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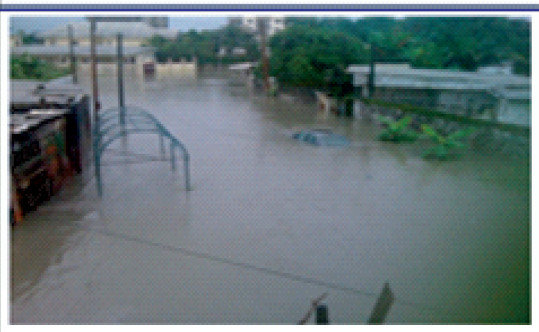

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WORKSHOP ON

THE PROBLEMS OF URBANIZATION IN CAMEROON : STRATEGIES FOR SOLUTIONS

8 - 9 May 2017, Yaoundé, Cameroon

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ACRONYMS

BDEAC	Banque de Développement des Etats de l'Afrique Centrale
BEAC	Banque des Etats de l'Afrique Centrale
BUCREP	Bureau Central des Recensements et des Etudes de Population
CAS	Cameroon Academy of Sciences
CEP	Caisse d'Epargne Postale
CFC	Crédit Foncier du Cameroun
CNPS	Caisse Nationale de la Prévoyance Sociale
FAO	Food and Agricultural Organisation
INS	Institut Nationale des Statistiques
MAETUR	Mission d'Aménagement d'Equipement des Terrains Urbains et Ruraux
MINUH	Ministry of Urbanism and Housing
MIPROMALO	Mission de Promotion des Matériaux Locaux
SDG	Sustainable development Goals
SIC	Société Immobilière du Cameroun
STISA	Science, Technology and Innovation Strategy for Africa 2020
UN	United Nations
WHO	World Health Organisation

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We are also grateful to His Excellency Mr. **Mbouentchou**, Minister of Housing and Urban Development who through his Secretary General, **Dr A. Sardaona,** co-chaired the workshop.

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We acknowledge with gratitude the leadership provided for the workshop by the late Professor Samuel Domngang, President of CAS at the time of the workshop, and Professor Beban Sammy Chumbow, current President of CAS.

Dr. Vincent N. Tanya, Programme Officer of CAS, wrote this report based on the presentations at the workshop and Dr. David A. Mbah, Executive Secretary of CAS, oversaw its production. Responsibility for the content that is summarized in this report is that of the authors who presented papers at the workshop. They had the opportunity to review the summarises of their presentation.

EXECUTIVE SUMMARY

The industrial and commercial activities and a large proliferating informal sector, make Cameroon's cities attractive destinations for many people. Their real or perceived employment opportunities and superior quality of life continue to lure rural migrants. The cities are growing very large and at a very rapid rate. The rate of urbanization has grown from 28% in 1976 to 52% in 2010. With a population growth rate of 2.4%, the projections of the 2005 General Population and Housing Census indicate that 55% were living in urban areas in 2015. It is estimated that by 2035, about 65 to 70% of our population will be living in urban areas.

While the workshop directly addressed Sustainable Development Goals (SDG) 11, it embraced SDG 1, 2, 3, 4, 5, 6 and 7 as well. It further addressed 3 Science, Technology and Innovation Strategy for Africa 2020 (STISA) priorities (1, 2 and 6).

This rapid urbanization has brought with it new challenges for municipal authorities in the areas of housing, health care, clean drinking water, sanitation, public transport, energy and food supply. Urbanization has also led to overcrowding wherein too many people live in too little space.

Given the above, the Cameroon Academy of Sciences (CAS) organised a workshop on the problems of urbanization in Cameroon from 8 – 9 May 2017 in Yaoundé, Cameroon, to provide an opportunity for scientists, municipal administrators and policy and decision makers to discuss the actions that are necessary for solving the problems of urbanization in Cameroon.

After listening to the presentations on the challenges of urbanization in the country, the participants had group discussions and suggested the following strategies and policies to improve the quality of life in urban areas.

The housing crisis in the cities: Given the fact that government attempts to solve the housing crisis in urban areas have not produced the desired results; there is need for innovative approaches to the problem. These include:

- The diversification of the types of social products according to the types of occupation such as rental housing, hire-purchase, semi-finished housing, provision of developed plots, and support for self-construction like the provision of standard plans, central purchasing of materials at reduced costs, training in the manufacture of local materials, the realization of road, water and electricity works, etc.
- The granting of appropriate incentives to social housing programmes through exemptions or special reductions for value added tax (VAT) on locally produced building materials.
- The implementation of a policy of industrialization of the production of building materials through the promotion of building materials manufacturing units.
- Strategic reflections and implementation of land tenure reforms and creation of special social housing and mortgage guarantee funds.

The energy needs of urban areas: In order to improve the energy needs of urban areas, it was agreed that:

- the adoption of energy efficient appliances and solar home systems could significantly reduce household energy demand and electricity bills;
- the government of Cameroon should enact legislation to institute reduced import tariffs on renewable energy equipment as well as subsidies and incentives to independent energy producers;
- the interconnection of independent energy generation systems with the grid should be encouraged so that independent energy producers can sell excess energy to the grid.

Supply of clean drinking water, sanitation and solid waste management: Given that water related issues such as access to clean drinking water, sanitation and floods could lead to diseases like diarrhoea, malaria and cholera, the following proposals were made:

- Catchment areas should be identified and protected.
- Better watershed management can also improve the quality and quantity of water supplied to our cities.
- Efforts should be made to diversify the sources of drinking for the urban areas through the use of water reservoirs located in rural areas, provision of boreholes which have better quality water than the shallow wells and recycling of wastewater through a four-step reverse osmosis process that removes all contaminants and toxins.
- Since poor solid waste management is the main cause of floods in urban areas, its management must adopt effective approaches that involve not only the construction of appropriate physical drainage infrastructure but also include effective stakeholder participation.

Transportation: In large cities like Yaoundé and Douala, the transport systems can have many disruptions because of the high concentration of economic activities. The participants of the workshop agreed that the urban transport difficulties should be reduced by increasing the size and number of roads, improving public transport, encouraging non-motorized modes of transport and creating pedestrian zones. The government and municipal authorities should also adopt policies that discourage automobile use and channel investment into public transport.

The urban environment and health: It was noted that health officials and other stakeholders have been directing most attention to the control of infectious diseases while the growing burden of non-communicable diseases has been neglected in spite of growing evidence for its magnitude.

Thus, the participants agreed that there was a need to urgently formulate and implement a strategic plan to prevent and control the burden of NCDs in Cameroon. Such a plan should be based on an integrated multi-sectoral approach that targets common risk factors both at population level and at high-risk groups. The major modifiable risk factors (such as tobacco use, harmful use of alcohol, unhealthy diets, and physical inactivity) and the social and environmental determinants should be tackled through information provided by health promotion initiatives and primary health care services. Furthermore, there must be concerted action by all stakeholders (health, education, social, agricultural and economic sectors) to improve the social determinants of poverty, unequal access to educational opportunities, unemployment and low pay employment.

While waiting for a more comprehensive strategic plan to be formulated and implemented, the participants called on the government and other stakeholders to immediately take measures to promote healthy diets through education and public campaigns and enhance physical activity through the provision of free gyms and modifying urban planning and transport policies to include infrastructure for sports, walking and cycling.

Urban agriculture: In order to improve urban agriculture, the participants agreed that the attention of municipal and other authorities should be drawn to the need for:

- zoning in the formulation of plans for the development and management of urban and suburban areas, which is guided by land use compatibility policies and should focus equally on providing services like housing, transport, water, electricity and urban agriculture that are all integral components of urban systems.
- designing agricultural development policies to include programmes and projects to provide technical, financial and material support to urban farmers so that their activities can be more productive and environmentally friendly.
- incorporating urban agriculture into programmes for urban poverty reduction and the alleviation of food insecurity.
- facilitating access to available urban land by urban farmers through the revision of land tenure management systems that should also be gender sensitive.

Socio-economic impact of urbanization: The workshop participants made the following suggestions to provide some solutions for the socio-economic challenges of urbanization that are complex and context-specific:

- Balanced regional development to create new growth poles to decongest the oversized cities of Douala and Yaoundé.
- Rural development that will keep in check uncontrolled rural exodus;
- Affirmative action: creation of more jobs for jobless youth and opportunities for disadvantaged groups.
- Education policy must address issues emanating from urbanisation either as a lone discipline concern or as an integrated issue in related disciplines or courses.

RESUME

Les activités industrielles et commerciales et un important secteur informel de plus en plus grandissant font des villes du Cameroun des destinations attrayantes pour bien de personnes. Les opportunités d'emploi réelles ou apparentes et la meilleure qualité de vie que présentent ces villes continuent d'attirer les migrants de zones rurales. Les villes connaissent une expansion fulgurante à une vitesse exponentielle. Le taux d'urbanisation est passé de 28% en 1976 à 52% en 2010. Avec un taux de croissance démographique de 2,4%, les projections du recensement général de la population et de l'habitat de 2005 indiquent que 55% de personnes vivaient en zone urbaine en 2015. Selon les estimations, environ 65 à 70% de notre population vivra dans des zones urbaines d'ici à 2035.

Certes, l'atelier a porté sur l'objectif de développement durable (ODD) 11, mais il a également abordé les ODD 1, 2, 3, 4, 5, 6 et 7. En outre, il s'est intéressé à trois priorités (1, 2 et 6) de la stratégie de science, Technologie et Innovation pour l'Afrique (avant 2024, STISA).

Cette urbanisation rapide a entraîné de nouveaux défis que doivent relever les autorités municipales dans les domaines du logement, des soins de santé, de l'eau potable, de l'assainissement, des transports publics, de l'énergie et de l'alimentation. L'urbanisation a également conduit à la surpopulation ; situation dans laquelle beaucoup trop de personnes vivent dans très peu d'espace.

Á la lumière de ce qui précède, l'Académie des sciences du Cameroun (CAS) a organisé du 8 au 9 mai 2017 à Yaoundé au Cameroun, un atelier sur les problèmes d'urbanisation au Cameroun afin d'offrir une opportunité aux scientifiques, aux autorités municipales et aux décideurs de débattre de mesures à prendre pour résoudre les problèmes d'urbanisation au Cameroun.

Après avoir suivi les communications relatives aux défis de l'urbanisation dans le pays, les participants ont eu des discussions de groupe et ont fait valoir les stratégies et les mesures suivantes pour améliorer la qualité de vie des populations dans les zones urbaines.

En ce qui concerne la crise du logement dans les villes: dans la mesure où les efforts déployés par le gouvernement pour résoudre la crise du logement dans les zones urbaines n'ont pas produit les résultats escomptés, des approches novatrices sont nécessaires pour remédier au problème. Il s'agit de:

- la diversification des types de produits sociaux selon la profession tels que le logement locatif, la location-vente, l'habitation semi-finie, la mise à disposition

de parcelles aménagées et l'appui à la construction avec offre de plans types, matériaux à coûts réduits, formation à la fabrication de matériaux locaux, à la réalisation de travaux routiers, hydrauliques et électriques, etc.

- l'octroi d'incitations appropriées aux programmes de logement social par le biais d'exemptions ou de réductions spéciales de la taxe sur la valeur ajoutée (TVA) sur les matériaux de construction produits localement;
- la mise en place d'une politique d'industrialisation de la production de matériaux de construction à travers la promotion d'unités de fabrication de matériaux de construction ;
- des réflexions stratégiques et la mise en œuvre des réformes du régime foncier et la création de fonds spéciaux de garantie du logement social et de garantie hypothécaire.

S'agissant des besoins en énergie dans les zones urbaines: en vue de l'amélioration des besoins en énergie des zones urbaines, il a été convenu que:

- l'adoption d'appareils ménagers plus économes en énergie et de systèmes solaires à haut rendement énergétique pourrait réduire considérablement la demande d'énergie et les factures d'électricité des ménages;
- le gouvernement camerounais adopte une législation instituant une réduction des droits d'importation sur les équipements d'énergie renouvelable, ainsi que des subventions et des incitations en faveur des producteurs indépendants d'énergie;
- l'interconnexion de systèmes de production d'énergie indépendants avec le réseau soit encouragée afin que les producteurs d'énergie indépendants puissent vendre l'énergie excédentaire au réseau.

Pour ce qui est de l'alimentation en eau potable, de l'assainissement et de la gestion des déchets solides: étant donné que des problèmes liés à l'eau tels que l'accès à l'eau potable, l'assainissement et les inondations pourraient entraîner des maladies telles que la diarrhée, le paludisme et le choléra, les propositions suivantes ont été formulées:

• les zones de captage doivent être identifiées et protégées ;

• une meilleure gestion des bassins hydrographiques peut également améliorer la qualité et la quantité d'eau fournie à nos villes ;

• des efforts devraient être fournis pour diversifier les sources d'approvisionnement en eau des zones urbaines en utilisant des réservoirs d'eau situés dans des zones rurales, en prévoyant des forages avec une eau de meilleure qualité que les puits peu profonds et en recyclant les eaux usées par un processus d'osmose inverse en quatre étapes qui élimine tous les contaminants et les toxines ;

• la mauvaise gestion des déchets solides étant la principale cause des inondations dans les zones urbaines, sa gestion doit adopter des approches efficaces impliquant non seulement la construction d'infrastructures de drainage physiques appropriées, mais également une participation effective des parties prenantes.

Concernant les transports: dans les grandes villes comme Yaoundé et Douala, les systèmes de transport peuvent être perturbés à cause de la forte concentration d'activités économiques. Les participants à l'atelier sont convenus qu'il fallait minimiser les difficultés de transport urbain en augmentant la taille et le nombre des routes, en améliorant les transports en commun, en encourageant les modes de transport non motorisés et en créant des zones piétonnes. Le gouvernement et les autorités municipales devraient également adopter des politiques qui découragent l'utilisation de l'automobile et orientent les investissements vers les transports publics.

S'agissant de l'environnement urbain et de la santé: il a été relevé que les responsables de santé et les autres parties prenantes accordaient beaucoup plus d'attention à la lutte contre les maladies infectieuses en faisant peu de cas des maladies non transmissibles en dépit des preuves de plus en plus accablantes des effets néfastes de celles-ci.

Par conséquent, les participants sont convenus de la nécessité d'élaborer et de mettre en œuvre de manière urgente un plan stratégique pour prévenir et lutter contre les maladies non transmissibles (MNT) au Cameroun. Ledit plan devrait reposer sur une approche multisectorielle intégrée qui cible les facteurs de risque communs à la fois au niveau de la population et aux groupes à haut risque. Les principaux facteurs de risque modifiables (tels que le tabagisme, l'usage nocif d'alcool, les régimes malsains et l'inactivité physique) et les déterminants sociaux et environnementaux doivent être combattus par le biais d'informations fournies par les initiatives de promotion de la santé et les services de soins de santé primaires. Par ailleurs, toutes les parties prenantes (santé, éducation, secteur social, secteurs agricole et économique) doivent mener une action concertée pour améliorer les déterminants sociaux de la pauvreté, l'inégalité de chances dans l'accès à l'éducation, le chômage et les emplois peu rémunérés.

En attendant la formulation et la mise en œuvre d'un plan stratégique plus englobant, les participants ont appelé le gouvernement et les autres parties prenantes à prendre, sans délai, des mesures pour promouvoir une alimentation saine par l'entremise de campagnes publiques de sensibilisation et pour encourager l'activité physique grâce à l'accès gratuit dans des gymnases, la modification de la planification urbaine et des politiques de transport urbain en y incluant des infrastructures pour les sport collectifs, la marche et le cyclisme.

En ce qui concerne l'agriculture urbaine: afin d'améliorer l'agriculture urbaine, les participants sont convenus qu'il fallait attirer l'attention des autorités municipales et autres responsables sur la nécessité de:

- prendre en compte le zonage dans la formulation de plans pour le développement et la gestion des zones urbaines et suburbaines guidé par des politiques foncières comparatives et visant également à fournir des services tels que le logement, les transports, l'eau, l'électricité et l'agriculture urbaine qui font tous partie intégrante de systèmes urbains ;

- concevoir des politiques de développement agricole comprenant des programmes et des projets visant à fournir un soutien technique, financier et matériel aux agriculteurs en zone urbaine afin que leurs activités soient plus productives et respectueuses de l'environnement.
- incorporer l'agriculture urbaine dans les programmes de réduction de la pauvreté urbaine et d'atténuation de l'insécurité alimentaire.
- faciliter l'accès des agriculteurs en zones urbaines aux terres urbaines disponibles grâce à la révision des systèmes de gestion du régime foncier qui devrait également tenir compte des sexospécificités.

Pour ce qui est de l'impact socio-économique de l'urbanisation, les participants à l'atelier ont formulé les propositions suivantes pour remédier aux problèmes socio-économiques de l'urbanisation qui sont complexes et spécifiques au contexte:

- développement régional équilibré pour créer de nouveaux pôles de croissance afin de décongestionner les villes surpeuplées de Douala et Yaoundé ;
- développement rural qui limitera l'exode rural incontrôlé;
- discrimination positive: création de davantage d'emplois pour les jeunes sans emploi et d'opportunités pour les groupes défavorisés ;
- la politique de la formation doit aborder les problèmes émanant de l'urbanisation soit en tant que matière relevant d'une seule discipline, soit en tant que matière intégrée dans des disciplines ou des cours connexes.

INTRODUCTION

Cameroon's cities are growing very large and at a very rapid rate as a result of rural–urban migration and due to an influx of migrants (especially refugees) from other countries. The rate of urbanization has grown from 28% in 1976 to 52% in 2010 (INS, 2010). With a population growth rate of 2.4%, the projections of the 2005 General Population and Housing Census (BUCREP, 2005) indicate that out of the 22 million inhabitants, about 12 million (55%) were living in urban areas in 2015. It is estimated that by 2035, about 65 to 70% of our population will be living in urban areas.

The industrial and commercial activities and a large proliferating informal sector, make the cities attractive destinations for many people. Their real or perceived employment opportunities and superior quality of life continue to lure rural migrants. These cities support very large informal sectors of small-scale enterprises, particularly in the commercial and trade sectors, which attract migrants (Gilbert and Gugler, 1992). This rapid urbanization has brought with it new challenges for city managers in the areas of housing, health care, clean drinking water, sanitation, public transport, energy and food supply.

Urbanization has also led to overcrowding wherein too many people live in too little space. Housing is inadequate for the urban dwellers. Social ills such as poverty, unemployment and under employment among the rural immigrants, beggary, thefts and insecurity have increased. Urban sprawl is rapidly encroaching on precious agricultural land.

Urbanization has resulted in a concentration of economic activities in the cities and the labour force has been transferred from the agricultural sector in the rural areas to the industrial and service sectors in urban areas. In terms of energy, production has shifted from low-energy intensity agricultural production to the production of high-energy intensity specialized commodities (Madlener, 2011; Madlener and Sunak, 2011).

Rapid urban growth has come with the need for more infrastructure and public transport systems. Unfortunately, these are inadequate everywhere, resulting in increasing use of individual vehicles and the negative consequences.

Urbanization has an impact on people's living conditions and health status. It has both positive and negative effects on health. There is relatively easy access to healthcare and sanitation in some cases but there are problems of overcrowding, pollution, social deprivation and stress-related illness. In Africa in general and Cameroon in particular, urbanization has brought diseases of western life styles such as hypertension, heart disease, obesity and diabetes (Godfrey and Julien, 2005; CAS, 2012). All of this can be attributed to the differences in lifestyle as changes in food habits, physical activity and work patterns can increase the risk of chronic diseases and some infectious diseases (McMichael, 2000; CAS, 2012).

Although urban and peri-urban agriculture has often been regarded as a survival strategy of poor city dwellers, it is now commonly accepted that it contributes to the economy through job creation, the supply of food products to the low-income populations and curbs social exclusion through the integration of under-privileged categories into the labour market. It can significantly improve the nutrition of disadvantaged urban residents. It also enables the recycling of solid wastes and wastewater (FAO, 2012). Unfortunately, this agriculture faces many constraints, such as land insecurity, access to water resources, the lack of organization among producers with regard to advocacy and lobbying for the effective consideration of urban agriculture and the non-integration of urban agriculture in most urban development policies. In addition to these constraints, urban and peri-urban agriculture is still facing many issues that raise many concerns. These include its integration into environmental management and city governance and the risks and benefits of crop-livestock systems (Cissé et al., 2005).

Most of Cameroon's rapidly growing cities are unable to deal effectively with the problems highlighted above. The municipal authorities do not have enough resources due to inefficient revenue collection practices and limitations imposed by the highly centralized government structure on revenue raising (Rondinelli, 1988). There is also a lack of effective policies to manage urbanization.

We are now faced with the need to develop new institutions and methods to deal with the problems of urbanization in Cameroon. New partnerships need to be forged between several stakeholders to make the cities work.

Given the above, the Cameroon Academy of Sciences (CAS) decided to organise a workshop on the problems of urbanization in Cameroon from 8 – 9 May 2017 in Yaoundé, Cameroon at the Conference Hall of the Ministry of Scientific Research and Innovation. The workshop provided the opportunity for more than 70 scientists, municipal administrators and policy and decision makers to discuss the actions that are necessary for solving the problems of urbanization in Cameroon.

The objectives of the workshop were to:

- discuss evidence-based policies and plan health- and environmental-friendly strategies appropriate for facing the challenges of urban growth and development;
- propose efficient use of urban land through a better-balanced distribution of population and systems of settlements which would go a long way towards protecting the environment;
- propose strategies for (i) integrating agriculture into the socio-economic and environmental planning of cities and (ii) for developing land and water policies that consider agricultural production in urban and peri-urban areas;
- recommend flexible and reliable alternatives to traditional energy sources.

The output of the workshop is the present report, which has evidenced-based recommendations and key messages for policy makers, planners, researchers and Government Delegates and Mayors.

OPENING CEREMONY

The aim of this session was to bring the workshop participants to the same level of understanding of the general problems of urbanization in Cameroon and its implications for the quality of life of city dwellers through key note addresses and the opening speech of the Minister of Scientific Research and Innovation.

The session was co-chaired by the Minister for Scientific Research and Innovation (Dr Madeleine Tchuinte) and that of Housing and Urban Development who was represented by the Secretary General of the Ministry (Dr Ahmadou Sardaouna).

Welcome Remarks by Prof. Samuel Domngang, *President, Cameroon Academy of Sciences*

The opening ceremony started with welcome remarks by the President of CAS, Prof. Samuel Domngang. He welcomed the participants and thanked the Ministers for Scientific Research and Innovation and Housing and Urban Development for accepting to co-chair the opening ceremony. He paid glowing tributes to the Minister of Scientific Research and Innovation, H.E. Dr Madeleine Tchuinte whose financial assistance made it possible for the Academy to organise the workshop.

The CAS President reminded participants that rapid urbanisation is a phenomenon that affects the developing world very seriously and it is causing problems that municipal authorities are unable to solve. These problems include lack of appropriate housing, insecurity, inadequate educational infrastructure, poor health infrastructure, traffic congestion, provision of portable water, power cuts, and destruction of the environment. He said that the objective of the workshop was to give scientists and experts the opportunity to discuss these problems with various stakeholders and then propose strategies for solutions to these problems.

Urbanization : Past, present and perspectives in Cameroun by Laura Sime, Marceline. B. Manjia and Chrispin Pettang

The authors of this paper reminded participants that urbanization is a rapid and massive process that has intensified worldwide over time. Even though it had been mastered in all its aspects in developed countries, the fact remains that it has been a long process through the different phases of history such as medieval, revival, industrial revolution and modernity. In developing countries like Cameroon, urbanization is still a problem, which has not yet been mastered in all its dimensions. After almost 60 years of independence, the urban population has increased by 1599% between 1960 and 2015 (WHO and UN, 2015). The number of cities has also increased.

This situation has been accentuated by the complexity of the formation of our cities, which were essentially constituted of a structured central nucleus, enveloped by a relatively large space and consisting essentially of spontaneous habitats, whose ultimate viability is indispensable. This atypical urbanization thus entailed mostly negative consequences in terms of economic, energy, social, health and environmental aspects. The result is the urgent need to find adequate strategies to contain the scale of the phenomenon and to find clear and useful ways that can transform our cities into places of well-being.

Faced with the phenomenon of increasing and uncontrolled urbanization, Cameroon needs to elaborate an adapted and integrated model of urbanization that is in conformity with the Quito October 2016 Sustainable Development Objective. This should be based on innovative integrated urban planning which seeks to reduce urban inequalities and environmental impacts and substantially improve urban environments. This also includes new ways of providing urban services such as water, electricity, transport, housing, internet, telephone and waste management, which should be accessible, affordable and resistant to climate change and natural catastrophes. It is also necessary in this approach to integrate the informal sector in all its appropriate, varied and beneficial forms.

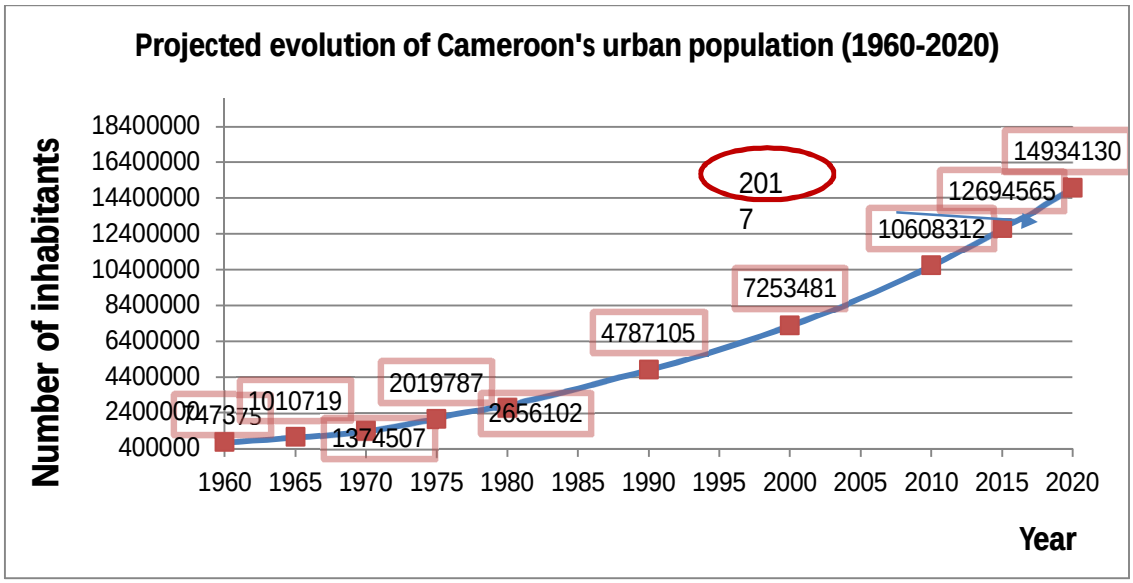


Figure 1. Projected evolution Cameroon's urban population from 1960 to 2020

Figure 2. Discharge zone for household waste (Nkolbikok, Yaoundé)

The urbanization policy in Cameroon : Performance and challenges by A. Sardaouna

Dr Ahmadou Sardaouna described the urbanisation policy in Cameroon and its performance and challenges. The aim of the policy was to make town planning a real driving force behind the socio-economic transformation of the country. This policy recognized the multiple challenges of cities and the role they could play in the development of the country. Unfortunately, the declination of this policy in the Strategic Document for Growth and Employment is not clear. It reduced Cities and Land Development to the mere creation of infrastructures, while a cross-sectoral economic-social-environmental approach could have been necessary.

Innovative solutions to the housing problems of Cameroonian cities by T. Yimgaing Moyo

Prof. Moyo started his paper by describing the context of the housing crisis in Cameroon. Cameroon was experiencing an exponential increase in urbanization, which according to the INS stood at 52% in 2010 and is expected to be 65 - 70% in 20 years. The country had nine cities with populations of over 100,000 inhabitants, 23 with populations of at least 50,000 inhabitants and 78 with populations of at least 10,000. Douala and Yaoundé had nearly 45% of the country's urban population. The increased urbanization was largely a result of rural exodus. Due to the congestion in the cities, a greater part of Cameroon's urban population lived in poor conditions characterized by:

- insufficient roads;
- inadequate supply of potable water and electricity, sanitary equipment and school infrastructure; and
- chronic housing shortage.

It has been estimated that about 80% of Cameroon's urban population now lives in slums. This situation could be attributed to a liberal economic system that replaced colonial system and created a situation where a privileged minority managed land and wealth to the detriment of the majority.

It has been estimated that the housing crisis in Cameroon is characterized by a deficit, which has been annually evaluated at about 1,500,000 (Data from the Strategic Development Document for the Urban Sub Sector).

Attempted solutions to the housing crisis

The housing crisis in Cameroon has been chronic and clearly cannot be eliminated. Given this, public authorities have over the decades, especially since the 1970s, attempted within the legal, institutional and operational framework to reduce the burden for the urban population through the following:

Société Immobilière du Cameroun (SIC): The government created this structure in 1952 and it had as mission the building of social housing. Unfortunately, its performance has been pathetic. In 64 years, it built less 25,000 houses despite the support received from various partners. The 10,000 programmed in 2010 have not been completed. Surprisingly, the poor could not afford the social houses built by SIC as some of these were being sold at 35,000,000 F CFA. At the rate of 50,000 F CFA per month, it would take a civil earning 200,000 F CFA per month 58 years to pay for the house.

La Mission d'Aménagement d'Equipement des Terrains Urbains et Ruraux (MAETUR): Created in 1977, its mission was to develop land in order to promote housing development. It provided facilities such as water, electricity, roads, drainage, etc. In general, it did a good job.

Le Crédit foncier du Cameroun (CFC): This structure was created in 1977 as a housing bank to facilitate real estate development for low-income earners. Its impact has not been satisfactory because its loan conditions were inappropriate for the levels of salaries most Cameroonians earned.

The housing crisis in the cities (SDG 11)

There is need for innovative approaches to the increasing housing problem in the cities. The author suggested the following strategies:

- The diversification of the types of social products (e.g. rental housing, hire-purchase, semi-finished housing, provision of developed plots, support for self-construction like the provision of standard plans, central purchasing of materials at reduced costs, training in the manufacture of local materials, the realization of road, water and electricity works) according to the types of occupation;
- The granting of appropriate incentives to social housing programmes through exemptions or special reductions for value added tax (VAT) on locally produced building materials;
- The implementation of a policy of industrialization of the production of building materials;
- Strategic reflections and implementation of land tenure reforms and creation of special social housing and mortgage guarantee funds.

Government strategies for solving the problems of urban housing in Cameroon by Asongwed Emmanuel Anyang

Engr. Asongwed started his paper by reminding participants that ensuring access to decent housing units for all was one of the main challenges facing the international community in general and Cameroon in particular. About 2 billion people worldwide needed proper housing. By 2030, this will increase to 3 billion which will be about 40% of world population and there will be need to construct 96,000 housing units/day. United Nations Resolution 40/202 of 17/12/1987 designated World Habitat Day to enable humanity to reflect on the state of our towns and cities and the right of all to adequate shelter.

The problem was acute in Cameroon as several households lacked decent housing units and lived in precarious conditions. It would get worse as the urbanization rate of 52% would likely reach 60% by 2020.

An analysis of Government's low-cost housing policy

The author analysed the government's low cost housing policy in four periods as follows:

Pre-1976: The Government showed interest in the housing sector with the creation of SIC in 1952, the enactment of land legislation (1974 ordinance) and the financing of housing with foreign assistance. During this period, SIC constructed 3,200 housing units.

Between 1976 and 1986 : The State strongly restructured SIC in 1978 and created MAETUR and CFC in 1977 and the Ministry of Urbanism and Housing (MINUH) in 1979. MINUH was the supervisory authority of the three structures. The State funded housing through direct interventions, CFC, the National Social Insurance Fund (CNPS), the Post Office Savings Bank (CEP), special drawing rights at the Bank of Central African States (BEAC), and multilateral lenders like the World Bank and the Development Bank of Central African States (BDEAC).

The results showed that for this period, 8,200 housing units were built by SIC, 30,000 plots were developed by MAETUR and 100 billion F CFA was mobilised by CFC.

Between 1986 and 2009 : This period witnessed the near total disengagement of the State from the housing sector because of the economic recession. Only two public housing projects were realised with a hundred housing units. This includes the cité SIC Mfandéna funded by Shelter Afrique and the uncompleted cité d'Olembé funded by CFC. Government inaction led to the haphazard spontaneous urban sprawl in the cities.

From 2009 : Conscious of the challenges to be dealt with, the government in 2009 launched a programme to construct 10,000 low-cost houses and service 50,000 plots at Olembe in Yaoundé and set the target of 17,000 low-cost houses to be constructed by 2020 in order to step up the supply of decent housing units for the population. There were similar plans in Douala. The Chinese group Shengany also engaged to 1500 housing units in Yaoundé, Douala, Bamenda, Bafoussam, Limbe, and Kribi.

Opening speech by the Minister of Scientific Research and Innovation, Dr Madeleine Tchuinte

In her opening speech, the Minister of Scientific Research and Innovation, Dr Madeleine Tchuinte warmly welcomed all participants to her Ministry. She addressed a special and friendly welcome to the Minister of Housing and Urban Development who was represented by the Secretary General, Dr Ahmadou Sardaouna. She thanked the President of CAS for the warm and enthusiastic welcome and for taking the initiative to organise this workshop.

The Minister used the occasion to highlight the fact that the vision of the Cameroon Academy of Sciences (CAS) was to be the prime mover of science, technology and innovation in Cameroon through evidence-based research to assist policy and decision makers to put science, technology and innovation at the service of the country's socio-economic development. Its commitment to advance science for the well-being of all humanity was the driver for its partnerships with international science organizations and government ministries. She added that consensus studies, policy briefs, conferences and workshops were the main mechanisms by which the academy advised government and non-governmental organizations and issued recommendations. Its independence and convening power influenced the strength of the recommendations produced. Given all of this, the organisation of this workshop on "the problems of urbanization in Cameroon: strategies for solutions" was within the mandate of the academy.

Coming back to the subject of the workshop, the Minister said that Cameroon's cities were growing very large and at a very rapid rate as result of rural–urban migration and also due to an influx of migrants (especially refugees) from other countries. The industrial and commercial activities and a large proliferating informal sector made the cities attractive destinations for many people. Their real or perceived employment opportunities and superior quality of life continued to lure rural migrants. This rapid urbanization had also brought with it new challenges for municipal authorities in the areas of housing, health care, clean drinking water, sanitation, public transport, energy and food supply.

Given these challenges, the Minister said that there was the need for all stakeholders to brainstorm on strategies to deal with the problems of urbanization in Cameroon. The workshop therefore provided the opportunity for scientists and policy makers to discuss the actions that are necessary for solving the problems of urbanization in Cameroon.

She ended by expressing the hope that the discussions emanating from this two-day workshop would be robust and forthright, and would help to take the country forward in its quest for greater social cohesion and nation building.

URBANIZATION AND WATER AND ENERGY

Satisfying the energy needs of urban areas in Cameroon by Nfah E.M. and Ngundam J.M.

Energy insecurity in urban areas of Cameroon like in many developing countries is a serious problem that is provoked by rapid growth in urban populations because of rural exodus, industrialisation and the insecurity and reliability of supply. Rapid growth in population provokes rapid increases in residential, commercial and invariably industrial energy demand. Consequently, this leads to increased national energy demand that is often not matched by a corresponding growth in total generating capacity because of the absence of or poor planning. The implication is load shedding in the current centralized generation and distribution of electrical energy.

In order to ensure energy security in general, the planning approach requires a combination of various generation options such as hydro, thermal (coal-fired, nuclear-fired and gas-fired) and in recent times with the advancement of technology, generation from renewable energy sources to ensure reliability of supply. Advances in the science of renewable energy technologies has shown that in urban areas there is need to introduce energy efficient methods to improve the security and reliability of supply. Such advances would include the adoption of energy efficient devices and solar home systems given the good solar radiation levels for a country like Cameroon. As far as Cameroon in particular is concerned, reliance on hydro sources for generation of electricity is inadequate because of the down side of hydro that is the inadequacy of water to generate all the electricity required in the dry season and lack of generation planning.

Given the above, the authors provided an example of how to increase supply reliability in urban areas with energy generated by a solar home system using energy efficient devices and/or equipment and a 100Wp photovoltaic panel. The performance data of the solar home system showed reductions in the electricity bill.

The key messages and recommendations from the presentation were that:

- adoption of energy efficient appliances and solar home systems could significantly reduce household energy demand and electricity bills.
- the government of Cameroon should enact legislation to institute reduced import tariffs on renewable energy equipment as well as subsidies and incentives to independent energy producers
- city and municipal councils should not only improve planning but also establish energy information offices to give locally appropriate advice to homeowners, businesses, city and municipal departments.
- interconnection of independent energy generation systems with the grid should be encouraged so that independent energy producers can sell excess energy to the grid.

Effect of poor solid waste management on the design capacity of urban drains : case study of Yaoundé in Cameroon by Fonteh M.F. and Ndongo B.

Floods occur naturally and cause disastrous effects such as loss of life and property, mass migration of people and animals and environmental degradation. Heavy rainfalls and anthropogenic factors like poor land use planning and poor solid waste management generally cause them.

Many studies have shown that poor solid waste management (SWM) is the main cause of floods in urban areas as solid waste can obstruct natural and man-made drains, reduce drain capacity and enhance flooding. The effective management of solid waste is a challenge because it involves many stakeholders but is unfortunately usually left to municipalities. It is a multi-dimensional issue that requires technological solutions and has environmental, socio-cultural, legal, institutional and economics linkages.

To manage or reduce floods, effective approaches must involve not only the construction of physical drainage infrastructures but also include effective stakeholder participation in SWM and appropriate SWM technologies that are sustainable and adapted to the environmental, socio-cultural, legal, institutional and economic context.

In view of the above, the authors designed a study to develop a methodology for allowing for poor SWM in the design of drains in Yaoundé. Specifically, they:

- characterized and quantified the solid waste generated in the city;
- determined the proportion of uncollected solid waste likely to affect the flow in drains;
- developed a runoff-solid waste and runoff-sediment model;
- determined the percentage modification in the design flow rate to account for poor SWM.

The study area was the Abiergué catchment in Yaoundé, which had a surface area of 13.5 km^2 and population of 202,000 in 2005.

The results showed that:

- about 90 % of generated waste is from households (77 % is biodegradable while 23% is non-biodegradable).
- the per capita production of wastes is 0.52 kg/person/day in planned settlements and 0.36 kg/person/day in unplanned settlements with an average of 0.41kg/person/day.
- nearly 60 % of solid wastes produced in the basin is collected by HYSACAM with about 40 % uncollected and likely to reduce the capacity of drains.
- the volume of solid wastes in drainage channels can be determined from the rainfall or runoff using a cumulative linear function while for sediments, it is a cumulative quadratic function.
- because of the uncollected wastes, the design flow rate of drains should be increased by 10 % to account for poor solid waste management.

Figure 3. Effect of floods in Yaoundé and Douala

Impact of urbanization on water quality : case study, Yaoundé city
by Ako A. A.

Yaoundé is currently experiencing very rapid urbanization. In thirty years, the population has grown by over 540%, moving from 318,700 inhabitants in 1976 to over 2,040,768 inhabitants in 2009, while built up area grew by 140% from 1989 to 2015. This high rate of urbanization has not been matched with improvement in service delivery, resulting in inadequate access to safe drinking water and sanitation.

Water supply, quality and health risks in Yaoundé (SDG 3)

With a population of over 2 million, drinking water demand in Yaoundé is estimated at about 315,000 m^3/day. The maximum production capacity of the treatment station at Akomnyada is approximately 100,000 m^3/day, giving a deficit of 215,000 m^3/day.

The deficit in the water supply in Yaoundé is met by water drawn from springs, public taps, boreholes and hand-dug wells, which are not safe as they have total bacterial counts that are far higher than the WHO guideline values. This is because most of the water points in the city are vulnerable to microbial pollution especially faecal contamination. The situation is similar in other Cameroonian cities.

Pollution of water resources by nitrate from urbanization in Maroua, Garoua and Douala in Cameroon by Fantong W. Y., Fouepe A. T., Kringel R., Tchakam B. K., Haman D.J.B., Nendah P., Njokam L. and Ayonghe S.N.

Increasing urbanization, especially in developing sub-Saharan African cities is usually accompanied by poor environmental management that leads to pollution of water resources. As the overall demand for water grows, the quantity of wastewater produced and its overall pollution load increases as more liquid and solid wastes are released to the environment without treatment.

Some studies (Eneke et al., 2010; Adelana et al., 2011; Fantong et al., 2013; Kamtchueng et al., 2015) have shown that the incidence of nitrate in water can be used to evaluate the impact of anthropogenic activities on the quality of water resources. When the concentration of nitrate is higher than the WHO guideline of 50 mg/l in drinking water, it causes a health problem called “blue eye baby” (WHO 1989).

Given the above, the authors studied the chemistry of water resources in Maroua, Garoua and Douala with the objective of evaluating the impact of urbanization on the water resources by using nitrate concentrations as an anthropogenic indicator.

In general, the results showed that with increasing urbanization and anthropogenic activities, water resources in the three cities have changed from a dominantly bicarbonate type to a dominantly nitrate type. Thus rendering the quality of the water sources poor for drinking.

In Maroua, variations in nitrate concentration in the observed water sources suggested that during the dry season water in rivers, springs, dams, boreholes and shallow wells contained nitrate below the WHO upper limit of 50 mg/l (WHO 1989), while in the rainy season some shallow wells were polluted by nitrate. Such a seasonal variation of nitrate content in the different water sources could be explained by the flushing of municipal waste by rainwater into shallow groundwater at the beginning of the rainy season. Then as the rainwater during the rainy season continues flushing, the municipal waste gets rid of the nitrate precursors, such that at the beginning of the dry season most of the water resources must have been subjected to either denitrification or dilution-processes. By comparing the nitrate concentrations observed in 1993 and that of this study in 2013 (20 years after), we observed that there was a remarkable increase in nitrate concentrations in almost all the localities. Thus, urbanization that is manifested by the presence of unmanaged municipal waste is changing the water chemistry from a bicarbonate type three decades ago to a nitrate dominant type. The correlation between nitrate and chloride also suggested an anthropic contribution of both ions.

In Garoua and its environs, the concentrations of nitrate in observed water sources showed that about 70 % of the 90 sites observed had values greater than 50 mg/l (50-823 mg/l). The prevalence of high concentrations was linked to oxidation of nitrogen in NPK fertilizers and NH4 in municipal waste sites.

For the city of Douala and its environs, the results showed that:

- water in boreholes (i.e. water from Paleocene sand of the Nkappa formation) was free of pollution by nitrate;
- the shallow wells (water from the Pleistocene alluvium of the Wouri formation) were subjected to pollution by chloride that was a result of the common practice of using chloride-rich detergent to disinfect the water;
- the water in shallow wells and from springs were polluted as indicated by the high concentration and dominance of nitrate that could be from the oxidation of NH_4^+ in municipal waste.

The variation in chemical parameters that polluted the water bodies suggested that point sources might be the dominant origin of pollution of water in Douala. More than 50% of the shallow wells that are cheaper to construct and commonly used by the inhabitants of Douala are not good sources of water for drinking. On the other hand, the boreholes that are costly to construct are good sources of water for drinking. The poor quality of water in the shallow wells was due to inputs from the poor disposal and management of industrial and/or municipal effluent in the city.

Based on the premise that point source pollution may be accountable for pollution of water resources in Douala and its environs, further investigations with the use of ^{15}N and ^{18}O isotope ratios that can further identify the specific (point) sources of an anthropogenic pollution of water bodies was advocated in the city of Douala. Secondly, catchment areas should be identified and protected.

Figure 4. Poor management of industrial effluents in Douala pollutes shallow groundwater and surface water resources

URBANIZATION AND TRANSPORTATION

Urbanization, traffic congestion and sustainable development in Cameroon by Njimanted G. and Mobit M.O.

Urban productivity is highly dependent on the efficiency of its transport system to move labour, consumers and freight between multiple origins and destinations. The most notable challenges related to the transport system in urban areas are congestion and parking difficulties, longer commuting, public transport inadequacy, loss of public space, difficulties for non-motorised transport, environmental impact and energy consumption (Rodrique, 2017). Since urban centres are the engines for economic growth and sustainable development, traffic congestion is a major concern. The rate of urban sprawl is necessitating the need for faster means of transport for households and industries in the urban and rural areas.

In their paper presented at the workshop, Njimanted and Mobit described traffic congestion in the urban areas of Cameroon and made suggestions for improvements. They attributed the congestion to poor driving habits (non-respect for traffic flow systems such as traffic lighting, non-respect of traffic flow speeds at particular segments of the road network, non-respect of passenger pick-up and alighting or stops) and the nature of the road infrastructure (such as the size and state of the roads) among others.

The emergence of commercial motorbikes, which extended their services from serving users in the peri-urban areas to the city centres, has also contributed to the traffic congestion in Cameroon's urban areas.

Traffic congestion has varied definitions that include delay in travel time or delay in excess of that normally incurred under light or free flow travel conditions. It can also be defined as the impedance that vehicles impose on each other due to the speed-flow relationship in conditions where the demand for road space exceeds supply. Congestion can be recurrent and non-recurrent (Schrank et al., 1993). Recurrent congestion is generally the consequence of factors that act regularly or periodically on the transportation system, such as daily commuting or weekend trips. However, even recurrent congestion can display a large degree of randomness, especially in its duration and severity. Non-recurrent congestion is the effect of unexpected or unplanned events (e.g. road works, accidents, special events) that affect parts of the transportation system randomly and as such, cannot be easily predicted. The share of non-recurrent congestion varies according to the road network and is linked to the presence and effectiveness of incident response strategies, roadwork scheduling and prevailing atmospheric conditions (snow, rain, fog).

For appropriate congestion management policies, government agencies and ministries charged with transportation must seek to understand the nature of travel demand in congested conditions. Although commuting trips may be a key factor of congestion, other types of causes such as peak-hour trips (including school runs, leisure travel and freight travel) should not be taken for granted if appropriate policies have to be recommended to reduce traffic congestion in the urban centres and metropolis in Cameroon.

Using a model specification for urbanisation, traffic congestion and sustainable development based theoretically on the aggregate demand function, the authors showed in their paper that a 10% increase in urban agglomeration would result in a 1.5% increase in the Physical Quality of Life Index in the urban areas of Cameroon (Njimanted and Mobit, 2013). The implication is that urban agglomeration is not a problem and traffic congestion is not an outcome of urbanisation but the consequences of poor planning and weak law enforcement among others. This core finding suggests that government through the Urban Councils, Traffic Police and Transport and Town Planning authorities need to work together to establish sustainable traffic flow systems, housing and access to key public services.

Strategies to reduce the traffic congestion in urban areas

In the last part of their paper, the authors suggested the following strategies for reducing the traffic congestion in Cameroon's urban areas:

- **Decongesting the roads in urban areas through:**
  - the licensing of commercial road users;
  - intra-municipality public transport buses;
  - strict limitation of commercial motorbikes to complement intra-municipality transport buses.
- **Road drive lane planning and user categorisation:**
  - fast lane inter-urban and municipality travels;
  - fast lane for personal commuters;
  - co-driving or share-taxis;
  - tri-cycle, motorbike and bicycle lanes.
- **Highway traffic flow planning and monitoring:**
  - functional and efficient traffic lighting system controlled from highway performance management centres;
  - high intra-urban connectivity will improve on smart driving.
- **Traffic law enforcement with the use of microwave radar technology:**
  - beating of the traffic light ticketing;
  - billing for defilement of traffic lane;
  - withdrawal of drivers' licensing.
- **Space maximisation strategy:**
  - All shopping malls, supermarkets, markets, office centres, airports, stadia, hospitals, and churches are potential risks factors for traffic jams. Such risks can be reduced by constructing parking lots at basements or separately but adjacent the areas.
- **Capital investment projects on road infrastructures:**
  - investment in road infrastructure in the major urban centres should be put in place.

There is a positive relationship between infrastructure investment and economic growth. Increased government expenditure on urban road infrastructure is very crucial in improving the productivity within the urban. China invested 12.6% of her GDP on urban road infrastructure in the early 2000s and it resulted in over 30% growth in urbanisation by 2011. This caused urban household incomes to be three times greater than those of the rural zones. UITP (2000) reported that 70 to 80% of the GDP in most economies is generated in urban areas with approximately 1% GDP growth corresponding to a 1.5% increase in demand for mobility that attracts more investments and encourages influx of productive labour force for the firms. In Sub Saharan Africa, the productivity of transport capital stock is superior when compared to overall capital. As such, most African countries are adopting the development of a good and effective transport system for poverty alleviation.

URBANISATION AND HEALTH (SDG 3; STISA 2)

One of the main features of urbanization especially in Africa and Asia is the very rapid increase in population movement from rural to urban centres. This has resulted in changing population structure, composition and lifestyles in the cities and its fringes. The population pressure on urban infrastructure has brought several social and socio-economic problems (Talib and Agus, 1992).

La ville au Cameroun et en Afrique noire : discours pour un autre destin by Assako Assako R.J.

The urban environment and health

It is a well-known fact that urban populations change their environment through their consumption of food, energy, water and land. The polluted environment also affects their health and quality of life. As described by Prof. Assako Assako in his paper presented at the workshop, health problems in our cities are directly linked to the urban environment for the following reasons:

- The management of watercourses is undoubtedly one of the biggest problems facing urban planning in Africa. In some large cities, the clogging of underground canals by garbage causes flooding. In anarchic neighbourhoods, the watercourses are the natural outlets for domestic sewage and even industrial wastes. They also supply the population water for domestic needs, laundry and bathing.
- The supply of drinking water is one of the aspects of the tropical African urban paradox. Water is abundant everywhere but drinking water is a rare commodity and people are forced to collect it from broken pipes in swamps, wells and dirty streams.
- Enforcing food security measures in African cities is a serious problem. Animals are slaughtered at the edge of rivers where the meat is washed at the same time as motorcycles and clothes and then transported in taxis. Most food products are marketed on the ground. The markets are also big garbage producers and the sellers are comfortable with the neighbourhood, despite the payment of market fees to the municipalities.

Yaoundé, Sofavinc district, where plastic bottles obstruct the underground canal of River Mfoundi and create floods, October 2016; Picture by Assako Assako R.J.

Yaoundé, avril 2012. Photo R.J. Assako Assako.

Watercourses blocked by domestic and industrial wastes, leading to floods; Pictures by Assako Assako

Yaoundé, Soa, Ambam, 2012. Photos R.J. Assako Assako

Drinking water is a rare commodity in cities and it is collected from broken pipes in swamps(A), wells (B1, B2). There can be long lines for drinking water at improved water points.

Food safety problems : Animals are slaughtered at the edge of rivers where the meat is washed at the same time as motorcycles and clothes and then transported in taxis. Pictures by Assako Assako R.J.

Ebolowa, Soa, Libreville, 2012. Photos R.J. Assoko Assoko.

Most food products are marketed on the ground (A) with the exception of meat (B) and fish (C). The markets are also big garbage producers (D).

Urbanization and non-communicable diseases and their risk factors in Cameroon. by Mbanya J.C.

Prof Mbanya in his paper described how the unsafe housing, transportation, physical environments, poor sanitation and the vast inequities in opportunities that are compounded by poverty, ethnicity, gender and age in urban areas have led to rising prevalence of NCDs (non-communicable diseases) and emerging infectious diseases in the urban milieu. Communicable diseases among the urban poor coexist with non-communicable diseases among the comparatively affluent. Like most countries in sub-Sahara Africa (SSA), Cameroon is undergoing an epidemiological transition with the emergence of chronic NCDs like cardiovascular diseases (CVD), chronic respiratory diseases, cancers and diabetes (Mbanya and Sobngwi, 1997; Kegne et al., 2005). Most deaths in hospitals have been attributed to cardiovascular and metabolic diseases. Complications of hypertension were ranked the fourth cause of mortality (Ngufor et al., 1998). In all, NCDs were responsible for 35% of all deaths among the age group of 50 years and above in hospital settings.

Metabolic and behavioural risk factors are the most common causes of non-communicable diseases. These include changes in lifestyles and behaviour, smoking, blood pressure, unhealthy food diet, inactivity, overweight and obesity, stress, hypercholesterolemia, diabetes and alcohol (Boutayeb, 2006). There is a rural to urban disparity in the burden of NCDs and their risk factors in Cameroon, as urbanization seems to be a contributor to the increase in NCD risk factors in Cameroon.

Mbanya et al. (1997) studied the prevalence of diabetes and impaired glucose tolerance in a rural and an urban community in Cameroon using the 75g oral glucose tolerance test and the World Health Organization diagnostic criteria in subjects aged 24-74 years. The age-standardized prevalence of diabetes in the rural and urban population was respectively 0.9% and 0.8% for men and 0.5% and 1.6% for women, and that of impaired glucose tolerance was 5.8% and 1.8% for men, and for women, 2.2% and 2.0%. There was a female excess of diabetes in the urban area and an equal sex distribution in the rural area. For both men and women, the body mass index (BMI) was higher at all ages in the urban than in the rural area. A 1994 survey showed that obesity (BMI>30kg m^{-2}) was more common in urban (16% of men and women) than in rural areas (6% of women and 8% of men).

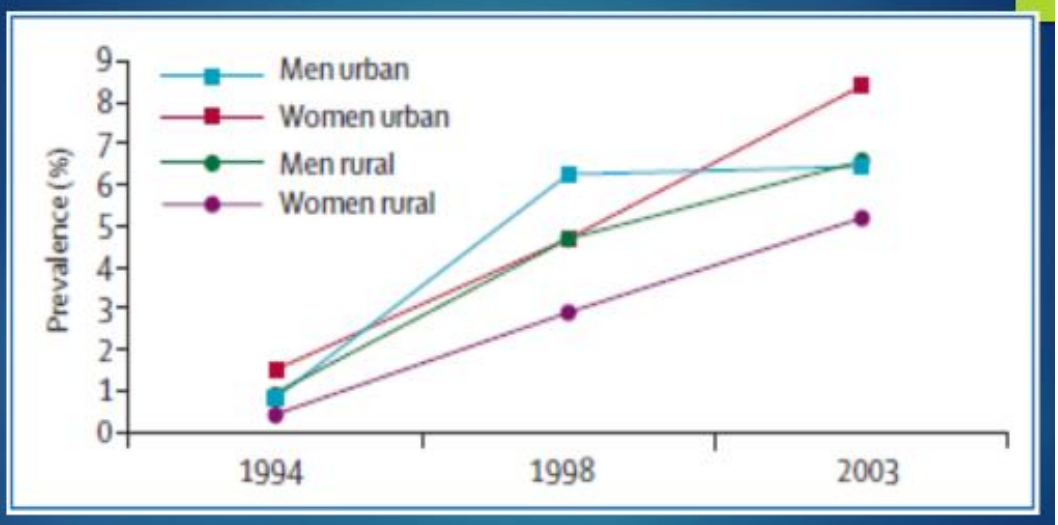
Using a population-based survey of Cameroonian subjects aged 25-74 years, Mbanya et al. (1998) studied the prevalence of hypertension, according to the World Health Organization definition (systolic blood pressure [SBP] > or = 160, diastolic [DBP] > or = 95 mmHg), and reported that the age-standardized prevalence of hypertension was significantly higher in the urban than in the rural area. It was 16.4% in urban men and 12.1% in urban women, while it was 5.4% in rural men and 5.9% in women. These results indicated that hypertension was still uncommon in rural Cameroon but occurred frequently in the urban community, reaching a proportion comparable with industrialized urban communities.

In a rural population, Sobngwi et al. (2002) found very little gain in weight with age and very low prevalence of overweight and obesity. However, other studies from urban populations in Cameroon have shown that overweight and obesity are increasingly common. For example, the estimated prevalence of obesity, based on BMI, was 17.1% in women and 5.4% in men in urban Cameroon in 2002 (Pasquet et al., 2003). Also based on BMI, Kamadjeu et al. (2006) reported that more than 25% of urban men and almost half of urban women were either overweight or obese with 6.5% of men and 19.5% of women being obese. The prevalence of obesity showed considerable variation with age in both genders.

Sobngwi et al. (2002) showed that urban subjects were characterized by lower physical activity, light occupation, high prevalence of multiple occupations, and reduced walking and cycling time compared to rural subjects. There were significant associations between both physical inactivity and obesity and high blood pressure. They concluded that the prevalence of obesity, diabetes and hypertension was higher in urban compared to rural dwellers in the populations studied and was associated with physical activity. Assah et al. (2011) also examined associations between free-living physical activity energy expenditure (PAEE) and metabolic syndrome in adults in rural and urban Cameroon and found that urban compared with rural residence was associated with lower PAEE and higher prevalence of metabolic syndrome. They suggested that modest population-wide changes in PAEE might have significant benefits in terms of reducing the emerging burden of metabolic diseases in sub-Saharan Africa.

An evaluation of the habitual diet in rural and urban Cameroon showed that the intake of energy, fat and alcohol was higher in rural men and women than in urban subjects. However, the high physical activity in the rural area could explain the lower levels of cardiovascular risk factors in this area compared to those of the urban dwellers (Mennen et al., 2000).

Urbanisation – NCD risk factors - Cameroon



Prevalence of type 2 diabetes in Cameroon, 1994–2003 ANPPA report 2017

URBANIZATION AND AGRICULTURE (SDG 2; STISA 1)

Problems associated with urban crop and livestock farming in Cameroon : strategies for solutions by Dongmo T.

Urbanisation and agriculture are mutually conflicting especially when it comes to land use. Rapid urban growth involving heavy migrations from rural to urban areas has changed land use patterns. It has led to increased competition between urban land uses (for residential, industry and commercial) and agriculture land on the urban and peri-urban perimeter. Increased food supplies are required in the cities. This leads to greater traffic congestion and pollution. City dwellers have higher incomes and changing food consumption habits involving increased demand for convenience and processed foods. This also has challenges for food quality and public health concerns (FAO, 2010).

Because of the high levels of poverty in urban areas, food security is a serious problem for the urban poor (De Bon *et al.*, 2010). Their food consumption remains insufficient in quality and quantity (FAO, 2001). Thus, urban and peri-urban agriculture (UPA) has become a survival mechanism with socioeconomic benefits for them.

The practice of urban agriculture creates both opportunities and risks. Among the opportunities are easy access to consumer markets, less need for packaging, storage and transportation of food, availability of fresh perishable foods and waste recycling. The risks include environmental and health risks from inappropriate agricultural and aquacultural practices, increased competition for land, water, energy, and labour and reduced environmental capacity for pollution absorption.

In a paper presented at the workshop, Dr. Dongmo described the characteristics and experiences associated with urban and peri-urban agriculture within and around Cameroon's cities.

Characteristics of urban agriculture: The data presented by Dongmo showed that most of those practicing urban agriculture were women (Bopda *et al.*, 2010; Dongmo *et al.*, 2010). The women did mostly subsistence farming while the men were involved in income generating farming activities. For livestock production, more men kept pigs than women did. On the other hand, more women than men were involved in poultry production. Urban farmers also produced vegetables, maize, cocoyams, ornamental trees, flowers, spices, okro, yams, tomatoes, goats, sheep, etc.

All the social components of the society were involved in urban agriculture. Most of the urban farmers used land for either crop or livestock production that was rented. It was therefore difficult for them to carry out long-term investments on the land.

Contributions of urban agriculture: These include contributions to food security, poverty alleviation, an increase of income, job creation, creation of green zones in the cities and solid waste and water recycling (FAO, 2001; Bopda *et al.*, 2010).

Constraints, challenges and potential negative impacts of urban agriculture: There is land and water scarcity because of competition with other users. Generally, the zoning of urban land in Cameroon does not allocate any portion to urban farmers. There is also no legal and regulatory framework to guide urban agriculture in the country. Most municipal authorities accuse urban farmers of illegal occupation of public space, chemical contamination of streams and increasing the risk factors for various diseases. Given the above, urban farmers are not considered when public assistance is given for equipment and inputs and training.

In most places in Cameroon, urban farmers use marginal areas of low soil fertility, which are exposed to pollution from emissions from vehicles, household discharges and industrial wastes. To increase production, the farmers use large quantities of fertilizers and pesticides that have serious consequences on food safety, soils and water pollution levels. Livestock production in cities is also a source of unpleasant smell and causes water pollution through contamination of streams.

Gender dimension of food systems in urban development in Cameroon by Enchaw G.B.

The second paper for this session was on the gender dimension of food systems in urban development in Cameroon.

Urban food systems, of which urban agriculture is an integral part, play a critical role in many cities in sustaining the integrity of the environment and in contributing significantly to the attainment of food self-reliance by improvement of the livelihoods of the urban poor, through cultivation of a wide range of crops and rearing of livestock with substantial yields.

That notwithstanding, urban food systems and agriculture still receive the least priority in many countries, particularly in the area of development planning. In Africa in general, and Cameroon in particular, the neglect of urban food systems and agriculture in urban development planning is complicated by gender colouration of urban food systems and agriculture. An analysis of gender and land tenure in urban food systems shows that land ownership whether through titling or customary transaction is biased against women who in Cameroon produce 80% of the country's food needs and yet own only 2% of the land. Within the context of African communitarian value systems, this gender insensitivity adds a burden to the woman who is associated with anything food and feeding of the ever-increasing population.

Another way the woman uses the food system to create employment is by improvising roadside markets and restaurants commonly called "*tournes dos*". This copping strategy is often against the wish of urban authorities who unjustly dissociate food systems from urban development particularly as it is woman driven.

The urban woman in the domain of urban agriculture faces the same challenges. With limited access to arable land, absence of urban agricultural policies, no planned matrix and urban space design and increasing household poverty, the woman resorts to urban food systems informalities. She tends to cultivate in any available unoccupied urban lots and sewage-laden valleys with attendant health and environmental threats.

In most tropical cities and Yaoundé in particular, what is mostly cultivated or raised as food products include grains, roots and tubers, vegetables, aromatic and medicinal herbs, fruit crops and livestock. Ornamental plants are often cultivated as part of urban agriculture but for tourism purposes. In Yaoundé, emphases is on these plants and not on food crops. With the vertical and horizontal expansion of Yaoundé and the proliferation of recreational parks, the surface area under crop cultivation continues to reduce within the city.

Antecedent planning of urban space is on the rise in Yaoundé, and it deprives the woman of land for crop cultivation. The conversion of land initially used for urban agriculture to non-agricultural uses in the city impacts greatly on urban food availability and household survival. Expropriation and antecedent activities are taking place in the valleys and low-lying marshy areas, which are under the statutory aegis of the municipalities.

URBANIZATION AND SOCIO-ECONOMIC IMPACT (SDG 1; STISA 6)

Since the year 2000, there has been a change in the numerical proportion of the world's population, as the share of the global urban population has overcome the rural population. This has been caused by the natural urban population growth and migration from rural areas. This increased urbanization has come with economic and social changes because of intensified pressures on resources, environment and the ecosystems (Dociu and Dunarintu, 2012).

The social impact of rapid urbanization in Cameroon

The social impact of rapid urbanization in Cameroon by Yenshu Vubo E., Tantoh F.W. and Mbua F.J.

Prof. Yenshu and his colleagues asserted in their paper that urbanization has had social impacts characterised by:

- issues of integration within the society at both the horizontal and vertical levels;
- social problems such as unemployment, poor housing, inadequate access to health facilities and poor working conditions that need social solutions (e.g. social welfare, social work, social policy, social affairs);
- social stratification, domination and polarisation (rejection, exclusion) along economic lines.

According to the authors, urbanisation in Cameroon has also brought considerable degrees of social disintegration. This is the result of an urbanisation that has taken place within two historical periods, colonial and post-colonial. These periods are characterised by spontaneous processes (rural-urban migration), liberal policies that have reinforced them and lack of planning to channel and contain distortions/problems. This has led to the crises of integration, loose segregation, urban co-existence (conflicts and tensions) and social problems that characterise our fractured society.

Sociological impacts

Urbanization has brought sociological impacts such as:

1. Disparities in the economy and distribution of population over the national territory characterized by depopulation of rural areas and loss of labour in favour of the urban areas.
2. Imbalances in development between regions and between the rural and urban areas.
3. Cross-cutting internal characteristics within urban space with:
    a. Continuous segregated urban space with pockets of planned areas: former colonial seats and residential areas, areas developed by urban

housing and development agencies, and a vast/huge unplanned or poorly planned areas but occupied in haphazard manner;

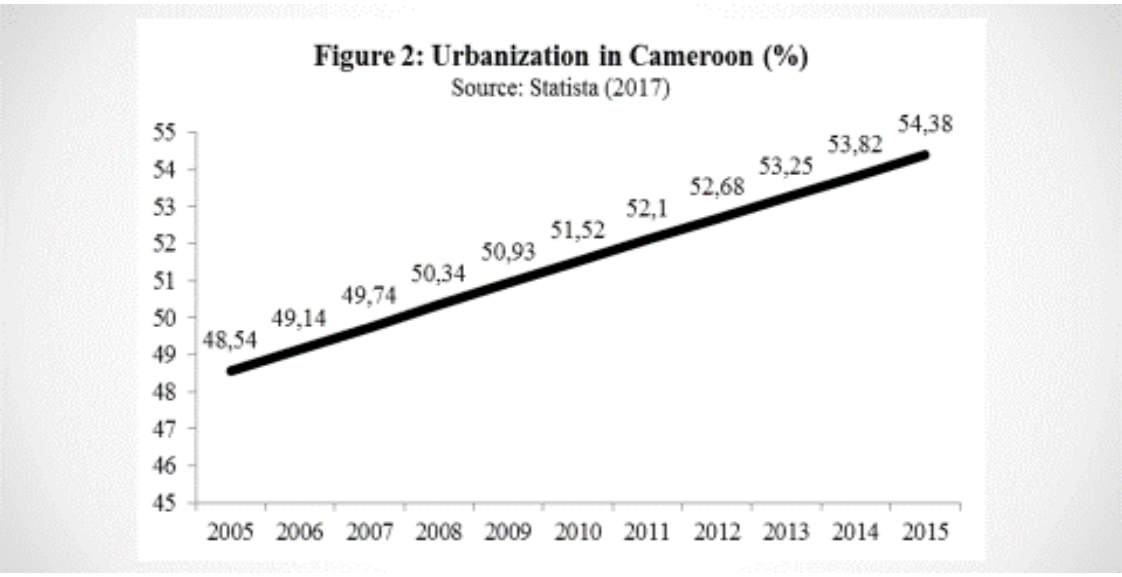
b. Convergence of peoples from all over the territory and the apparent outlook of integration but reproduction of ethno-regional labels and identities (“Nordistes”, Bamileke, Beti, “Bamenda”, Sawa) with likelihood of tensions and conflicts.

4. Submergence of local peoples and their spaces: demographic, economic, political dimensions; disappearance of homelands or “villages”.
5. Marginalization under the crushing influence of political and economic forces and imperatives of development.
6. Emergence of insider-outsider divides and their consciousness partially related to ethno-regionalism: ethnicity of a peculiar form as witnessed in the 1990s.
7. Crisis of representation and urban governance.
8. Conflicts that occasionally erupt along ethno-regional lines.
9. Polarization in socio-economic terms: development of new classes and new extremes especially with neo-liberal reforms (extremely rich and extremely poor).
10. Social problems: Unemployment/underemployment, poverty, poor housing, low nutrition levels or simply precarious living conditions, urban crime and delinquency and implications on family cohesion.
11. Poverty of urban populations also reflected in lower school attendance and a growing incidence of child labour”.

The Socio-Economic Impact of Urbanization

The economic impact of rapid urbanization in Cameroon by Tsafack N.

The figure below shows that urbanization in Cameroon has been increasing at a steady rate and with it has come social and economic impacts as described in the papers presented for this session of the workshop.



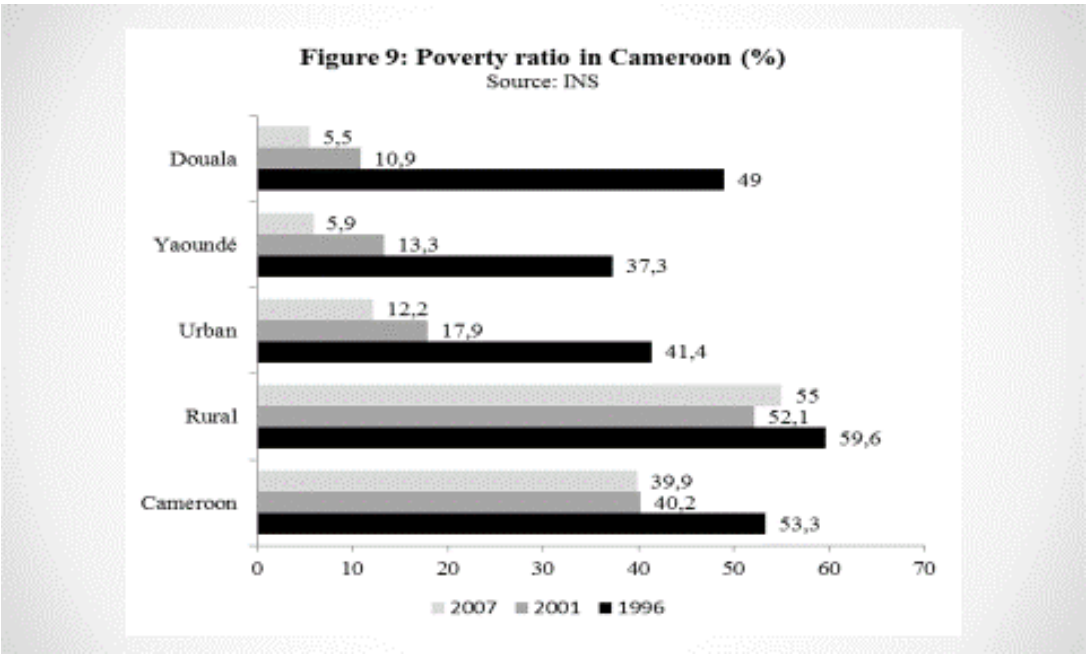
The socio-economic impact of urbanization includes both positive and negative aspects (Dociu and Dunarintu, 2012) such as,

- more job opportunities as a result of the development and diversification of the commercial activities;
- access to new technologies;
- development of better infrastructure;
- an intensification of the consumption of resources;
- an increase in the level of air pollution and its impact on health;
- public transport difficulties;
- access to better public utilities.

The paper presented by Prof. Tsafack highlighted some of these positive socio-economic impacts for Cameroon while at the same time pointed out the very serious positive impacts.

The cost of living in Cameroon's cities is very high. For example, the two major cities of Douala and Yaoundé are ranked 50 and 70 respectively among the world's most expensive cities. The high cost of living can be attributed to increased rents, cost of utilities and transportation.

There are significant differences in the poverty ratio between urban and rural areas in Cameroon as shown in the figure below. This is a reflection of the fact that there are more job opportunities in urban areas as most firms that offer employment are located mostly in cities, especially in Douala (35%) and Yaoundé (24%). The welfare indice also varied significantly between rural and urban areas.



The impact of rapid urbanization on education in Cameroon by T.M.S. Tchombe

Emeritus Prof. Tchombe started her paper by telling her audience that rapid urbanization is transforming the Cameroonian human, material resources and the physical landscape and thus making demands on education as a transformative mechanism. For the country to survive rapid urbanization, its education policy must revisit its knowledge contents, competences, skills, attitudes and values, including its available resources, services, practices and research infrastructure.

Urbanization creates shifts in economic and social activities with corresponding changes of behaviour patterns necessitating changing mind-sets through education, which has to:

- seek new ways of doing things through skills development;
- focus on developing social relations;
- develop the cognitive authority of people;
- demand of individuals to be creative, problem solvers, imaginative, analytic and innovative.

Problems for Education as a Function of Urbanisation (SDG 4, 5)

The projected population increase by 50% in 2030 (United Nations, 2008) highlights expected increase in urban population including school going children, adolescents and youths demanding access to employable skills. Approximately 54 .4% of the total population of Cameroon is urban. The population is youthful (62%), meaning more youths will be found in urban towns and cities in search of better opportunities. More school space and accompanying infrastructure would be required to ensure access to quality equity inclusive education for both general, technical and vocational education. Overcrowded schools and large class sizes would increase and thus, perpetuating teacher-centred pedagogic practices.

In overcrowded schools, seating arrangements that is a serious current challenge would be exacerbated including insufficient supplies of basic equipment, poor ventilation and noise. More qualified education administrators, teachers and special needs educators would be required to manage increasing school and classroom diversity to ensure equity in higher learning. Schools ethos may be challenged, if clearer rules, regulations and appropriate sanctions in the event of violation of institutional rules with mechanism for strict supervision are not in place, given the multiplicity of urban distractions. Relevant curricular and extra-curricular activities would be needed to engage children and youths through project based teaching in generative school and community activities to direct their attention and energy to valuable and altruistic actions.

The Tasks of Education

The demographic setting of our cities and towns is reflected in urban schools and classrooms. With rapid urbanisation, education must improve the wellbeing of learners by addressing the **social capital** through developing skills in living standards and ensuring equality, health, sanitation and security. It must also increase the **economic capital** by enhancing economic skills through training for entrepreneurship, thus professionalising education to ensure economic growth and improve quality productivity for quality living. Building **environmental capital** through strategies in teaching values

for improving natural resources that will improve lifestyle, protect the environment and reduce environmental risk with preservation initiatives.

On this account the education enterprise requires new reflections on pedagogical strategies and practices with focus on what student-centred learning means in terms for differentiated instruction, project approaches through and integrated and competency based curriculum. Through these especially the integrated approach to education which promotes learners to broadly explore knowledge in various subjects related to certain aspects of their environment" (p. 11). Through this skills and knowledge are developed and applied in more than one area of study (Humphreys, Post, and Ellis 1981). This can be made possible if education through its integrated curriculum helps pupils and learners to apply skills that enable them to retrieve information easily and faster; encourages a multiple perspectives leading to more integrated knowledge base, through encouraging depths and breadth; promoting positive attitudes in pupils and students giving them more time for quality exploration (Lipson, Valencia, Wilson, & Peters, 1993). It is important that we position the competency- based learning that focuses on the learner as an individual. It provides opportunities for each individual to develop skills at their own pace, collaborate with others, collect evidence of learning, and become successful lifelong learners. Competency based learning empowers learners to: understand the competencies they need to master to achieve their goals; explore diverse learning opportunities; collaborate in learning activities with communities of peers and mentors and reflect on their own learning achievements. From these perspectives the use of differentiated instruction addressing competency based learning practices, designed to meet the needs of individual learners and the challenges posed by rapid urbanisation to education and its pedagogic practices for access to quality, equity inclusive teaching and learning.

THE WAY FORWARD

The rising urban population growth has created many challenges for governments and municipal authorities. These include among others inadequate housing, secured tenure, energy supply, solid waste management and sanitation, provision of clean drinking water, transportation, access to health services, food supplies and socioeconomic difficulties. After listening to the presentations on these challenges, the participants had group discussions and suggested the following strategies and policies to improve the quality of life in urban areas.

The housing crisis in the cities

Given the fact that government attempts to solve the housing crisis in urban areas have not produced the desired results; there is need for innovative approaches to the problem. These include:

- The diversification of the types of social products according to the types of occupation such as rental housing, hire-purchase, semi-finished housing, provision of developed plots, support for self-construction like the provision of standard plans, central purchasing of materials at reduced costs, training in the manufacture of local materials, the realization of road, water and electricity works, etc.;
- The granting of appropriate incentives to social housing programmes through exemptions or special reductions for value added tax (VAT) on locally produced building materials, registration and stamps duties, the property tax, interest rates on bank loans, income tax for real estate developers, etc.;
- The implementation of a policy of industrialization of the production of building materials through:
    - the promotion of building materials manufacturing units;
    - support to MIPROMALO and other private or communal structures, for the creation of industrial units for manufacturing local materials;
    - the creation of industrial zones dedicated to the creation of building materials manufacturing units with appropriate tax and customs benefits;
- Strategic reflections and implementation of:
    - land tenure reforms;
    - creation of special social housing and mortgage guarantee funds;
    - promulgation of a Social Housing Act with a comprehensive definition of incentives for social housing programmes and the criteria (e.g. income threshold for households) for eligibility for social products;
    - housing and construction code.

The definition and implementation of a coherent social housing policy is a complex exercise involving several legal, technical, social, economic, financial and environmental parameters. Among all of these inputs, the socio-economic dimension appears to be the most decisive, as it takes into account the needs and constraints of the final beneficiaries of social products and allows an adaptation and adjustment of the other parameters. Much more work still needs to be done by the state and public authorities in general to reach the

lower income social categories. The key to success for all of this is in the establishment of adequate financing mechanisms.

The energy needs of urban areas

In order to improve the energy needs of urban areas, it was agreed that:

- the adoption of energy efficient appliances and solar home systems could significantly reduce household energy demand and electricity bills;
- the government of Cameroon should enact legislation to institute reduced import tariffs on renewable energy equipment as well as subsidies and incentives to independent energy producers;
- the interconnection of independent energy generation systems with the grid should be encouraged so that independent energy producers can sell excess energy to the grid.

Supply of clean drinking water, sanitation and solid waste management

Given that water related issues such as access to clean drinking water, sanitation and floods could lead to diseases like diarrhoea, malaria and cholera, the following proposals were made:

- Based on the premise that point source pollution may be accountable for pollution of water resources in our major cities, the identification of the specific sources of anthropogenic pollution of water bodies should be encouraged. Secondly, catchment areas should be identified and protected.
- Better watershed management can also improve the quality and quantity of water supplied to our cities.
- Efforts should be made to diversify the sources of drinking for the urban areas through the:
    - use of water reservoirs located in rural areas;
    - provision of boreholes which have better quality water than the shallow wells which are often contaminated by inputs from the poor disposal and management of industrial and/or municipal effluent;
    - recycling of wastewater through a four-step reverse osmosis process that removes all contaminants and toxins.
- As a result of the fact that poor solid waste management is the main cause of floods in urban areas, its management must adopt effective approaches that involve not only the construction of appropriate physical drainage infrastructure but also include effective stakeholder participation and appropriate technologies that are sustainable and adapted to the environmental, socio-cultural, legal, institutional and economic context.

Transportation

Compared to rural areas, urban areas have a high concentration of economic activities that are supported by transport systems. When cities are large like Yaoundé and Douala, the transport systems can have many disruptions. The participants of the workshop recommended the following strategies for reducing the identified transport difficulties:

- In general, the urban transport difficulties should be reduced by increasing the size and number of roads, improving public transport, encouraging non-motorized modes of transport and creating pedestrian zones.

- Specifically, the government and municipal authorities should:
  - adopt policies that discourage automobile use and channel investment into public transport;
  - create bus lanes on existing roads;
  - improve public bus services, which are presently unreliable, inconvenient and uncomfortable.

The urban environment and health

The participants noted that health officials and other stakeholders have been directing most attention to the control of infectious diseases while the growing burden of non-communicable diseases has been neglected in spite of growing evidence for its magnitude.

In general, the participants agreed that there was a need to urgently formulate and implement a strategic plan to prevent and control the burden of NCDs in Cameroon. Such a plan should be based on an integrated multi-sectoral approach that targets common risk factors both at population level and at high-risk groups. The major modifiable risk factors (such as tobacco use, harmful use of alcohol, unhealthy diets, and physical inactivity) and the social and environmental determinants should be tackled through information provided by health promotion initiatives and primary health care services. Furthermore, there must be concerted action by all stakeholders (health, education, social, agricultural and economic sectors) to improve the social determinants of poverty, unequal access to educational opportunities, unemployment and low pay employment.

While waiting for a more comprehensive strategic plan to be formulated and implemented, the participants called on the government and other stakeholders to take measures to:

- Reduce tobacco use through policy interventions such as raising taxes on tobacco products, advertising bans, public smoking ban, health warnings on tobacco products, mass health education, and counselling in communities.
- Discourage alcohol use through increasing the minimum drinking age, increased taxation on alcoholic drinks and other alcohol prevention programmes.
- Promote healthy diet through education and public campaigns that encourage people to:
  - achieve energy balance and a healthy weight;
  - limit energy intake from total fats and shift fat consumption away from saturated fats to unsaturated fats and toward the elimination of trans-fatty acids;
  - increase consumption of fruits and vegetables, legumes, whole grains, and nuts;
  - limit the intake of free sugars;
  - limit salt consumption and ensure that salt is iodized;
  - implement nutrition component in school curriculum;
  - encourage food producers through incentives and subsidies to use healthy agricultural products;
  - increase taxes on unhealthy food products;
- Enhance physical activity through:

- mass campaigns to inform and motivate people on the benefits of physical activity;
- provision of free gyms;
- implementation of physical education in school curriculum;
- modifying urban planning and transport policies to include infrastructure for sports, walking and cycling.

Improvement of urban agriculture

The participants agreed that the attention of municipal and other authorities should be drawn to the need for:

- zoning in the formulation of plans for the development and management of urban and suburban areas, which is guided by land use compatibility policies and should focus equally on providing services like housing, transport, water, electricity and urban agriculture that are all integral components of urban systems.
- designing agricultural development policies to include programmes and projects to provide technical, financial and material support to urban farmers so that their activities can be more productive and environmentally friendly.
- incorporating urban agriculture into programmes for urban poverty reduction and the alleviation of food insecurity.
- facilitating access to available urban land by urban farmers through the revision of land tenure management systems that should also be gender sensitive.

Socio-economic impact of urbanization

The challenges presented by urbanization are complex and context-specific. For the socio-economic sector, the following suggestions may be helpful in providing some solutions:

1. Balanced regional development to create new growth poles to decongest the oversized cities of Douala and Yaoundé.
2. Rural development that will keep in check uncontrolled rural exodus; this will solve part of the congestion in the cities.
3. Affirmative action: creation of more jobs for jobless youth, opportunities for disadvantaged groups.
4. Urban governance: a local peoples urban policy (planned to take care of people displaced by urban development); clear policies on citizenship and national space (in relation to urban centres); multiculturalism (education and conviviality).
5. Other than formal education, the media should be used to educate the people on how to manage the problems generated by urbanization through practical problem solving strategies.
6. Enhance school governance and partnership to combat the challenges of urbanization and sustain quality and relevance.
7. Education policy must address issues emanating from urbanisation either as a lone discipline concern or as an integrated issue in related disciplines or courses.

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ANNEXES

Opening speech of the Minister of Scientific Research and Innovation

DISCOURS DE MADAME LE MINISTRE DE LA RECHERCHE SCIENTIFIQUE ET DE L'INNOVATION A LA CEREMONIE D'OUVERTURE DE L'ATELIER DE L'ACADEMIE CAMEROUNAISE DES SCIENCES SUR 'LES PROBLEMES DE L'URBANISATION AU CAMEROUN: STRATEGIES DE SOLUTION'

Excellence, Monsieur le Ministre de l'Habitat et du Développement Urbain,
Excellences Messieurs les Ministres
Madame la Secrétaire Générale du Ministère de la Recherche Scientifique et de l'Innovation,
Monsieur le Délégué du Gouvernement auprès de la Communauté Urbaine de Yaoundé
Messieurs et Mesdames les Directeurs Généraux
Messieurs et Mesdames les Délégués du Gouvernement auprès des Communautés Urbaines
Messieurs et Mesdames les Maires
Messieurs les Directeurs
Messieurs les Professeurs et Chercheurs
Mesdames et Messieurs en vos rangs et grades respectifs

C'est un honneur et un devoir agréable pour moi de co-présider la cérémonie d'ouverture de l'atelier de l'Académie Camerounaise des Sciences sur « les problèmes d'Urbanisation au Cameroun : stratégies de solutions ».

La diversité, le calibre et la qualité des participants à cet atelier nous réjouis, car ici assemblés, nous avons les gestionnaires des villes et municipalités, les directeurs et décideurs en matière de l'habitat et l'urbanisme, les professeurs et chercheurs chevronnés, etc. Je vous souhaite tous la bienvenue.

Cette aéropage des parti-prenantes à cet atelier témoigne de l'importance que revêt le sujet de notre travail : « **le défi d'urbanisation face à la croissance démographique ».**

Mesdames et Messieurs, permettez-moi, d'abord, de m'acquitter d'un agréable devoir, d'accueillir de manière toute spéciale, mon collègue et frère, le Ministre de l'Habitat et du Développement de l'Urbanisme (MINHDU), Son Excellence **Mbouentchou**, valablement représentée par **Dr A. Sardaona**, le Secrétaire Général à qui nous souhaitons un chaleureux bienvenu comme co-président de cet atelier.

Mes remerciements vont d'abord à l'Académie des Sciences du Cameroun et son Président, le Professeur **Samuel Domngang** pour l'heureuse initiative de l'organisation de cet atelier qui nous rassemble aujourd'hui.

Comme vous le savez, la vision de l'Académie Camerounaise des Sciences est de servir comme mobilisateur premier de la science, la technologie et l'innovation au service du développement socio-économique de la nation en mettant à la disposition du gouvernement et des décideurs, les résultats de la recherche et de l'innovation comme input à une politique éclairée au service des peuples camerounais. Nous sommes bien placées, comme Ministère de la Recherche Scientifique et de l'Innovation, pour savoir que l'engagement de notre Académie au service de la science pour le bien-être de l'humanité et son rayonnement scientifique constituent le moteur de son partenariat fructueux avec les organismes scientifiques internationaux, tels que le Conseil International des Sciences (ICSU), l'Académie Nationale des Sciences des États-Unis (US-NAS), la Société Royale de la Grande Bretagne, l'Académie Allemande des Sciences (LEOPOLDINA) et le Réseau des Académies Africaines des Sciences (NASAC), pour ne citer que ceux–ci.

En effet, l'Académie met les fruits de ses travaux et réflexions à la disposition de l'état et des organismes non-gouvernementaux grâce aux conseils formels et illuminés par les résultats de la recherche, les recommandations des études thématiques via un processus de consensus des scientifiques et experts, et les résultats de délibérations aux ateliers. Ainsi, la qualité des experts et la neutralité de l'académie confèrent aux recommandations de cette institution une valeur et une puissance incontournable au service du développement de la nation.

C'est dire, Mesdames et Messieurs, que l'Académie des Sciences est bien placée pour organiser cet atelier dont le sujet nous tient à Cœur. Comme l'Académie nous le rappelle dans son exposé de motif, « les villes camerounaises connaissent une très forte expansion à un rythme accéléré, résultant de l'exode rural et d'un flux de migrants (en particulier les réfugiés) provenant d'autres pays. Les activités industrielles et commerciales et la prolifération d'un vaste secteur informel font des villes des destinations attrayantes pour de nombreuses personnes. Les possibilités d'emploi réelles ou perçues comme telles et l'espoir d'améliorer la qualité de vie continuent d'attirer les migrants ruraux. Ces villes alimentent de vastes secteurs informels de petites entreprises, en particulier dans le secteur commercial, qui attirent des migrants ».

Alors que l'urbanisation est normalement perçue comme un instrument de progrès économique, sociale et politique, elle amène aussi de graves problèmes socio-économiques. La magnitude de taux de croissance démographique de nos villes, la croissance chaotique et non planifié des habitats d'une part et un manque criard d'infrastructure décente d'autre part expliquent, en partie, la situation socio-économique précaire de nos villes. En effet, la forte croissance des populations des villes met une forte pression sur les utilités publiques telles que, l'habitat, l'eau potable, l'énergie, le transport intra-urbain, les structures de santé, les écoles et centres de formation, etc. La fourniture des besoins en alimentation de qualité et quantité constitue aussi un gageur. Dans les rangs des immigrés ruraux, la pauvreté ambiante, le chômage, la mendicité, le banditisme et d'autres maux sociaux vont croissant. Les espaces disponibles sont inadéquates et généralement surpeuplés, la croissance de l'infrastructure urbaine gagne et étouffe les terres précieuses destinées à l'agriculture.

Toutes nos villes sont caractérisées par l'insuffisance, l'inefficacité et l'inefficience des systèmes d'écoulement des eaux usées et les eaux d'égouts. Les quantités inestimables

d'ordures et déchets générés dans nos villes constituent un danger permanent pour la santé car il n'y a souvent pas de structures de broyage d'ordures.

De ce fait, il est difficile d'envisager l'émergence sociale, culturelle et économique du Cameroun quand ses citadins croupissent dans la misère, et la qualité de vie s'incline vers la médiocrité, et l'environnement urbain reste l'objet de dégâts de toute nature.

Il nous incombe de prendre plusieurs mesures nécessaires pour faire face aux défis posés par la crise de la croissance urbaine chaotique. Malheureusement force est de constater que la plupart de nos villes, dans leur état de croissance sans développement planifié, ne peuvent pas fournir des solutions adéquates aux multiples problèmes soulevés tantôt. Dans bien de cas, les gouvernements municipaux n'ont pas de ressources adéquates parce que les pratiques inefficaces de collecte de recettes réduisent leur capacité de faire face aux besoins des villes et municipalités. Il faudrait aussi voir si la politique de gestion des villes à besoin des réaménagements pour augmenter l'efficacité de gestion.

Considérant tous ce qui précède, nous devons envisager des nouvelles méthodes et concevoir de nouvelles institutions pour faire face aux défis de l'urbanisme au Cameroun. Ainsi, par exemple, de nouveaux partenariats entre structures et organismes concernés sont nécessaires pour redynamiser le fonctionnement des villes.

De ce fait, l'atelier est aussi en droite ligne avec les attentes des ***Objectifs de Développement Durable*** des Nations Unies, surtout l'objectif numéro 11 qui vise un développement planifié et durable pour les villes. Les objectifs de nos travaux ce matin cadre bien aussi avec les objectifs de la conférence internationale, ICCCAS II, qu'organise, le Ministère de l'Habitat et du Développement Urbain à Yaoundé en décembre 2017 sous le haut patronage du Président de la République avec comme thème « le développement des villes intelligentes » (« development of smart cities »).

Monsieur le Ministre, permettez-moi, de féliciter votre Département, le MINHDU pour cette heureuse initiative d'une conférence internationale, fruit d'un partenariat Chine-Canada-Cameroun-ONU Habitat pour envisager la solution de nos problèmes de villes africaines à la lumière de l'expérience louable et exemplaire de nos amis de la Chine et du Canada.

Mesdames et Messieurs,

Cet atelier de l'Académie des Sciences du Cameroun a comme l'objet de donner aux chercheurs et décideurs une plateforme pour la réflexion et les discussions des actions nécessaires comme solutions aux problèmes de l'urbanisation au Cameroun. Aussi permettez-moi de terminer mes propos par cet appel lancé à l'endroit de tous les participants ici présents.
Il convient de

- centraliser les discussions sur les politiques et recommandations appuyées par les résultats de la recherche et les disponibilités des preuves matérielles.
- proposer des stratégies de santé et des stratégies appropriées et respectueuses de l'environnement pour faire face au défi de la croissance et du développement urbain.

- proposer une utilisation efficiente des ressources urbaines via une distribution équilibrée des populations et systèmes de construction des habitations susceptibles, à la long, de favoriser la protection de l'environnement
- Proposer des stratégies (i) pour l'intégration de certaines formes d'agriculture dans la planification socio-économique et environnementale des villes et (ii) pour la conceptualisation des politiques d'utilisation rationnelle de terrain et d'adduction d'eau qui tiennent compte de la production agricole en zone urbaine et péri-urbaine.
- Recommander des options flexibles et fiables aux sources traditionnelles d'énergie.
- Faires d'autres propositions compatibles avec les objectifs généraux de l'atelier

L'Académie des Sciences attend de cet atelier des recommandations motivées par la recherche à l'intention des décideurs, les maires et les délégués du gouvernement. Je n'ai aucun doute que vos analyses, débats et recommandations émanant des activités de cet atelier seront de nature à lancer le pays en avant sur le chemin de la conquête d'une meilleure cohésion sociale en faveur du pluralisme dans l'entreprise du développement national.

Vive l'Académie des Sciences du Cameroun
Vive le Ministère de la Recherche Scientifique et de l'innovation
Vive le Cameroun et son illustre Chef de l'état, le Président Paul Biya

Members of the Organizing Committee

Chairman	**Prof. Samuel Domngang**, FCAS, Professor of Physics, President of CAS
Co-Chair	**Prof. Sammy Beban Chumbow**, FCAS, Professor of Linguistics, 1st Vice-President of CAS
Co-Chair	**Prof. Wali Muna**, FCAS, Professor of Internal Medicine, 2nd Vice-President of CAS
Rapporteur 1	**Dr. David A. Mbah**, FCAS, Chief Research Officer, Animal Geneticist, Executive Secretary CAS
Rapporteur 2, Science Writer	**Dr. Vincent N. Tanya**, FCAS, FTWAS, Chief Research Officer, Virologist/Epidemiologist, Treasurer/Programme Officer of CAS
Members	**Prof. Jean Claude Mbanya**, FCAS, FTWAS, Professor of Internal Medicine, Dean College of Biological Sciences of CAS
	Prof. Paul Woafo, FCAS, Professor of Physics, Dean College of Mathematics and Physical Sciences of CAS
	Prof. Jean Emmanuel Pondi, FCAS, Professor of Political Science, Dean College of Social Sciences of CAS
	Prof. T. Kofane, FCAS, FTWAS, Professor of Physics, FCAS, FTWAS
	Prof. Wilfred Mbacham, FCAS, Professor of Medical Biotechnology
	Prof. John Ngundam, FCAS, Professor of Power Systems

Workshop Programme

TIME	ACTIVITY
DAY 1: 8TH MAY 2017	
8H00 – 09.00	**REGISTRATION OF PARTICIPANTS**
9H00 – 11H00:	**OPENING CEREMONY** **Co-Chairs:** Minister for Scientific Research and Innovation Minister for Housing and Urban Development **Rapporteurs:** Dr David Mbah and Dr Vincent Tanya **Master of Ceremony:** Mr Paul Zebaze • Welcome Remarks by Prof. Samuel Domngang, President, Cameroon Academy of Sciences • KEY Note ADDRESSES: o What is urbanization? Past, present and future trends in Cameroon by Sime L., Manjia M.B. and Pettang C. o The urbanization policy in Cameroon: performance and challenges by Sardaouna A. o Innovative solutions to the housing problems of Cameroon's cities by Yimgaing Moyo T. o Government strategies for solving the problems of urban housing in Cameroon by Asongwed E. A. • Opening speech by the Minister of Scientific Research and Innovation • Group picture • Coffee/Tea break • Communication with the Media
11H00 -12H30	**SESSION I - Urbanization and water and energy** **Moderator:** Prof. Tonye Emmanuel, FCAS, Professor of Electronics, University of Yaoundé I, Cameroon **Rapporteur:** Dr. Ako A.A., Senior Research Officer, IRGM Yaoundé • Satisfying the energy needs of urban areas in Cameroon by Nfah E.M. and Ngundam J.M. • Effect of poor solid waste management on the design capacity of urban drains: case study of Yaoundé in Cameroon by Fonteh M.F. and Ndongo B. • Impact of urbanization on water quality: case study, Yaoundé city by Ako A.A. • Pollution of water resources by nitrate from urbanization in Maroua, Garoua and Douala in Cameroon by Fantong W.Y., Fouepe A.T., Kringel R., Tchakam B.K., Haman D.J.B., Nbendah P., Njokam L. and Ayonghe S.N.
12H30 – 13H30	**SESSION II - Urbanization and transportation** **Moderator:** Prof. T. Kofane, FCAS, FTWAS, Professor of Physics, UY1, **Rapporteur:** Dr. Fantong W.Y., Senior Research Officer, IRGM • Urbanization, traffic congestion and sustainable development in Cameroon by Njimanted G.F. and Mbohjim O.M.

13H30 – 15H00	**LUNCH BREAK**
15H00 – 16H00	**Session III - Urbanization and health** **Moderator:** Prof. Wali Muna, FCAS, Professor of Internal Medicine, FMBS, UYI, 2nd Vice- President of CAS, **Rapporteur:** Dr Assah F., Senior Lecturer, FMBS, UYI • Urbanization and non-communicable diseases and their risk factors in Cameroon by Mbanya J.C., FCAS, FTWAS
16H00 – 16H30	**COFFEE BREAK**
16H30 - 18H00	**WORK SESSIONS** Term of Reference: From presentations and discussions suggest targeted key messages and recommendations **GROUP I:** Urbanization and water and energy Moderator: Prof. Tonye Emmanuel Rapporteur: Dr. Ako A.A. **GROUP II:** Urbanization and transportation: Moderator: Prof. T. Kofane Rapporteur: Dr. Fantong W.Y. **GROUP III:** Urbanization and health Moderator: Prof. Wali Muna Rapporteur: Dr. Assah F.
DAY 2: 9TH MAY 2017	
8H30 – 9H30	**SESSION IV- Urbanization & agriculture and the environment** **Moderator:** Dr. Mbah D.A., FCAS ,Chief Research Officer, **Rapporteur:** Dr. Tanya V.N., FCAS, FTWAS**,** Chief Research Officer, • Problems associated with urban crop and livestock farming in Cameroon: strategies for solutions by Dongmo T., • Gender dimension of food systems in urban development in Cameroon by Enchaw G.B.
9H30 – 10H30	**SESSION V - Urbanization and socio-economic impact** **Moderator:** Prof. Pondi J.E., FCAS, Professor of Political Science, UYII, Dean, College of Social Sciences CAS **Rapporteur:** Prof. Manguelle Dicoum E**.**, FCAS, Professor of Physics, UY1 • The social impact of rapid urbanization in Cameroon by Yenshu Vubo E., Tantoh F.W. and Mbua F.J. • The economic impact of rapid urbanization in Cameroon by Tsafack N., FCAS, University of Dschang • The impact of rapid urbanization on education in Cameroon by Tchombe T.M.S., FCAS
10H30 – 11H30	**COFFEE BREAK**
11H30 – 13H00	**WORKING SESSIONS** Terms of Reference: From presentations and discussions suggest targeted key messages and recommendations **GROUP 4:** Urbanization & agriculture and the environment: Moderator; Dr. Mbah D.A., Rapporteur: Dr. Tanya V.N. **GROUP 5:** Urbanization and socio-economic impact: Moderator: Prof. Pondi J.E., Rapporteur: Prof. Manguelle Dicoum E.

13H00 – 14H30	**LUNCH BREAK**
14H30 – 15H30	**PRESENTATION OF REPORTS FROM WORKING SESSIONS**
16H – 16H30	**CLOSING SESSION** • Report of the workshop by the Workshop Rapporteur: Dr. Tanya V.N. • Remarks by Prof. Samuel Domngang, President, Cameroon Academy of Sciences • Closing remarks by the Minister of Scientific Research and Innovation