

[14] Enyivigbo Vivien Chidinma, Esimai Ugochi Sally, Rev. Fr. Dr. Anthony Aniagbaoso Igwe, (2023), “Technology Transfer by Multinational Corporations in Lesser Developed Countries: The Case of Nigeria”, *International Journal of Humanities Social Science and Management (IJHSSM)* Volume 3, Issue 1, Jan.-Feb. 2023, pp: 514-522.

[15] Harvard Devold, (2013), *Oil and gas production handbook: An introduction to oil and gas production, transport, refining and petrochemical industry*, 3ed. ABB Publisher, defines Asphalt also known as bitumen is a sticky, black, highly viscous liquid or semi-solid form of petroleum. It can be found in natural deposits or refined products. The primary use of asphalt is in road construction where it is used as glue to create asphalt concrete. It is also used in the production of roofing felt and sealing flat roofs

[16] Section 1 of the Petroleum code. This law institute the petroleum code and shall apply to upstream petroleum sector. To this end, it shall: lay down the condition for upstream hydrocarbon prospecting, exploitation, exploration, transportation, storage and processing...”

[17] www.ranken-energy.com.

[18] Bernard Gauthier and Albert Zeufack (2001), “Governance and Oil Revenues in Cameroon”, available at <https://www.researchgate.net/publication/242764757>. Accessed on 15 November 2019.

[19] Felix M. Edoho, (1990), Technology Transfer and Third World Development :The Petrochemical Complex in Nigeria, *Bulletin of Science, Technology and Society Journal* Vol.10, Issue 4.

[20] UNCTAD, (2012), Virtual Institute Teaching Material on Technology Transfer, United Nation Publication, New York Geneva. Available at <http://vi.unctad.org>. Accessed on 15/01/2019.

[21] *Ibid.*

[22] Law no. 2019/008 of 25 April 2019 to Institute the Petroleum code.

[23] Law no. 2012/006 of 19 April 2012 to Institute the Gas code.

[24] W.M Sounder et al, (1990), "A guide to the best technology transfer practice", *Journal of technology transfer*, vol15, issue 1-2 pp.5-16.

[25] *Ibid.*

[26] *Ibid.*

[27] *Ibid.*

[28] Maya Shakespeare, (2012), *Capacity Building For Technology Transfer In The African Context: Priorities And Strategies*. vol1, Zimbabwe, Samara publisher, p.56.

[29] *Ibid*, Maya.

[30] OECD ,(2002), Francati Manual 2002: Proporsed Standards Practice for Survey on Research and Experimental Development Organisation for Economic Co-operation and Development Paris. Available at <http://www.oecd.org/dovument/6/03343.en> 2649 34451 33828550.html. Accessed on 13.03/2020

[31] Harm Jam Steenhuis, *op cit*, p.53.

[32] Mboya Rose, (2014) , "Linking Universities and Research Centers to Private Sector for Management, Promotion and commercialization of IP asset: Spin-offs and Start-ups", Available at https://www.wipo.int/edocs/mdocs/africa/en/wipo_tiscsda14/wipot_3pdf. Accessed on 27/04/2020.

[33] Innovation is a process that brings together various novel ideas in a way that has impact on the society. it is finding a way of doing thing better and different. An innovation which cannot be applied to solve society's problem is of no use and any innovation that is not commercialized is not useful. Innovation is the engine that drives the economy of a country and a major generator of employment

[34] Mboya Rose, *loc cit*.

[35] Cameroon Tribune of 9 March 2010. Available at allafrica.com.

[36] *Ibid*, Maya.

[37] Lorenzo Cotula, (2018), Foreign Direct Investment, Law and Sustainable Development, 1st ed., UK, Full Spectrum print Media, p67

[38] Sections 86 of the 2019 Cameroon Petroleum Code.

[39] Suzy H. Nikeman, (2014), Performance Requirement In Investment Treaties, 1st ed, Canada, Winnipeg Publisher.

- [40] UNCTAD, (2003), Foreign Direct Investment and Performance Requirements: New Evidence from Selected countries, available at http://unctad.org/en/docs/iteiia20037_en.pdf. Accessed on 15/07/2022
- [41] Costaggui Catherine E., (2019), Performance Requirement, Available at <https://www.jusmundi.com>. Accessed on 20/04/2022.
- [42] ICSID Case No, ARB(AF)/07/4 2015
- [43] Article 1106 of the North America Free Trade Agreement (NAFAT) states that no party may impose or enforce any of the following requirements, or enforce any commitment or undertaking, in connection with the establishment, acquisition, expansion, management, conduct or operation of an investment of a party in its territory; to export a given percentage of goods or services, or to achieve a given percentage of domestic content. In **The Corn Products Cases (Archer Daniels Midland Company (ADM) v Mexico ICSID Case No ARB (AF)/04/01; Cargill, Inc. v Mexico ICSID Case No. ARB(AF)/05/2 and Corn Products International, Inc. (CPI) v Mexico)**, ICSID Case No. ARB(AF)/04.01 the provisions of Article 1106 were also violated.
- [44] Hestermeyer, Holger P. & Nielsen, Laura, (2014), “The Legality of Local Content Measures under WTO Law”. *Journal of World Trade* 48, no. 3, 553–592.
- [45] **Turkey v. Rice**, (2008), WT/DS3334/14
- [46] *Ibid*, Hestermeyer.
- [47] Cameroon Tribune (2016) Cabinet Meeting, available at ct2015.cameroon-tribune.com
- [48] Cameroon Tribune (2010) of 9 March 2010. Available at allafrica.com.
- [49] UNCTAD (2011) Report of the Expert Meeting on the Contribution of foreign Direct Investment to the Transfer and diffusion of technology and know-how for Sustainable Development in Developing countries. Available at http://www.unctad.org/en/Docs/ciem2d3_en.pdf. Accessed on 19/05/2020
- [50] Section 1(1) 2013 amended 2017 Law on Private Incentives.
- [51] *Ibid*, Article 3 para 4.
- [52] Section 7(1) The investor may, during the operation phase, which may not exceed 10 (ten) years, according to the scale of investment and expected economic returns, as applicable, enjoy exemptions from reductions of payment of the following taxes, duties and other fees: Minimum Fee; Corporate tax; Tax on profit; Stamp duty on loans, borrowings, overdrafts, guarantees: increase, reduction, corporate capital repayment and liquidation, or any transfer of activities, real profit Ownership or usufruct, leases or shares; Tax on income from movable assets during the distribution of income in the form of dividends or other from to be specified in the agreement; Special income tax (SIT) on sums paid to foreign companies for services rendered or used in Cameroon during the project design and execution phases, provided that they are billed at cost price; Taxes, registration and stamp duties on the transportation of processed products; Customs duties as well as all other fees and service taxes on the importation of all types of equipment, building materials, tools, spare parts, intermediate products, supplies and consumables which do not have locally manufactured equivalents, save for duties, taxes and other non-tax fees deemed to be a service fee; Duties on the exportation of construction and

processing plant equipment; Any tax, duty or charge of any kind that is calculated on the basis of the turnover realized by the processing company; Any tax on the transfer, purchase or sale of foreign currency and any indirect consumer tax, including the special tax on petroleum products.

[53] Section 8 (1) Any investor may benefit from a tax credit provided he or she meets one of the following criteria employs at least 5 (five) graduates each year; combats pollution; develops public interest activities in rural areas.

[54] Section 14 para 7.

[55] Available at www.wikijob.co.uk. Accessed on 16/05/2022

[56] Available at www.publicprivaterdialogue.org. Accessed on 9/03/2022