The Dynamism between Urbanization, Coastal Water Resources and Human Health: A Case Study of Douala, Cameroon

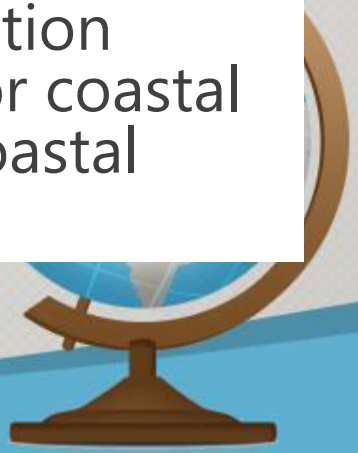
Suinyuy Derrick Ngoran
Xue XiongZhi
Bongajum Simplice Ngoran

厦门大学
Xiamen University



Introduction

- Coastal zones are convergent hot spots for human settlement since they are rich in resources.
- However, the increasing concentration of people in these areas has come with costs.
- For instance, a surge in pollution from ships and oil platforms, industrial pollution, inundations due sea level rise and climate change, overfishing and problems of domestic waste management among others (Brown, 2014).
- According to Nicholls et al. (2007) rapid population growth, coupled with the increasing demand for coastal resources exert additional harmful effects on coastal ecosystems.

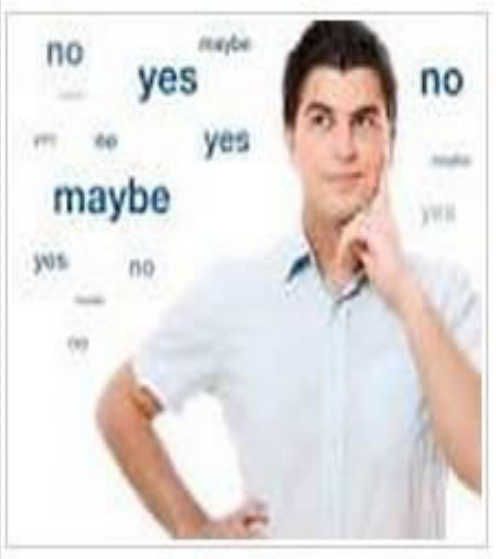


Introduction cont.

- The challenge for policy/decision makers and coastal resource managers is therefore to find a balance between rapid urbanization, coastal ecosystem health and anthropogenic well-being.

- Therefore, focusing on human actions is essential to achieving such a balance and hence, gear towards environmental sustainability.

- This paper, therefore, seeks to address the link between urbanization, coastal water resources degradation and their retroactions on human health in Douala, Cameroon.





Background

- Douala, the economic capital and chief seaport of Cameroon, is the industrial pivot of the country. This coastal city handles over 80 percent of the country's commercial and industrial activities (Eyong, 2003).
- Douala is the most urbanized coastal city in Cameroon with an estimated population of 2,000,000 inhabitants.
- The fast growing nature of the city, coupled with poor management strategies, has meant that there is increasing pressure on its coastal resources.
- Moreover, the degradation of the biophysical milieu has shouldered with waterborne diseases such as diarrhea, cholera, dysentery etc.
- Without updating/reformulating and adequately implementing strategic urban policies, this destruction will continue to deplete the limited coastal resources.

Causes of urbanization in Douala

- **The pre-colonial era**
- The pre-colonial era (before 1884), that is, before the colonization of Cameroon. Before the year 1884, the terminology, “urbanization” did not exist.

- However, this period is still vital as it depicts man’s perception of the environment.

- Before 1884, the population of Douala was less than a hundred thousand and with limited technology, the Douala inhabitants were subjected to live in harmony with the natural environment

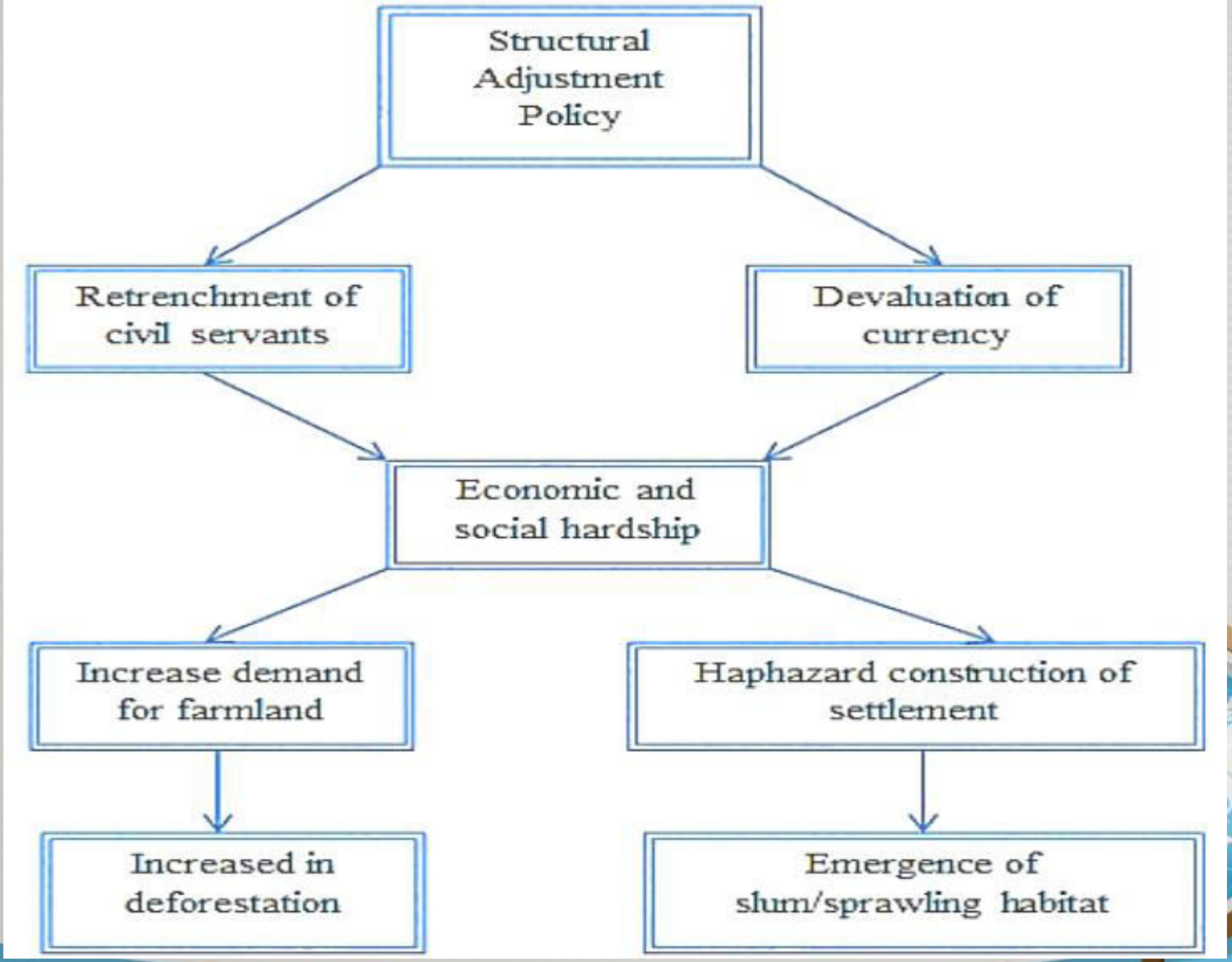
The colonial era

- The colonial era spans from 1884 to 1960.
- German colonial rule (1884-1916), and the period under the British and French influence (1916-1961 and 1916-1960, respectively).
- This span of time is very significant because it sets the stage and orientation of Cameroon's coastal development.
- The colonial masters played an eminent role in setting up schools, construction of roads, railways, establishing plantations, and industries, and most importantly the construction of the seaport and an airport.
- All the existing opportunities created by the colonial masters acted as pull factors that contributed in shaping up the coast of Douala.

The post-colonial era

- This depicts the era from 1960 onwards and paints a clear picture on the evolution of urbanization in Douala and Cameroon at large.
- This section tallies on national factors that have spearheaded urbanization as well as the role orchestrated by international factors.
- The theory of possiblism well affirmed decades after independence.

The post-colonial era

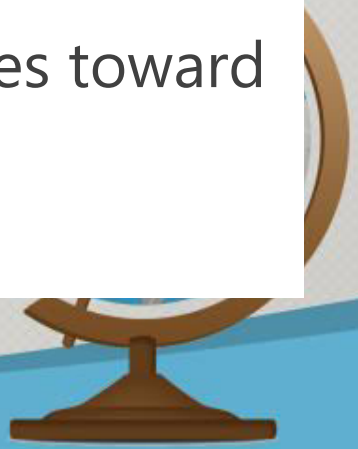


Structural Adjustment Policy as a Contributing Factor to Urban Extension

Government Policy

- Government policy in Cameroon has acted as a pull factor to population concentration by favouring urban development over rural development.

- The government of Cameroon over decades has been channeling a larger share of the budgets toward improvement in two major cities, Douala and Yaoundé.
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- This has, however, oriented migratory tendencies toward these major cities.
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Government Policy

- The government policy of providing family allowances to state employees has also impacted population growth positively, but the rapid growth in Douala's population has not been commensurate with the available resources at hand.
- The latter is a glaring example of the Malthusian theory of population growth.
- Contradictorily, according to Ester Boserup, it would have been expected that more invention be made to give Douala the face it deserves, but a necessity in the domain of environmental protection has rather been the mother of destruction.

Implications

Effects on Fresh Water

- Uncoordinated urbanization compounded by poor waste management has contributed significantly to the deterioration of the water quality in Douala.
- Some industries operating in Douala discharge untreated effluents directly into canals, streams, and rivers that end up causing widespread deterioration in the water quality and the health of the coastal ecosystem.



Implications

- Agriculture constitutes one of the sources of income, especially in the periphery of Douala and its growth has led to the excess use of nutrients, pesticides, and other herbicides and organo-chlorine substances
- Pig farming is an activity gaining importance in Douala. Pig waste is rich in nutrient, such as nitrogen and phosphorous.



- Many of the piggeries are located in swamps and their wastes are intentionally washed directly into the adjacent streams.
- In addition to the direct discharge of pig wastes into surface waters, the drainage of fields during precipitation contaminates surface waters as animal wastes are never treated.
- The socioeconomic impacts of untreated and poorly disposed wastes are enormous.



Exposure to Disease Vectors, such as Mosquitoes

Mangrove degradation

- The increase demand of mangrove as fuel wood and building material is gradually impacting the dynamics of marine habitats.
- Wanton cutting of mangrove and poor land-use practices result in increased coastal erosion in Douala.
- The loss of mangrove at the Douala estuary was estimated to be 24.29% in 2009 (Nfotabong, 2013).





Mangrove degradation

- Sedimentation especially, artificial sedimentation has a damaging effect on the health of mangrove trees.
- Artificial sedimentation is mostly orchestrated by improper waste disposal from either domestic households or industrial wastes, reckless logging and mining operations, and poorly built and maintained roads.
- On an average, mangrove forests worldwide retain a natural level of sedimentation at a rate of 0.5 to 1 cm per year. Anything above this rate is considered to be an unnatural rate of sedimentation (Armstrong et al., 2010).





Mangrove degradation

- Sedimentation becomes harmful to mangroves when portions of their roots become buried. When this occurs, there is less gaseous exchange between the roots and the water that surrounds them, thereby lessening the ability of the aquatic vegetation to respire and thus preventing an important physiological process.
- In addition, excess sediment inhibits adequate light from reaching the mangrove roots (Krauss, et al., 2008).
- Sedimentation above the accepted threshold on the coast greatly disturbs the life cycle of marine animals more especially those that survive brackish medium

Conclusion

- The urban outlook of Douala has been typified and the engendering factors of urbanization and its resultant socioeconomic and biophysical impediments have been elucidated.
- The research emphasizes that inadequate policy implementation and weak law enforcement in Douala are hot issues to be addressed if negative effects of urbanization are to be curtailed.
- Although there is a master plan of Douala, it is archaic and its implementation has not been satisfactory; the result has been unauthorized and disorganized urban development and above all environmental degradation, lack of basic amenities within and around urban areas.
- Human health on its part will improve if the biophysical milieu is well taken of. This necessitates the involvement of all stakeholders, especially the government


THANK YOU FOR LISTENING
NOW ANY QUESTIONS ?