Impact of Climate Change on Employment in Nigeria

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Abstract: Nigeria as a developing country in African continent is one of the major suppliers of crude oil in the world and the effect of climate change on her employment status cannot be over-emphasized. Employment debates have been of high discussion in the world news. Nigeria, due to its vulnerability to climate change is moving towards investing on the renewable energy industry so as to militate the effects of climate change as well as economic advancement. This paper through the use of exploratory methods, aims to explore the existing literatures to examine the impact of climate change on employment, be it – in the short; medium and long term. The results were presented through statistical charts. However, this study discovered that effects of climate change was felt over the longer term when technical change and innovation would lead to more job creation, productivity improvements and growth. The study therefore recommends that all the stakeholders should raise awareness on the environmental effects of climate change and focus on policies that militate against the adverse effect of climate change and inevitably having impact on jobs, working conditions and incomes in many sectors.

Keywords: climate change; employment; crude oil, mitigation; renewable energy; Nigeria

JEL Classification: Q01; Q43; Q54; 055

1. Introduction

The Global community including the G-8 (super-powers of the world) has come up with a consensus to address the problem of climate change. This consensus requires a cut in global greenhouse gas emissions of at least 50% by the middle of the century (Stern, 2007). Going by the adjustments agreed upon by the global community, it will require holistic changes in the way economies are structured as well as changes that will spread into every aspect of economic life. Nigeria as a developing country in Africa continent is one of the major suppliers of crude in the world and the effect of climate change on her employment status cannot be over-

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emphasized. Hence, this paper through the use of descriptive exploratory methods, aims to explore existing literatures relating to the impact of climate change on employment in addressing the impact of climate change on employment, be it – in the short; medium and long term in Nigeria.

Employment debates have been of high discussion particularly in Nigeria due to its vulnerability to climate change effects. Hence, Nigeria is moving towards investing on the renewable energy industry so as to militate the effects of climate change as well as economic advancement. This is because, renewable energy replaces conventional fuels in four distinct areas: electricity generation, hot water/ space heating, motor fuels, and rural (off-grid) energy services (REN21, 2010). Although, all forms of energy are expensive, but as time progresses, renewable energy generally gets cheaper, while fossil fuels generally get more expensive and hence, the world is shifting towards increasing employment in the renewable energy industry (Reuters, 2009a). This study intends to explore through the review of literatures the impact of climate change on employment in three stages. (That is short-term, medium term and long term).

2. Literature Review

2.1 Theoretical Framework

2.1.1 Short Term Effects of Climate Change Policy on Employment

In the short term there will be job creation and loss in directly affected industries. Jobs will be lost in carbon-intensive sectors and new jobs will be created in low-carbon sectors (for example, to run a wind farm). Although, the energy sector is a relatively small direct employer and source of value added to the economy due to the fact that Nigeria has not actually delve into massive labour intensity in this industries (NBS 2006). Nonetheless, Nigeria, in the short term derives employment benefit from the renewable industry through the use of biofuel in the petroleum industry, aviation industry and agriculture industry (NESREA 2009).

To put this effect into perspective, Kammen et al. (2006) emphasised a comprehensive employment effect of renewable energy technologies as put together in table I. He suggests that renewables are more labour-intensive than conventional energy, both in terms of manufacture and, to a lesser extent, the operation of facilities. A switch to low-carbon technologies should thus lead to net job creation because movement of worker from fossil fuel industry would lead to unemployment in the short term as shown in table I.

However, employment benefit that can be derived from the renewable energy would sensitize the government officials as well as all the stakeholders in embracing climate change policies that would foster rapid economic development

through adoption of global climate change policy of switching to a low-carbon technology.

Table I essentially shows 'comparative static' results, comparing the jobs available in a renewable energy installation with those in a fossil fuel plant. So if the demand for labour relative to other factors is to rise, the new technologies have to raise the labour–capital ratio, and not just the labour–output ratio.

Table 1 showing Average employment over the life of a facility (jobs/MW)

Renewable Energy	Construction, Manufacturing Installation	O&M and Fuel Processing	Total Employment
Solar PV	5.76–6.21	1.20–4.80	7.41–10.56
Wind	0.43–2.51	0.27	0.71–2.79
Biomass	0.40	0.38–2.44	0.78–2.84
Coal	0.27	0.74	1.01
Gas	0.25	0.70	0.95

Source: Kammen et al. (2006). (Jobs per Megawatt)

Laid-off workers may not immediately find a new employment job in the growing renewables industry as they have different abilities and the jobs have different requirements. Matching old workers to new jobs takes time. Limited short-run flexibility of real wages can further contribute to fluctuations in output, employment and unemployment. Babiker and Eckhaus (2006) and Küster et al. (2007) include sectoral rigidities in labour mobility and in wage adjustments as a factor in a computable general equilibrium model to evaluate the impact of climate policy measures on overall economic performance. Furthermore, Küster et al. (2007) show that unemployment rises as a result of negative growth effects when subsidies for renewable energy technologies are applied, while unskilled workers are more seriously affected than skilled ones. However, they assume a comparatively lower labour intensity for renewable energy technologies.

2.1.2 Medium Term Effects of Climate Change Policy on Employment

The medium run effect is characterised with adjustment in the behavioural changes and value chains thereby enabling the climate change policy to cut across the economy. For instance, as suggested by Kammen et al. (2006), a reduction in coal-fired power generation will lead to upstream job losses in the mining industry and rail freight. Demand for rotor blades (for wind turbines), silicone (for solar panels), and low-carbon appliances will grow at the expense of more polluting equipment. Stricter building standards will accelerate the refurbishment of the housing stock,

creating jobs in the construction sector. There will be new jobs for carbon traders, wind power engineers and climate change consultants.

The reduction in corporate demand will have economy-wide repercussions on output and employment. The magnitude of this budget effect depends on the price differential between low-carbon technologies and conventional solutions. The lower the differential (for example because gas prices are high), the lower will be the budget effect. For win–win measures such as energy efficiency improvements, the budget effect could even be positive. Recent increases in energy prices and international efforts to price carbon are likely to improve the competitiveness of renewable energy technologies and thus increase employment impacts.

2.1.3 Long Term Effects of Climate Change Policy on Employment

In the longer term, jobs will be created in research and the development of low-carbon technologies as a show of evidence from IEA, (2011) reports that renewable energy technologies is becoming cost-competitive in an increasingly broad range of circumstances, in some cases providing new investment and job opportunities without the need for specific economic support. The core of the argument is that the arrival of new technologies with wide-ranging applications (such as information technology or, earlier, the steam engine) will trigger a process of technology diffusion, adaptation and experimentation. The need to adopt the new technology will create a wave of secondary innovations as industries adjust their processes and adapt the technology to their specific requirements. This process, which may take place over a long period of time, will increase the demand for (skilled) labour (Aghion, 2001).

The key issue in this context is whether expenditures for the development and employment of new energy technologies are complementary to or substitutes for other investment options. Other authors (e.g. IEA, 2000) appear more optimistic, by highlighting the fact that additional knowledge gains through learning-by-doing could boost cost reductions. Notwithstanding the uncertainty in cost estimates, Weyant (2004) concludes from a survey of the underlying literature that overall welfare will be higher if policies to induce innovation start earlier rather than later.

Nigeria, blessed with enormous human and natural endowments is endowed with a population of 155 million in 2009, (NPHC, 2009). National Environmental Standards and Regulations Enforcement Agency (NESREA) have revealed that developing countries like Nigeria contribute the lowest to climate change but they are the most vulnerable to the effects of climate change. According to National Bureau of Statistics (2006), Nigeria had a labour force of 57.21 million. In 2003, the unemployment rate was 10.8 percent overall; urban unemployment of 12.3 percent exceeded rural unemployment of 7.4 percent.

3. Methodology and Data

This paper through the use of exploratory methods, aims to explore the existing literatures to examine the impact of climate change on employment, be it – in the short; medium and long term in Nigeria. The purpose of this study is to come up with a set of potential supporting activities of climate change that influence employment in Nigeria. According to the latest available information from 1999, the labor force employment sectors are categorized into agriculture, services, industry. The sectors are as follows: 70 percent in agriculture, 20 percent in services, and 10 percent in industry. The study was mainly based on information derived from secondary sources. Secondary data employed for this study were collected from a cross section of National Bureau of Statistics and government agency such as National Population and Housing Census.

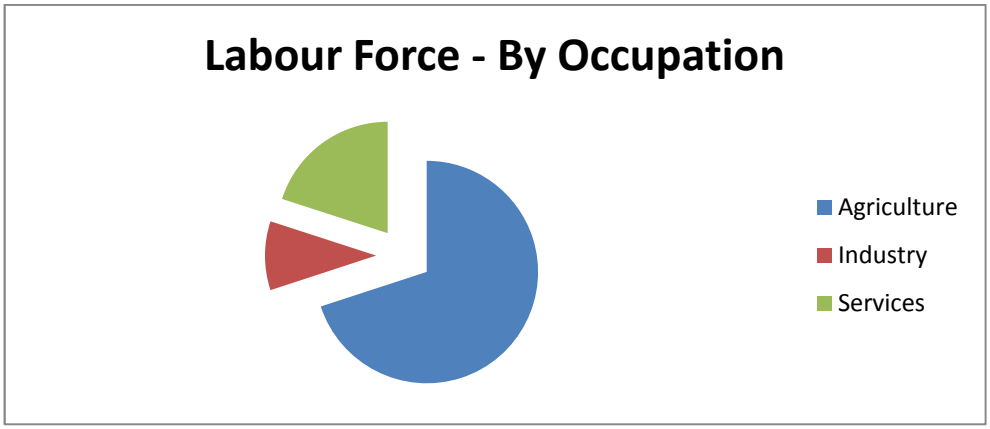

Figure 1. Showing Labor force – by occupation: agriculture 70%, industry 10%, services 20% (NBS, 2006)

3.1. Labour Market Trends

The labour force in Nigeria has continued to grow in line with the growth in population and natural age-specific transition in the economy. The labour force as shown in figure I above depicts percentages by occupation which they occupy. The labour force grew from 47 million of which 87 percent were employed in 1999, to 54 million of which 88.9 percent were employed in 2005. Aggregate wage employment in industries and businesses13 increased from about 3.66 million in 1999, to about 4.52 million in 2005. Overall, aggregate employment in Nigeria grew at 3.76 percent per annum, between 1999 and 2005. The gender dimension of the structure of employment is shown in Table 2. This is well illustrated in figure 2 and 3 below. Until the beginning of the 1980s, unemployment was not a serious problem in Nigeria.

Table 2. Distribution of Economically Active Population by Sector and Sex, 2005, % in Each Sector, % in the Labour-Force

	Women	Men	Women	Men
Agriculture	21.8	78.2	32.8	46.2
Manufacturing	12.3	87.7	4.2	3.0
Services	39.1	60.9	63.0	50.8

Source: Calculated using data from NBS (2006)

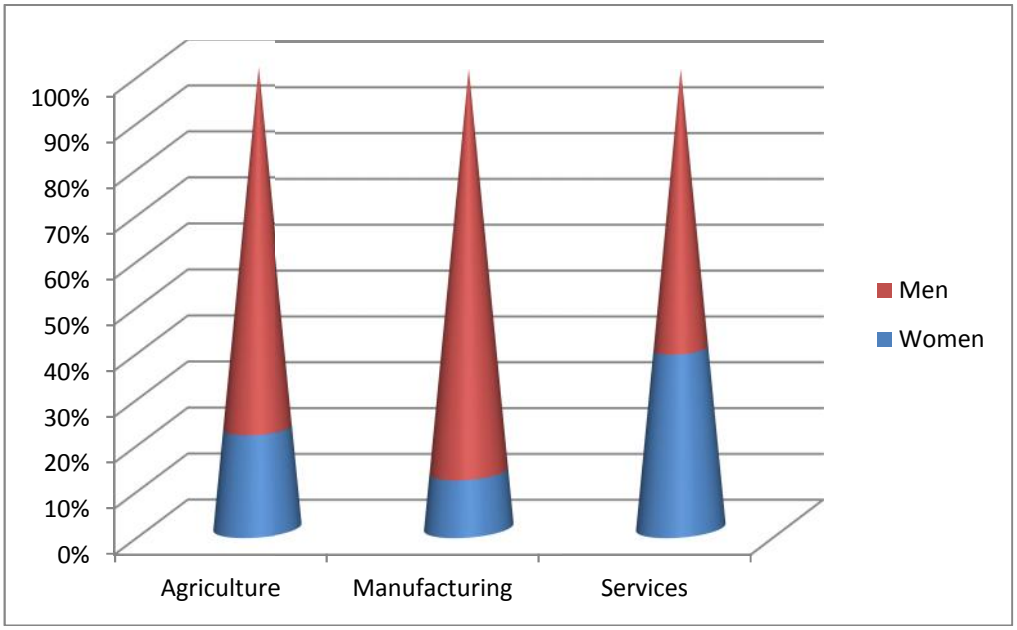

Figure 2. Showing Distribution of Economically Active Population By Sector & Sex Percentages in Terms of Sectors

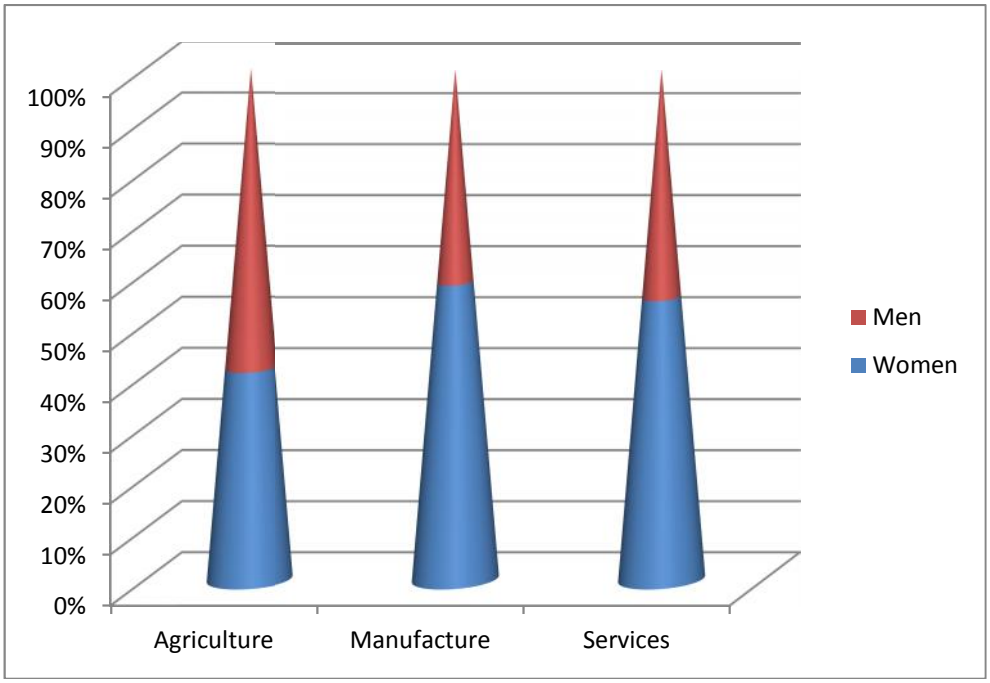

Figure 3. Showing Distribution of Economically Active Population By Sector & Sex Percentages in Terms of Labour Force

4. Conclusion and Recommendation

This paper through the use of descriptive exploratory methods, aims to explore existing literatures relating to the impact of climate change on employment in addressing the impact of climate change on employment, be it – in the short; medium and long term in Nigeria.

Climate change also leads to sea-level rise with its attendant consequences, and includes fiercer weather, increased frequency and intensity of storms, floods, hurricanes, droughts, increased frequency of fires, poverty, malnutrition and series of health and socio-economic consequences, thereby leading to a positive shift in the way each country is addressing the effect of climate change. In Nigeria, this climate change has a cumulative effect on employment through the short term, medium term and long term. Although, all forms of energy are expensive, but as time progresses, renewable energy generally gets cheaper, while fossil fuels generally get more expensive and hence, the world is shifting towards increasing employment in the renewable energy industry (Reuters, 2009b).

This study concludes that in the short term, low-carbon technologies are more labour-intensive than conventional fossil fuel solutions and the effect it has on

climate policy should be positive because it leads to net job creation. Although, at the International Confederation of Free Trade Unions conference held at Hague, it was stressed that on a short term, closing down industries that contribute to global warming will create unemployment but it will lead to more jobs creation in other sectors that embark on producing alternatives energy.

The medium term effect of climate change on employment was characterised with economy wide effect. On the one hand, comparative advantage creates export related jobs in the low carbon technological industry while on the other hand; unilateral action could result in a loss of competitiveness in the fossil fuel industry leads to migration of jobs elsewhere. However, it was discovered that the biggest effects will be felt over the longer term, when technical change and innovation would lead to more job creation, productivity improvements and growth.

The study therefore recommends that all the stakeholders; both government and private enterprises should raise awareness on the importance of climate change, and its attendant effects on the environment. Also, government agencies should implement policies that will militate against the adverse effect of climate change that will inevitably have an impact on jobs, working conditions and incomes in many sectors.

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