Quality of Life and the Fundamental Issues to be Addressed in West African Countries

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ABSTRACT

One key challenge developing countries have been grappling with is how to transform economic gains into improved quality of life. Most extant studies have submitted that quality of life in developing countries can only improve by adopting drafted policy templates from the developed world, which may have little or no socioeconomic resemblance with the adopting developing nation. Thus, this study's objective is to identify policy issues relevant to enhancing the determinants of quality of life: healthcare outcome, environmental factors, food security, income level, and natural resource utilisation in 13 West African countries from 1970 to 2016. Using the panel fully modified ordinary least square approach, the study reveals that healthcare outcomes through high mortality rate, overuse of environmental factors and resulting ecological protection measures, and poor access to high-quality seeds and feeds devalue the quality of life in West Africa. However, higher-income and natural resource utilisation promote the quality of life in the region. Hence, sustained improvement in primary health care provision, diversification of FDI inflows from resource-seeking to knowledge-seeking sectors, shrinking income inequality, and genuine commitment to using natural wealth revenues for progressive spending are considered imperative for quality of life policy efficiency in West Africa.

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ملخص

يتمثل أحد التحديات الرئيسية التي تواجهها البلدان النامية في كيفية تحويل المكاسب الاقتصادية إلى نوعية حياة أفضل.وقد أشارت معظم الدراسات الموجودة إلى أن جودة الحياة في البلدان النامية لا يمكن أن تتحسن إلا من خلال اعتماد نماذج سياسات مصاغة من العالم المتقدم، والتي قد يكون لها تشابه اجتماعي واقتصادي ضئيل مع الدولة النامية المتبنية أو لا يوجد بها أي تشابه. وبالتالي، فإن هدف هذه الدراسة هو تحديد القضايا المتعلقة بالسياسات ذات الصلة بتعزيز محددات جودة الحياة: نتائج الرعاية الصحية، والعوامل البيئية، والأمن الغذائي، ومستوى الدخل، واستخدام الموارد الطبيعية في 13 دولة في غرب أفريقيا من 1970 حتى 2016. وباستخدام نموذج لوحة المربعات الصغرى العادية المعدلة بالكامل، تكشف الدراسة أن نتائج الرعاية الصحية من خلال معدل الوفيات المرتفع، والإفراط في استخدام العوامل البيئية وتدابير الحماية البيئية الناتجة، وضعف مستوى الوصول إلى البذور والأعلاف عالية الجودة تقلل من جودة الحياة في غرب أفريقيا. ومع ذلك، فإن استخدام الدخل المرتفع والموارد الطبيعية يعزز جودة الحياة في المنطقة. ومن ثم، فإن التحسين المستمر في توفير الرعاية الصحية الأولية، وتنويع تدفقات الاستثمار الأجنبي المباشر الواردة من البحث عن الموارد إلى قطاعات البحث عن المعرفة، وتقليص عدم المساواة في الدخل، والالتزام الحقيقي باستخدام عائدات الثروة الطبيعية للإنفاق التدريجي، تعتبر جميعها مسائل ضرورية لضمان كفاءة السياسة المتعلقة بجودة الحياة في غرب أفريقيا.

ABSTRAITE

L'un des principaux défis auxquels les pays en développement sont confrontés est de savoir comment transformer les gains économiques en une meilleure qualité de vie. Selon la plupart des études existantes, la qualité de vie dans les pays en développement ne peut s'améliorer qu'en adoptant des modèles de politiques élaborés dans le monde développé, qui peuvent avoir peu ou pas de ressemblance socio-économique avec le pays en développement qui les adopte. Ainsi, l'objectif de cette étude est d'identifier les questions politiques pertinentes pour améliorer les déterminants de la qualité de vie : résultats des soins de santé, facteurs environnementaux, sécurité alimentaire, niveau de revenu et utilisation des ressources naturelles dans 13 pays d'Afrique de l'Ouest entre 1970 et 2016. En utilisant l'approche des moindres carrés ordinaires entièrement modifiée par panel, l'étude révèle que les résultats en matière de santé à travers un taux de mortalité élevé, la surutilisation des facteurs environnementaux et les mesures de protection écologique qui en découlent, ainsi que le faible accès à des

semences et à des aliments pour animaux de haute qualité dévalorisent la qualité de vie en Afrique occidentale. En revanche, les revenus élevés et l'utilisation des ressources naturelles améliorent la qualité de vie dans la région. Par conséquent, l'amélioration soutenue de l'offre de soins de santé primaires, la diversification des flux d'IDE des secteurs demandeurs de ressources vers les secteurs demandeurs de connaissances, la réduction des inégalités de revenus et un véritable engagement à utiliser les revenus des richesses naturelles pour des dépenses progressives sont considérés comme impératifs pour l'efficacité des politiques de qualité de vie en Afrique de l'Ouest.

Keywords: Environment; Food security; Health outcome; Quality of life;

Resources, West Africa.

JEL Classification: I18, I31, I38.

1. INTRODUCTION

One common ground among researchers has been the fact that the term Quality of Life (QoL), can be viewed from different perspectives, such as well-being, a good life, happiness, and a fulfilled or valued life (McCrea, Shyy and Stimson, 2006). QoL's multifaceted nature has also led to researchers' use of various measures in its estimation. One of such measures has been the extensive use of life expectancy at birth, countries with improved living conditions end-up having citizens with potential elongated lifespans. Nevertheless, regardless of the cultural differences that abound between and within countries, every nation's constituted authority has all its functions embedded in the primary goal of improving QoL for its citizens. Failure to actualise this goal usually ends in social strife and an increase in criminality in societies. Today, many governments, especially those in the developing world, tend to magnify any bit of growth in the economy; as if to say such growth are indications of a better or improved life for their citizens and to legitimise further their stay in power (Aladejare, 2020). However, improved economic growth cannot be an indication of improved QoL in a country. The latter can only be attained when economic growth translates to improved social and economic infrastructure.

In this light, in the past two decades, the West African region have recorded impressive economic growth rates (OXFAM International,

2019). That by 2018, six of the ten fastest-growing economies in Africa, which are: Benin, Burkina Faso, Cote d'Ivoire, Ghana, Guinea and Senegal, were located in the region (OXFAM International, 2019; Ebi and Nyong,2020). Cote d'Ivoire, Ghana, and Senegal were among the world's ten fastest-growing economies as of 2018 (Coulibaly, 2019). However, in most countries in the region, high economic growth has not translated into improved QoL. For instance, Cote d'Ivoire, Nigeria, Mali, Mauritania, Liberia, Sierra Leone, Guinea, and Niger, were among the world's 17 lowest-ranked countries in QoL using the Social Progress Index (SPI) (Business Insider, 2016). In addition, Nigeria, with the largest economy and population in the region was declared the world's leader in the number of under-5 mortality rates by the United Nations International Children's Emergency Fund (UNICEF) in 2020 (UN IGME Report, 2020). This was when such health condition was dropping in other parts of Africa and the world. The region is also home to the highest population living on less than $1.90 per day in Africa (OXFAM International, 2019). By 2018, 14 of the 32 African countries which ranked lowest on the Human Development Index (HDI) were in West Africa (UNDP, 2019).

Hence, one major challenge developing nations such as those in West Africa have been trying to surmount is how to transform economic gains into improved QoL. Policies aimed at improving QoL in these developing countries are often drafted based on some foreign templates which may have little or no relation to the socioeconomic characterisation of the country. For instance, Schmidt and Bullinger (2007) noted that most often, the determinants of QoL were developed in advanced countries and only subsequently adapted to developing countries. Hence, such measures are more generally concerned with health issues, making their adaption by developing countries yield less than the desired impact. Recently, there have been calls to rethink some of these determinants, especially in Africa, by its stakeholders by considering the socioeconomic peculiarities of African countries for policy effectiveness. These measures have been reflected in the review of related policy documents, such as the Algiers Convention on the conservation of nature and natural resources (1969-2002), whose review is known as the Maputo convention (2003-2017). Another is the African Health Strategy (2007-2015) which was later reviewed for 2016-2030. Despite the aim of giving African colouration to these policies, they are yet to be ratified by most countries on the continent and especially in West Africa. The intuition for this could be that most

stakeholders, particularly in West Africa, might consider implementing these policies retarding to the already poor QoL in their countries.
Extant literature has theoretically proposed diverse views regarding what should constitute QoL measures for policy development. Prominent amongst these indicators are health outcome, income level, quality nutrition, environmental conditions, and natural resource utilisation. However, in low and middle-income countries to which West African countries belong, poor resource management, food insecurity, an undiversified economy, and over-reliance on primary exports contribute to rendering the government's efforts to improve the QoL ineffective. Hence, the dream of a dignified life through access to quality healthcare, education, sanitation, water, security, jobs, etc., often appears like a mirage.

Therefore, the objective of this study is to determine the critical policy issues related to the five major determinants of QoL in West Africa that should be addressed for QoL policy effectiveness. The first is health care outcome, which is primarily visible in the level of mortality rate. The high mortality rate connotes poor access to healthcare, poor population health, high per capita cost of healthcare, and increasing clinician and health staff stress, all prevalent in West African countries. Second is the effect of environmental factors; these factors are units of different natural areas required to aid an economy. They provide food for West Africans and serve as primary sources of energy and employment for the majority of the citizens. Therefore, pollution from overuse of environmental resources, and policies aimed at improving the environment's quality, either at regional or national levels, will continue to impact on QoL inversely; unless alternative employment in the secondary and tertiary sectors of the economies of countries within the region are being scaled-up. Third, food security is essential to improving QoL in West Africa. However, malnutrition is still a major challenge despite the prevalence of arable farmland in the region. Most of the food crops produced and consumed are of low quality, lacking in essential vitamins and iron, and diary nutrients, which increases dietary deficiency and a decline in QoL (Elbehri et al., 2013). Fourth, the poor income level in West African countries has continued to widen the income inequality gap, thereby exacerbating the poor QoL. More West Africans are increasingly becoming less self-fulfilled and satisfied. Poor income has forced increased consumption of low quality food for survival, limited access to good healthcare, good job, reasonable accommodation, and quality

education. Fifth, West African governments rely on natural resource utilisation for QoL enhancement. Hence, sincere, committed use of natural resource revenues for progressive spending on social and economic infrastructure is imperative (Ebi and Nyong, 2021). Without these issues first being addressed, QoL policy measures in West Africa will continue to lose efficiency.

The rest of the study is structured as follows: Section two has a brief literature review, Section three describes the study data and methodology, Section four contains the empirical findings and discussion of findings; and Section five captures the concluding remarks and recommendations of the study.

2. LITERATURE REVIEW

A number of theories have proposed what should constitute measures of QoL, especially for public policy formulation. However, two particular views were considered relevant for this study due to their essential appeal to developing countries. They are succinctly discussed as follows.

2.1 The Objective Indicators Approach
Researchers have defined the objective indicator in relation to measurable economic indicators. These indicators range from income level, cost of living, employment and unemployment figures; to data covering aspects of life and living conditions such as housing tenure/homeownership type, access to consumer durables, overcrowding, social engagement, leisure activities, healthcare outcomes, environment and pollution, crime rates, etc. (Brown et al., 2004).

The Nordic living conditions surveys, as prevalent in Scandinavian countries, are popularly known to be anchored on the objective approach (Johansson, 2002; and Veenhoven, 2002). There are also other countries who choose to evaluate their critical living conditions in line with the process. For instance, the British Labour Government expressly launched QoL monitoring indicators by adapting 15 indicators designed by the public, business and environmental groups. Included indicators were economic output, investment level, employment rate, poverty level, educational level, life expectancy, housing, rate of violent crime, car crime/burglary, road traffic, climate change, environmental quality measures, etc. (DEFRA, 2002).

2.2 The Fulfilment of Basic Human Needs Approach

Some researchers of QoL integrate a needs-based fulfilment model, founded on Maslow's (1954) order of shared human needs, essential for maintenance and survival. These needs, according to Maslow, can be grouped into physiological, safety and security, social belonging, ego, status and self-esteem, and self-actualisation needs (Brown et al., 2004). In addition, Maslow stated that once individuals achieve these fundamental needs, their quest for higher needs such as self-actualisation, happiness and self-esteem are activated. Hence, in modelling QoL, essential human needs and satisfactory accomplishment should constitute its core. It is for this purpose that the vulnerable groups expect the fulfilment of their fundamental needs to be paramount in every society. Thus, access to food, personal care satisfaction, the safety of life and property, should constitute the significant priorities used for evaluating the effectiveness of social care, alongside social engagement and control over daily life (Netten et al., 2002). It has been observed that the fulfilment of human needs approach is widely adopted particularly when assessing the QoL of individuals with mental health challenges, coupled with evaluations of global well-being (Bowling, 2001). To further comply with a needs model of QoL, the perceptual needs indicators have additionally been proposed by researchers. The aim is to push for a model that goes beyond sole dependence on welfare indicators to incorporating individuals' subjective assessments of their objective circumstances and their right to information and advice, money, and right to own or access tangible goods and services (Rettig and Leichtentritt, 1999).

Both the objective and fulfilment of basic human needs theoretical proposition on what should constitute the QoL can be adapted to West African countries, given that the socioeconomic characteristic of these countries is considered. For instance, the fulfilment of basic human needs theorem is believed to be more applicable to people with mental health in the developed world. However, factors that give rise to mental health issues in the developed world such as low income, poor access to healthcare, poor life expectancy, overcrowding, environmental pollution, poor leisure, etc., as the theories propose, are common phenomena in West African countries.

2.3 Empirical Review

A number of studies have tried to identify key factors to consider when formulating policies aimed at improving the QoL in developing countries.

One visual similarity in these studies is the use of life expectancy as a proxy for QoL, which this study also adopted. Furthermore, the most prominent factors in these studies for QoL policy formulation in developing countries can be summarised as food security, income level, and public investment in health and education infrastructure. These primary factors were also considered in this study alongside environmental effects, which seldomly exist in the literature, particularly for West Africa. The reviewed studies are as follows.

Factors that impacted life expectancy at birth in 33 Sub-Saharan African (SSA) countries were conducted by Fayissa and Gutema (2005). Substantial impacts from socioeconomic and environmental determinants such as literacy rate, food availability per capita, alcohol intake, health spending, carbon emissions per capita, and urbanisation were noted as the major determinants of life expectancy. The study findings indicated that food availability per capita, urbanisation, and literacy rate positively affect life expectancy in the SSA countries. On the other hand, increased alcohol intake, carbon emissions per capita, and health spending were reported to have inversely affected life expectancy. The inverse effect of health spending was strongly associated with the prevalent inefficient health service provision systems in the SSA countries.

Kabir (2008) considered ten factors usually touted as significant for boosting life expectancy in a sample of 91 developing countries. The study findings showed that most of these factors were insignificant in improving life expectancy in these countries. Thus, the conclusion is that although factors such as growth in per capita real income, improved spending on health and education, access to safe drinking water, and proper population planning may have strong policy implications for developing countries, they may not promote higher life expectancy. Rather, the study recommended that if issues related to healthcare outcome, undernourishment, fertility rate, population control, and high level of public indebtedness are addressed, particularly in poor SSA countries, life expectancy might be improved.

Lin et al. (2012) considered political and social factors in improving life expectancy in 119 less developed countries. The study found a relatively small short-term effect of democracy on life expectancy; however, it stated that the long-term effect should not be underestimated, especially in African countries. Economic development and improvement in

nutritional needs were the main factors to have had more significant short and long term effects on life expectancy in the study's results.

Camfield (2012) made a strong proposition to elaborate subjective QoL research in developing countries, particularly the adoption of individual QoL indicators. However, the study also highlighted the significant challenges associated with formulating, adapting and using indicators of subjective QoL in developing countries. Since the study submits that assessing an individual's QoL is explicitly an ethical priority, hence, the singular use of measures such as gross national product (GNP) per capita could be highly misleading.

The study by Bayati et al. (2013) observed that life expectancy in Eastern Mediterranean countries was significantly and positively boosted by factors such as growth in per capita income, investment in education, food accessibility, level of urbanisation, and job creation.

In the study by Sede and Ohemeng (2015), traditional determinants of life expectancy in developing countries, such as public health spending, per capita income, and secondary school enrolment, were reported not to be significant for improving life expectancy in Nigeria. However, the unemployment and nominal exchange rate levels showed a substantial impact on life expectancy. In another related study for Nigeria, Benjamin and Jegede (2018) found substantial positive effects of sustainable development, secondary school enrolment, the level of investment, inflation rate, income pattern, and political dummy on QoL (proxied by aggregate consumption expenditure).

Although Guisan and Exposito (2016) observed that there has been significant improvement in life expectancy in many African countries, the level was, however reported to be lower in comparison with the World average. Nevertheless, the improvement was attributed to the positive effects of education, and economic development, which vary across countries due to geographical location, social characteristics, health assistance, sanitation infrastructures, etc. Health-related outcomes such as HIV/AIDS, influenza and pneumonia, etc., were mainly found responsible for the below World average life expectancy rates on the continent.

Furthermore, the African Development Bank (2016) report admitted that while most African countries have made substantial progress towards improving the QoL for their citizens, such progress had not been sufficient compared to other developing countries. The basic needs approach was adopted in the bank's evaluation of QoL policies in African countries. Six basic needs indicators comprising life expectancy, educational enrolment, technical/vocational training enrolment, the level of the unemployment rate, access to improved water sources and sanitation infrastructure were used. The report concluded that while African countries have recorded significant growth in their economies, such growth has not been able to boost health, and education, create jobs, and improve access to water and good sanitation in most countries. In a related study, Hassan et al. (2017) found substantial effects from access to water, improved sanitation, GDP, health spending, and education on life expectancy in 108 developing countries.

Wu et al. (2017) also noted that in spite of the growth in income and economy of China, food safety and air pollution are still of primary importance to the Chinese middle-income class, and for China's leaders to legitimately assert their regime. This is because both factors constitute the prominent measures for QoL politics and policy determination in the country.

Nanor et al. (2018) analysed QoL measurement from a subjective perspective for residents of Kumasi, Ghana. Factors that constituted the main subjective elements were health, economic power, and neighbourhood and housing. By using these measures, the study found that the subjective QoL of Kumasi residents was above average. It was further noted by the study that subjective QoL measures can be adopted as urban planning equipment in tackling problems peculiar to the management of urban centres, while the outcomes of such measurements may present the needed basis for constructing future spatial and urban planning policies.

The study by El-Aswad (2019) used multiple important objective and subjective indicators to evaluate and compare the QoL and well-being of Middle Eastern and Northern African countries. The objective indicators included healthcare outcomes assessed from the perspective of life expectancy at birth and infant and maternal mortality rates. Educational level was evaluated based on years of schooling, adult literacy, and

enrolment rates, and economic standard of living was assessed using the level of gross domestic product (GDP) per capita. As for the subjective measures, individuals' states of subjective well-being, which include life fulfilment, level of happiness, and absence of ill-being, were employed. The study specifically noted that healthcare outcome, level of education, economic progress, and technology should be critical in QoL policy formulation in the studied countries due to their substantial impacts.

Dumith et al. (2021) investigated QoL levels and assessed the impact of social determinants on adults' QoL residing in southern Brazil's urban areas. The study found the QoL to be unevenly distributed and worse for disadvantaged subgroups. However, the study suggested that intersectoral policies aimed at lowering social inequality can potentially heighten the population-level QoL in the region.

Paloma et al. (2021) identified the core factors that affect the life satisfaction of economic migrants arriving from developing nations and residing in welcoming societies that possess high HDI. The study suggests that economic migrants' life satisfaction is helped by twelve determining factors grouped into three classes of structural integration, social and cultural inclusion, and individual strengths.

Aladejare (2022) examined the nexus between human well-being and environmental degradation in 29 African countries. Human well-being indicators such as globalisation, life expectancy and human capital development were reported to be environmentally enhancing. However, urbanisation and growth in income, and natural resource rent were found to be ecologically degrading. Also, a bidirectional relationship between the human well-being indicators and environmental degradation was also confirmed. Consequently, the study noted that the human well-being indicators could only improve the quality of life through a beneficial symbiotic relationship between the former and the environment in African countries.

3. DATA AND METHODOLOGY

3.1 Data
For this study's empirical analysis, panel data from 13 West African countries spanning from 1970 to 2016 was utilised. These countries are Benin, Burkina Faso, Cote d'Ivoire, Gambia, Ghana, Guinea-Bissau,

Mali, Mauritania, Niger, Nigeria, Senegal, Sierra-Leone, and Togo. The selection of these countries was based on date availability.

Although the human development index (HDI), which combines four key measures of education, human capital, health, and standard of living would have suffix as a better indicator for QoL. However, HDI data unavailability for the chosen timeframe for most West African countries constrained its adoption in this study. Hence, a future path in enriching the literature will be to see how HDI responds to variations in QoL determinants in West Africa. Nevertheless, to circumvent this limitation, QoL in this study is evaluated using life expectancy at birth. Its adoption was based on the intuition that life expectancy is a function of individual lifestyle choices or habits, which are substantially based on response to incentives from other factors. This study narrowed down these factors to five peculiar components considered essential for QoL policy formulation in West Africa. They are healthcare outcome, environmental quality, food security, level of income, and natural resource utilisation.

To capture healthcare outcomes, the infant mortality rate per thousand live births was adopted. The mortality rate constitute a crucial aspect of population health outcome evaluation. Furthermore, governments and healthcare organisations such as the UNICEF and the World Health Organisation (WHO) have healthcare outcome measures such as mortality rate as their primary quality and cost targets they try to improve. Environmental factors were proxied by adopting ecological footprint consumption per capita. Ecological footprint represents a unique measure which considers the unit of different natural areas required to aid an economy. These natural areas include built-up land, carbon space, cropland, fishing grounds, forest products, and grazing land. It is important to note that the bulk of the West African population relies on the environment not just for food but for a cheap source of energy (i.e., firewood fetching) and employment in farming, hunting, lumbering, fishing, and mining. Noteworthy in the literature is a shortage of studies that have adopted ecological footprint in measuring environmental factors related to West Africa. Hence, making the use of this measure a further contribution to knowledge.

Food security is measured using the food price index. The concept of food security has undergone diverse revisions over the last three decades, growing from primary food supply to include stability and affordability.

Hence, for an efficient QoL policy formulation and implementation in West African countries, there is a need to ensure constant physical and economic access to basic food nutritional requirements necessary for healthy living. Another vital factor to consider in QoL policy formulation is income, which was measured using the GDP per capita growth rate. Intuitively, it is expected that growth in income level should translate to better QoL in a country. Stress and depression can be related to issues of poor income level, capable of reducing the QoL in a country. Hence, to evaluate individuals' happiness and self-fulfilment in West African countries, growth in GDP per capita can be used. Natural resource utilisation is the fifth important component and was measured using the total natural resources rents as a share of GDP (tny). It is the aggregation of rents collected by the government from exploring natural resources such as gas, oil, coal, mineral deposits, and forest products richly available in the West African region (Aladejare, 2020). To improve the QoL in the region, proceeds from these natural resources that constitute the bulk of West African governments revenue are usually deployed for provision of schools, hospitals, jobs, security, good drinking water, and sanitation infrastructure.

Table 1: captures the measurement of each indicator used in the study and its sources.

Table 1: Variable measurement and description

Variable	Measurement	Sources	Symbol
Quality of birth	Life expectancy at birth	WDI (2021)	le
Health care outcome	Infant mortality rate per 1000 live births	WDI (2021)	ipt
Environmental factors	Ecological footprint global hectare (gha) per capita	Global footprint network (2021)	ef
Food security	Food price index	WDI (2021)	fpi
Income level	GDP per capita growth rate	WDI (2021)	gyp
Natural resource utilisation	Total natural resource utilisation per GDP	WDI (2021)	tny

Source: Authors' computation.

3.2 Methodology

For the purpose of deriving the long-term effects of the identified primary determinants of QoL, the Fully Modified Ordinary Least Square (FMOLS) approach as introduced by Pedroni (2001) was adopted. This estimation technique was preferred to the conventional OLS due to the latter's proneness to second-order asymptotic bias and serial correlation challenges. Thus, the FMOLS corrects this deficiency associated with the OLS, making it a more robust estimator. In addition, the first difference integration of all the study variables (see Table 4 analysis) further lend credence to the application of the FMOLS procedure over the OLS; since the latter assumes independence across observations for the first difference residuals.

Thus, the panel FMOLS regression equation is presented as:

$$le_{i,t} = \propto_i + \beta_{1i} ipt_{i,t} + \beta_{2i} ef_{i,t} + \beta_{3i} fpi_{i,t} + \beta_{4i} gyp_{i,t} + \beta_{5i} tny_{i,t}$$

$$+ \sum_{k=-K_i}^{K_i} \gamma_{i,t} \Delta ipt_{i,t-k}$$

$$+ \sum_{k=-K_i}^{K_i} \delta_{i,t} \Delta ef_{i,t-k} + \sum_{k=-K_i}^{K_i} \tau_{i,t} \Delta fpi_{i,t-k}$$

$$+ \sum_{k=-K_i}^{K_i} \rho_{i,t} \Delta gyp_{i,t-k} + \sum_{k=-K_i}^{K_i} \varphi_{i,t} \Delta tny_{i,t-k}$$

$$+ \varepsilon_{i,t} \qquad (1)$$

where all variables remain as previously defined in table 1, and $-K_i$ and K_i denote the leads and lags, respectively. The panel FMOLS estimation for each regressor can be built-up as follows:

$$\hat{\beta}_{iptFMOLS} = I^{-1} \sum_{i=1}^{I} \hat{\beta}_{FMOLS,i} \qquad (2)$$

where $\hat{\beta}_{=FMOLS,i}$ is the panel FMOLS estimator.

4. EMPIRICAL FINDINGS AND DISCUSSION OF FINDINGS

4.1 Preliminary Analysis

Table 2 reveals that the average life expectancy in the West African region is about 50.6 years. This value falls short of the WHO Global average of 72.0 years and the WHO African Region average of 61.2 years in 2016 (WHO, 2016). The infant mortality rate per 1000 births averaged 101.7, against the WHO African Region average of 76 (WHO, 2016). Also, the average ecological footprint for the region is 1.38, which is less than 2.75 and higher than 1.22 values for the World and Africa's average, respectively, in 2016 (GFP, 2019). The food production index averaged 74.3, which is low, given the availability of enormous uncultivated land in most countries in the region. Growth in GDP per capita is less than 1%. The average total national resource rent per GDP is about 9.8%; suggesting less resource exploration and extractive projects development in the region.

Table 2: Descriptive statistics

Statistics	*le*	*ipt*	*ef*	*fpi*	*gyp*	*tny*
Mean	50.5894	101.6787	1.3762	74.2875	0.6574	9.8436
Max.	67.1460	195.2000	3.2711	201.220	22.1823	54.3795
Min.	32.3880	33.8000	0.9111	23.9200	-29.4616	1.2661
Std. Dev.	7.0753	34.9842	0.3832	36.0988	5.0502	7.6204
Obs.	611	611	611	611	611	611

Source: Authors' computation.

Table 3 shows the correlation test with evidence of less multi-collinearity between the study variables. However, the high negative correlation between life expectancy and the infant mortality rate is expected, since a high infant mortality rate would also translate to lower life expectancy and vice versa.

Table 3: Correlation matrix

	le	*ipt*	*ef*	*fpi*	*gyp*	*tny*
le	1					
ipt	-0.9095	1				
ef	0.2774	-0.1756	1			
fpi	0.6366	-0.7276	0.0854	1		
gyp	0.0577	-0.0482	0.0370	0.1612	1	
tny	0.1439	-0.0570	0.3137	0.2228	0.0896	1

Source: Authors' computation.

Contained in Table 4 are five different CD tests conducted. They are the Breusch–Pagan Chi-square or non-parametric test, Pearson Langrage-Multiplier (LM) normality test, Pearson CD normality test, Friedman Chi-square test, and the Frees normality test. Observations from the probability values of the five tests indicate that the null hypothesis of cross-sectional independence is rejected. Stating otherwise, there is a significant level of cross-sectional dependence between West African countries.

Table 4: Cross-sectional dependence test

Test	Statistic	d.f	Prob.
Breusch-Pagan Chi-square	152.8419***	78	0.0000
Pearson LM Normal	4.9513**		0.0000
Pearson CD Normal	6.9204***		0.0000
Friedman Chi-square	114.6603***	46	0.0000
Frees Normal	0.3851***		0.0001

Where ** and *** indicates significance at 5% and 1% respectively.
Source: Authors' computation.

4.2 Unit Root Test

In handling dynamic heterogeneous panel dataset, especially when T>30, it is not uncommon to subject the relevant series to panel unit root test. Thus, two unique sets of panel unit root tests were considered in this study. The first category, as shown in Table 4, is the first generation panel unit root tests comprising Levin, Lin and Chu (LLC), Breitung, Fisher Augmented Dickey-Fuller (ADF), Fisher Phillips-Perron (PP), and the Im, Pesaran, and Shin (IPS) tests. However, due to the failure of these tests to incorporate cross-sectional effects in their unit root process, a second category was introduced and used to judge the stationarity of the variables. In the second category are cross-sectional augmented Dicky Fuller (CADF) and cross-sectional Im–Pesaran–Shin (CIPS) panel unit root test by Pesaran (2007). Both tests are known to incorporate cross-sectional effects in their unit root process robustly.

Evidence from Table 5 shows the divergence in the first generation unit root test outputs with stationarity at level, first difference, and non-stationarity. However, the superior CADF and CIPS unit root tests (which incorporate CD effects) show that the series is all stationary at first difference. Hence, the conclusion is that the panel variables are first difference stationary.

Table 5: Unit root test

Level form	First generation unit root test				
	LLC	Breitung	Fisher-ADF	Fisher-PP	IPS W-stat
le	-3.6275***[a]	0.3819	88.6421***[a]	7.9797	-5.7825***[a]
ipt	-1.1006	-2.5559***[b]	40.1197**[a]	18.2674	-2.7154***[b]
ef	5.3338	-2.3301***[b]	139.114***[b]	97.9013***[a]	-9.5382***[b]
fpi	3.3591	0.0623	122.894***[b]	46.8251***[a]	-8.8401***[b]
gyp	20.8538	-2.9324***[a]	88.6436***[a]	422.379***[a]	-6.4931***[a]
tny	6.0153	-1.5061*[b]	79.4628***[b]	52.1432***[a]	-5.7608***[b]

Second generation unit root test				
	CADF	**CIPS**			
le	-5.971***[b]	-1.672**[b]			
ipt	-3.639***[b]	-2.578*[b]			
ef	-4.549***[b]	-3.136***[b]			
fpi	-3.099***[b]	-3.665***[b]			
gyp	-3.655***[b]	-6.140***[b]			
tny	-3.573***[b]	-2.856**[b]			

A and b indicate stationarity at level and first difference, respectively, and *, **, ***
indicate significance at 10%, 5%, and 1%, respectively.
Source: Authors' computation.

4.3 Cointegration Test

After determining the stationarity of the series, the following approach is ascertaining the long-term association between the variables. The Pedroni and the Kao residual-based cointegration tests were employed to accomplish this. A peculiar advantage of the Pedroni cointegration test lies in its integration of the heterogeneity of cross-sections by utilising defined unrestricted parameters across individual cross-sections of the sample (Pedroni, 1999). The Kao residual-based cointegration test was only used to reaffirm cointegration between the variables. Hence, both cointegration test outputs in Table 6 indicate that the panel variables co-move in the long term.

Table 6: Panel cointegration outputs

Panel A: Pedroni test		Statistic	p-value
	Modified Phillips-Perron test	5.0656***	0.0000
	Phillips-Perron test	4.8048***	0.0000
	ADF test	6.1999***	0.0000
Panel B: Kao test			
	Modified DF	-1.4764*	0.0699
	DF test	-2.2028**	0.0138
	ADF test	-1.8625**	0.0313
	Unadjusted Modified DF	1.6214*	0.0525
	Unadjusted DF	-1.0571	0.1452

Where *, **, *** indicates significance at 10%, 5%, and 1% respectively.
Source: Authors' computation.

4.4 Panel FMOLS Findings and Discussion of Findings

The panel FMOLS in Table 7 show that all the variables significantly affect QoL. The healthcare outcome measure reveals an inverse effect on QoL. Indicating that increase in poor access to primary healthcare, child and maternal care, and antiretroviral drugs for HIV treatment diminishes QoL in West African countries. This finding is in line with the results Kabir (2008), Guisan and Exposito (2016), and El-Aswad (2019) that if issues related to healthcare outcomes, are addressed, particularly in poor SSA countries, then QoL might be improved.

Likewise, the coefficient for environmental factors shows an inverse effect with QoL. This output is plausible and aligned with the findings of DEFRA (2002) and Fayissa and Gutema (2005), who identified environmental quality measures as an essential determinant of Qo. Given that the bulk of the West African population relies on the environment not just for food but for a cheap source of energy (i.e., firewood fetching) and employment in farming, hunting, lumbering, fishing, mining, etc. Hence, overuse of environmental factors leads to an increase in the levels of emanating pollution, which diminishes QoL. On the contrary, adopting measures directed at improving and protecting the environment means denying many people their means of livelihood and further worsens their QoL. This could be why the Maputo Convention on the conservation of nature and natural resources (2003-2017) was not ratified, especially by

most West African heads of state. Thus, without increased employment in the secondary and tertiary sectors of West African countries' economies, getting out of the environmental poverty trap may continue to be a daunting challenge for the region.

Also, the food security measure reveals a negative effect on QoL. Thus, indicating that despite the increase in food production, QoL is worsening. It is important to note that countries in the West African region occupy a vast range of agro-ecological systems, from arid to semi-arid, sub-humid and humid climates (Elbehri et al., 2013). Consequently, food production and consumption are a function of these climates. Consumption patterns are also known to vary based on country location and even within the same country that possesses different climatic characteristics. However, cereals (mainly sorghum, rice, maise and millet) and roots and tubers (mainly cassava and yam) constitute the dominant food crops produced and consumed by the majority of the population (Elbehri et al., 2013). Consumption of other food groups such as fruits, dairy products, meats, potatoes, fish, vegetables and vegetable oils are occasionally consumed due to fast-growing income inequality in the region (see; OXFAM International, 2019); and consequently creating nutritional deficiency, which devalues QoL.

Furthermore, the production of high-quality food and dairy products depends on farmers' access to high-quality seeds and feeds. Frequently, much of the food crops produced in West Africa are self-consumed, with two-thirds of production-consumption occurring among the rural populace (Elbehri et al., 2013). Thus, when farmers cannot access high-quality seeds and feeds, and there is an increase in demand for low-quality food, dietary diversity and QoL is lowered.

Growth in income level appears to have a positive effect on QoL. Suggesting that a higher income level will translate to improved QoL; since income-related stress and depression will be eliminated. Thus, higher-income has the tendency to promote individuals' level of happiness and self-fulfilment and, accordingly, improve QoL in West African countries. For instance, the 2013 World happiness report had the five best-ranked West African countries as Nigeria (82nd), Ghana (86th), Sierra-Leone (127th), Burkina Faso (131st), and Mali (132nd), from a total of 156 countries (World Happiness Report, 2013). At the same time, the *gyp* for these countries was 3.05% (Nigeria), 7.77% (Ghana), 6.51%

(Sierra-Leone), and 3.00% (Burkina Faso), and -0.48% (Mali) (WDI, 2019). However, in the 2017 happiness report, the ranking was Nigeria (95th), Ghana (131st), Sierra-Leone (106th), Burkina Faso (134th) and Mali (127th) (World Happiness Report, 2017); while their corresponding gyp for the period was -0.23%, 0.53%, -5.42%, 1.69%, and 3.19% respectively (WDI, 2019).

Similarly, the natural resource utilisation measure appears to have a positive effect on QoL. Supporting the notion that revenue from natural resources is relied upon in West African countries for infrastructure development in health, education, road, water and sanitation, and provision of security for QoL improvement. Nevertheless, the lower value of the coefficient suggests less resource utilisation due to insufficient capacity to exploit, over-dependence on specific resources or both. Thus, West African stakeholders may be sceptical of any resource management policy at the continental or regional levels, which might want to regulate natural resource use and access.

Table 7: Panel FMOLS estimated output

Dependent variables: le			
Regressor	**Coefficient**	**Std. error**	**Prob.**
ipt	-0.2439***	0.006661	0.0000
ef	-1.7353***	0.026458	0.0000
fpi	-0.1341***	0.023777	0.0017
gyp	0.3770***	0.050315	0.0000
tny	0.0766**	0.033154	0.0458
$Adj.R-squared$	0.8985		

Where ** and *** indicate significance at 5% and 1%, respectively.
Source: Authors' computation.

5. CONCLUSION

QoL represents "well-being" and what constitutes the benchmarks of "the good life." How efficient these QoL benchmarks will vary between countries and regions due to their peculiar characteristics. It is on this ground that this study identifies critical issues for enhancing QoL policies in West African countries. These issues are related to five main QoL determining factors: healthcare outcome, environmental factors, food security, income level, and natural resource utilisation. Improving healthcare outcome, particularly the child mortality rate, should be non-

negotiable for countries within the region. More efforts at achieving this are still required, especially in Nigeria, where it is highest. Thus, sustained improvement in primary health care provision in the region is imperative for QoL policy enhancement. Furthermore, opening up the economy with policies to encourage diversification of foreign direct investment inflows from resource-seeking to knowledge-seeking sectors will reduce the pressure on environmental factors for jobs. Such measures will also strengthen the effective implementation of environmental protection policies in West African countries.

Although countries within the West African region have begun to prioritise agriculture revolution, much effort is still required to improve seed and feed quality, output processing, and dietary consumption diversification. Income inequality should and urgently be addressed to enhance consumption of high-quality food, eliminate nutritional deficiency, and improve individual self-sufficiency and fulfilment. Furthermore, paying a living wage and increasing the tax burden on the rich than the poorest people will also help narrow the income gap in West African countries. West African leaders will also have to genuinely commit to using their natural wealth revenues for progressive spending policies on essentials such as human capital development and accumulation, hospital infrastructure, security, and social protection. With these primary issues being addressed, QoL policies in West Africa can then gain efficiency.

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The data that support the findings of the study are available from the corresponding author upon reasonable request.

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