

## **FDI and Environmental Sustainability in the Neo-Economic Order: An Innovative Approach for Africa**

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**Abstract** This paper is an attempt to provide a new approach to attracting FDI to developing countries especially Africa, due to the new economic order which is on clean energy and environmental sustainability, the paper dwells so much on the need for a paradigm shift from the former ways of FDI attraction and the need to embrace clean and efficient technology with innovation. The paper therefore advocated for a comprehensive approach to the conduct of international trade which involves firms, government and the society at large, because the new economic order depends so much on a collaborative effort to solve the myriad of problems caused by globalization and our lifestyle. In order to achieve this comprehensive approach, the paper depended on a WARM model as developed by Carraro (1997) which is all embracing for the environment, firms, competitiveness and the society.

**Key words** Sustainability; Emission; Innovation; Corporate social responsibility

### **1 Introduction**

The only constant thing in life is change; it is a never ending process of mutation where unbalances never lead to opportunities, contradictions and disasters. Change is a dominant feature of modern economy and world system, decade after decade incremental and radical innovations re-shape the way we live, produce and consume and this phenomenon, spreads across all the society strata, country and the environment of our habitation.

However in these dynamisms, it is plausible that the flow of change often leads to a plethora of unsolved problems which binds together our electoral systems, societal and economic interests in a way that in the aggregate raise dangers to nature, humankind survival, justice and well-being. The global world is currently faced with the challenge of global warming and environmental degradation which implies emission of green-house gases and carbon emission along with other dangerous materials into the environment, however various groups and vested interests, technological complementarities, skills and inertial dynamics, made the unlocking of the big potential for a new economic order difficult and even impossible.

However there is a need for a new approach to the way things are done and re-direct the flow of change to generate tangible incentives to our historically powerful policy makers to deliver the deep change that is necessary.

Developing countries have gotten to the stage whereby they have the right to stand up with a voice for higher consumption standards, poverty eradication, and sustainable development and to reap the benefit of science and technology. Though the developed world would react harshly to any forced reduction in their levels of global emissions and consumption of natural resources, but it is necessary to recognize the need for a deep change in how the economy is run in the new economic order, offering new technology, new incentives and a new life style.

In this new world economy, there will be clean energy supplies, sustainable dwellings green jobs , effective feedback on how firms and organizations influence the environment with a different –tourism management etc., which implies a number of novelties in terms of international trade, global supply chains and the relationship between all the dominant sectors of the economy, in which products and services will be provided with which technologies and production methods will be employed, what skills are required of labor and employment conditions.

By and large the new world economic order calls for an innovative approach in Africa especially in her quest for FDI, most of which have always been in the dirty industries (cement, paper and pulp, iron and so on) as most African counties lack the will to enact strict environmental laws and this allows polluting firms seek haven in the continent due to the high tax on carbon emission in developed countries.

It is therefore pertinent to state that in order to stay competitive most Multinationals through their corporate power have made government environmental policy weak as any strict regulation would impose additional cost and gives countries with lax regulations a comparative advantage in attracting

FDI, List et al (2003) discovered that in developing countries while domestic firms are influenced by environmental regulations, foreign firms are not because they provide economic stimuli, benefits of foreign investment, more jobs and increased local wages. So it is necessary to define what environmental sustainability is.

There is no clear definition of sustainability as most definitions attempt to combine social, ecological and economic considerations into a common theme, however a working definition is by world council on environment and development in 1987, defines sustainable as that which “meets the needs of the present without compromising the ability of the future generations to meet their own needs”. The WCED’s definition also posits that the present generation has been reckless and wasteful in both its exploitation of natural resources by pursuing a series of socioeconomically and industrial policies that endanger global environmental securities.

The main objective of this paper therefore is an attempt to re-direct FDI into Africa from the perspective of environmental sustainability in the face of the new-economic order due to global climate change and it will have four sections as follows, the introductory section will be on the current need for a total change from the way things are done by many developing countries in order to be relevant in the new world, Section 2 will be look at trade theories and FDI from the perspective of environmental sustainability, while Section 3 will discuss the need for an econometric model that will take a holistic approach to both firm and government on the need for a clean energy and the last section will discuss policy and implications.

## 2 Literature Review

The financial sector in many developing countries is highly under developed and it’s just getting out of repression, its inability to mobilize domestic financial resources to close the gaps and develop the economy is quite inadequate, however with the debt forgiveness and debt cancelation of some countries in the African sub-region, there has been an increase in economic performance and growth especially with the understanding of the factors that determines foreign investment in flows. These factors are either pull (demand side) or push (supply side) approach or a combination of the two Singh and Jun (1996), in their study focused only on the pull factors which illustrate the relationship between host country specific conditions and the inflows of FDI. For example, factors that attracts investment, when a multinational company decides to invest in the home country. A number of socio-economic and political factors exist in the host country that determine available business opportunities and potential political risks and thus influence the MNCs decision to locate in a specific country. The following scholars, Pigato (2001), Akinkugbe (2003) and Asiedu (2002) have cited other factors to include, infrastructure, market size, labor cost, openness of the economy to foreign trade, exchange rate, fiscal and other non-tax incentives, political stability, legal system and monetary policies also important have been the existence of natural resource endowments, such as crude oil, diamond and forest reserves. However the implication of these factors is that while push factors, influence the overall size of FDI, the pull factors determines which country receives what share of FDI Carleon and Hernandez (2002).

The importance of the pull factors in attracting FDI depends on FDI type and the literature generally identifies two types of FDI, these are Market-seeking FDI which is intended to serve the market called the horizontal FDI (as it involves replication of production facilities in the host country). While the other type of FDI is resource seeking FDI, which seeks to reduce the cost of supplying the market (tariff and transport cost) or to become more competitive by responding promptly to local situations and preferences (Lim, 2001 and Campos and Kinoshita, 2003).

It is plausible to now state that Africa’s role in global market can only be improved by expanding both the range of products and trading partners along with the need for sustainable development which may not come from increasing FDI inflow alone for it would require the incorporation of social values by MNCs with an effective development policies at both national and global levels with the explicit embrace of environmental and social obligations in investment regimes for without adequate regulation economic growth is likely to accelerate environmental degradation, even if MNCs are good performers through scale effects the experience of East Asia often described as an economic success story provides a tragic example, According to Asian development bank, resources degradation and environmental pollution in both East and Southern Asia is so pervasive, accelerating and unabated “that it risks human health and livelihood”, while acknowledging that environmental impacts can worsen with an increase in the rate of economic growth according to Shafik and Bandyopadhyay (1992), Seldon and Song (1994) Grossman and Krueger (1991), they posits that environmental Kuznets curve first worsens and then

improves as per capita income increases however Dean (2002) disclaim this theory while Ostrom (2000), suggests that consumer social awareness can also be the reason for the improvements of environmental quality, Benabou and Tirole (2006) also added several cases of interaction between an individual's self image and social norms prevailing in the economy as a source of motivation for pro-social behavior by MNCs, consumers heterogeneity concerns for willingness to pay for ecological attribute itself is also considered by other scholars, Moraga-Gonzalez and Pardon-Fumero (2002), or some other features like income as in Arora and Gangopadhyay (1995) and Bansel and Gangopadhyay (2003) or the ideal product variety by Conrad (2005).

Taking the distributions of consumers' valuation as given all of these scholars focused on standard policy instruments like minimum environmental quality, taxes and subsidies. Innes (2006) also discussed about powers of consumers to boycott products not conforming to environmental regulation or standard.

Though resource management is the sole preserve of the state but MNCs have been able to drive standards up or down through their substantial powers because asymmetric bargaining power of MNCs is most troublesome in the context of intense competition for FDI in both developed and developing countries, given the absence of global environmental standards as most would be host countries seeking FDI are reluctant to make higher demands on environmental standards on MNCs as they may even be tempted to make lower than average demands to enhance attractiveness.

The impact of intense global competitiveness for FDI is thus to inhibit the rise of environmental standards as the problem affects both the developed and developing countries as effort to put a moderate tax on carbon and greenhouse emission has always been defeated by the developed countries due to fear of FDI moving off shore but due to awareness of climate change and rise of corporate social responsibility along with consumerism things are changing but at a slow rate, however now is the time to accelerate this change.

As much as FDI is needed in Africa to promote economic growth this as come with a lot of environmental impact for example large scale production target at international trade has led to loss of bio-diversity, including indigenous plants and animals extinction as well as deforestation, other effects includes water contamination of ground and surface water from fertilizers and pesticides, threats to human and animal health from pesticides and food additives and reduced agricultural productivity due to land degradation though trade should not be blamed for all the myriads of problems in the environment. It has often been argued that policies designed to protect the environment may harm economic growth and if introduced unilaterally by a country may reduce the competitiveness of its domestic firms this argument is based on the assumption that environmental protection has to be achieved through the introduction of emission charges (carbon tax) but 3 issues need to be raised. Tax is not the only policy instrument and is not the most efficient one that can be used to reduce polluting emissions.

When a tax policy is implemented it is important to assess the feedback effects induced by recycling the tax revenue and lastly the most important is the role of technical progress which cannot be neglected, therefore there may be a policy mix that provides firms with the correct incentives to adopt energy-saving techniques and investment in environmental friendly R&D while the first two issues partly explored both the theoretical and empirical literatures the last issue (role of incentives to technical progress) still lacks adequate quantitative assessment and it is for this reason that a new model was developed by Carlo Carraro and Marzio Galleoti. This new model endogenizes technical progress and its effects on feed back on economic, energy, and the environment. This econometric model called WARM (World assessment of resources management) which is developed for European Union presents simulation results up to 2015 on the effects of some industrial environmental policies which is aimed at protecting the environmental without necessarily damaging competitiveness and economic growth. The results show that policies that stimulate the environmental R&D, technological innovation and diffusion may provide firms with the correct incentives to avoid damaging the environment, while preserving their competitiveness in the market and this may not also worsen the public sector balance budget as a result of the positive effects on economic growth.

### 3 Methodology

The main idea behind this model is that technological progress cannot be observed but can be inferred by observing the dynamics of other variables, which can be decomposed into two parts (energy saving or environmentally friendly capital and the energy consuming or polluting part). Each year a new

vintage of capital stock becomes operational, in this way, new capital is added to the two components but the characteristics of this new capital depend on a number of economic variables which affects firms decision of installing energy saving capital the ratio between the two types of capital constitutes our indicator of technological progress.

Let  $k_t$  = the capital stock

$k_e$  = the environmentally friendly

$k_p$  = the polluting stocks

By definition, this implies

$$g_k - g_p + (g_e - g_p)(k_e/k_t) \tag{1}$$

Where  $g_k, g_p$  are the growth rates of the overall, polluting and environmentally friendly capital stocks respectively, suppose that

$$g_e - g_p = f(x) / (k_e/k_t) + \varepsilon \tag{2}$$

Where  $f(x)$  is the capital growth rate in the long run, when all technological possibilities to reduce energy consumption have been implemented

I.e. when  $K_t = k_e$  and  $g_p = 0$ ;  $x$  is a set of explanatory variables

$\varepsilon$  = Stochastic error term

The implicit assumption here is that when the stock of polluting capital is high, the rate of growth of the environmentally friendly capital is greater than the rate of growth of the polluting capital however the difference decreases as  $k_e$  approaches  $k_t$

Finally the following equation defines the dynamics of the following component of the capital stock i.e

$$g_p = h(w, v) \tag{3}$$

Where,

$w$  = set of explanatory variables

$v$  = stochastic error term

In particular the explanatory variables include R&D spending, output demand, factor prices and the number of imported patents. All things being equal, it is likely that more R&D spending increases the technological possibility of the economic system so that inducing investment in environmentally friendly capital replaces investment in polluting capital, similarly higher energy prices may induce firms to reduce investment in energy consuming technologies.

The amount of R&D carried out by firms is an endogenous variable of the model and this is related to the total output demand (assuming a unitary elasticity in the long run), relative factor prices and policy variables, which include which include environmental taxation (via energy prices) and innovation subsidies (via publicly funded R&D expenditures).

Eq., (1-3) endogenizes R&D expenditure factor prices and output demand define the structure of the latent variable model because  $g_p$  and  $g_e$  are not observable ,they must be estimated by filtering the information contained in the observable variables, to achieve this

Let's write eqs (1-3) in a state space form as

$$g_k = Hs + \varepsilon \tag{4}$$

$$S = fS(-1) + v \tag{5}$$

Where  $S$  = state space vector, which contains the unobservable variable  $g_p$  and the parameter vectors  $\beta$  and  $\delta$  associated with the variable vectors  $x$  and  $W$  respectively more precisely we have

$$H = [1 \times 0], \quad S = \begin{bmatrix} g_p \\ \beta \\ \delta \end{bmatrix} \quad F = \begin{bmatrix} m & 0 & \omega \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

In this matrix

$H$  = output matrix

$F$  = Transition matrix of the state space form of the model that contains the parameters which captures the adjustment speed

$m$  = component of the capital stock sector

$\omega$  = variable vector

The zeros and ones necessary to re-produce the identities concerning all the time-invariant coefficients. The error terms  $\varepsilon$  and  $v$  are assumed to be normally distributed and serially uncorrelated.

The state space form of eqs (4) and (5) has been estimated using the square root Kalman and information filters described by Carraro (1988), the covariance matrix of the error term  $\varepsilon$  and  $v$  has

been estimated using the maximum likelihood method. The initial values for the state vector have been estimated using the generalized least square (GLS) procedure proposed by Carraro (1985). The results of the estimates of state space transition matrix  $F$ , the output matrix  $H$  and the state vector  $S$  (in particular, the vector  $\delta$ ) show that the filtering procedure we used to decompose the capital stock yields homogenous results.

What this means is that there is a need for paradigm shift from the old way of doing things where by states impose carbon taxes which in most cases has not been efficient to check environmental pollution but now is the need to have a completely different approach whereby both the firm, state and the public come together to formulate the new approach whereby whatever approach is taken will be beneficial to the firm by making them more competitive, encourage investment into new technology and innovative practices energy consumption and multiplicity of other economic practices which generate different emissions of gases as this is more sustainable and comprehensive and could be used by government, firms, household, labor wage bargaining, international trade flows, to assess the impact of emission etc., this is why the WARM model is proposed in this paper to influence and guide all the stake holders involved in clean energy or the new economic order.

#### **4 Discussion and Policy Implication for African Countries**

MNCs have realized the need for a new approach on investment and climate change as vital for their staying competitive, retaining talents and customers' expectations as some firms have been embarrassed through scandals concerning the environment, human rights, health and labor matters. They have now realized the need to take society's concern seriously in order to continue in business. Therefore corporate social responsibility (CSR) is now viewed as vital for their survival and competitiveness and as time goes on the CSR will be consolidated and integrated as a core business strategy for firms and those who failed to integrate CSR will be left behind at a distinct disadvantage.

Global responsibility implies a global understanding of CSR which is illusive but World Business Council for Sustainable Development (WBCSD) in its new book "Walking the talk" emphasized the need for firms to develop local interpretation of CSR which complement local diversity and sector specific challenges using a lot of fundamental international standards and principles including the OECD guidelines for MNCs, (ILO) International Labor Organization standards and regulation, the Social Accountability 8000 (SA 8000) etc are some of the plethora of international standards being offered (CSR Europe, 2001), but nevertheless there are many global issues with which firms are now engaged and this includes health and safety, human rights, the environment, basic needs (water, sanitation, education, etc.), transparency and ethical practices, intellectual property rights, etc. It is now common to see government and private firms in a lot of collaborative effort on sustainable development programs, in a survey by environics international it was discovered that there is a common upward trend in the general public focus on social responsibility of the firm and many were even reported for not fulfilling their social responsibility and punished making them realize this can't be ignored again.

In another development many firms have realized the need to also include poverty reduction and sustainable economic development as part of their CSR responsibility and part of this is the creation of business networks across some developed countries as a new way of doing business globally.

However in the new economic order there is a need for African countries to attract only investment that will be environmentally friendly which will be departure from the old investment regime where most investments are in the dirty industries The firms have recognized this through their purchasing and investment decisions, with more investment in R&D and new technology which has produced a strong demand for increase accountability for their impact on society and the environment and this has been driven by a lot of stake holders including the government, consumers and many NGOs (non-governmental organizations).

Governments also need to come up with legislation that will be a guide to firms on how to operate especially on important issues such as human and labor rights and the environment to help firms to be more responsible by creating a level playing field for firms' competitiveness.

Therefore this new re-thinking process means that MNCs needs to operate within the legislative and economic framework developed by the governments and the corporate governance structure needs to be re-processed with regard to international trade according to UNCTAD, (2000). There is a need for developing countries to be integrated into the globalizing economy, FDI destinations needs to be expanded, there is a need for developed countries to reduce trade protection and subsidies, similarly developing countries need more trade liberalization.

## 5 Conclusion

This paper has made an attempt to call the attention of many developing countries especially Sub-Saharan African countries on the need for a paradigm shift from the way international trade and investment is conducted, as many of the old trade policies will soon be irrelevant in the new economic order which emphasize clean and green production techniques, the paper has gone through the trade theories and used the warm model to show the reason for more investment in R&D and innovative production policy which in turn will drive competitiveness and economic growth but cannot be left alone to the firm but needs a more comprehensive approach if the continent wants to be relevant in the new economic order and this comprehensive approach should include all stake holders on the environment and sustainability economics and standard production methods which will enhance competitiveness and diversify the continents economic base.

(1) Government should involve the firm as partners to share concerns on governance and implementation of innovative tools such as sustainability impact assessments, trade issues, and soft law policy instruments as a complement to hard law including bench marking and peer review, non hierarchical governance and co-regulation and labor standards.

(2) Firms has to be incorporated into the promotion of human rights democratization, and social governance especially in the context of globalization, which must include funding for capacity building towards trade incentives which could be restricted to include the incidents of non-observation of minimum social and environmental standards. Also, this capacity building will help many African countries socially, economically and improve the environment.

(3) African governments to involve the firm in poverty reduction through the provision of access to loans, technology and access to foreign markets and quality procedures for international trade along with employment practices and working conditions.

(4) Knowledge is a condition for allowing socio-cultural development of a nation and also balances economic re-birth in the long run, however insufficient protection of property rights, weak infrastructure, bureaucracy, low qualification level of workforce are some of the reasons put forward as to why efficiency seeking FDI does not come to Africa, therefore there is a need for government to go beyond the passive policies of attracting FDI such as tax holiday, subsidies etc but to now motivate firms to invest in an environment that fosters the necessary transfer of knowledge and technologies.

As globalization is increasing so also so is the cost of this new lifestyle in form of global warming and environmental degradation, however as the world and the business community is now aware of the cost, it is pertinent for a paradigm shift from the way things are done for firms and government to be more decisive in their responsibilities to the society and the environment similarly government on its part also need to collaborate with firms on the need to work together to reduce poverty and ignorance in order to achieve the millennium development goals and green production as evidences shows that this new approach will be beneficial to all parties in the way business is done in the new economic order.

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