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Empirical Study on "Green Economy (GE)" for Sustainable Development in Developing Country India

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ABSTRACT

Across the world, Green Economy concept has been gaining ground and India is no exception. Green Economy is a development strategy which synergizes both economic development and ecological sustainability. Since 2008 global financial crisis focused attention not only on the financial losses, and implications for economies, jobs and housing, but also raised questions as to the fundamental imbalance in our economies. The choice of capital allocation - investment in property, fossil fuels and financial assets, rather than in measures to encourage resource efficiency - has created destructive imbalances. A further common element to all these crises is the focus of decision making on short time horizons and trust in what has often proven to be an incomplete evidence base including a lack of proper accounting, for example as regards the cost of climate change and biodiversity. The "green economy" has become a topic of growing discussion in light of the environmental crisis. It has also become a rather controversial term, perhaps because it has become the subject of a multilateral negotiating process, within the Rio-Plus-20 framework. The "green economy" is not a concept that has yet to enjoy widespread agreement (among economists or environmentalists) or an international consensus. It is an extremely complex concept and it is unlikely there can be a consensus on its meaning, use and usefulness and policy implications, in the short term. A "green economy" gives the impression of an economy that is environmentally-friendly, sensitive to the need to conserve natural resources, minimizes pollution and emissions that damage the environment in the production process, and produces products and services the existence and consumption of which do not harm the environment. Hence empirical study carried out with extracting many excellent research papers and contribution to Green Economy and Implementation.

Keywords: Eco-Friendly Economy, Green Economy, Sustainable Economy, Sustainable Development, Green Economic Implication (GEI), Resource Efficient Use, Climate Change, Carbon Credits.

Introduction

This briefing provides an introduction to the green economy concept as it has developed to date, key policy tools to support a green economy and potential future steps in the EU's on-going development of a green economy approach. It also sets out key findings from research projects funded through the European Commission's Research Framework Programmes with results relevant to the green economy. It has been written by Doreen Fedrigo-Fazio and Patrick ten Brink of IEEP, with support from IEEP colleagues Samuela Bassi, Leonardo Mazza, Sonia Rouabhi, Axel Volkery, Emma Watkins, and Sirini Withana. Further support was provided by Jennifer Emond and Thierry Lucas from UNEP. This briefing covers:

What is a green economy?

Green economy, green growth and sustainable development

Green economy and environmental challenges

Policy options and research insights for a green economy

The global financial crisis that began in 2008 triggered questioning of the soundness of economic models and policies as they have developed over past decades. This questioning was amplified by the identification of various interrelated global crises (environmental and social) and the role of traditional views of economic growth in creating or worsening these. The rise and spread of the concept of the 'green economy' has stemmed from the identification of the need to address multiple issues in an integrated way, to overcome these existing interrelated crises and to better avoid any further ones. Some systemic environmental problems have become more evident in recent years, with climate change topping the media and political attention, closely followed by biodiversity loss in major part due to habitat destruction. Pressure from increasing resource demand has also led to availability scares of some resources (raw materials) that have become economically important and are central to a green economy, and in other basic resources such as water and phosphorus. Speculation on food commodities was also central in driving up prices for important staple foods, causing social hardship and riots in some countries. In industrialized countries, waste generation and most importantly the illegal shipment of hazardous wastes continues to cause the double negative impacts of wasting renewable and non-renewable resources and polluting the environment. Despite international political discussion on sustainable development dating back at least four decades, the underlying factor helping to make environmental

problems systemic is the economic system not taking appropriate account of natural capital assets nor of environmental and human health impacts. When the 2008 global financial crisis highlighted further weaknesses in most of the world's economic approaches and policies, the green economy concept was promoted as a means of reforming traditional economics to better reflect natural and human/social capital. In so doing, economic development could be stimulated whilst nourishing natural and human capital and respecting planetary limits. Central to the development and promotion of the green economy as a means of overcoming a number of crises was the United Nations Environment Programme, notably its Green Economy Initiative (GEI).

Initiative Survey

The research topic concerning the effect of green economy innovations on employment is receiving more and more attention because of transition to cleaner production for a full sustainable growth of industrialized countries. Moreover, high unemployment rates can be observed in these economic areas because of economic and financial crisis since 2006. More empirical studies about these structural changes are required to compare the benefits and the costs relative to the transition process. We can distinguish studies dealing with the general nexus between technology and employment, and studies focusing on green technologies.

Empirical Evidence Based on Technology and Employment

As far as the macroeconomic perspective is concerned, Sinclair (1981) finds that there is a positive impact on employment in case of high demand elasticity and elasticity of factor substitution. Also Layard and Nickell (1985) identify the key role in the elasticity of the demand for labor with respect to a variation in the ratio between real wages and labor productivity. In particular, this parameter should be sufficiently high to compensate initial job destruction. Feldman (2013) finds that technological progress produces unemployment in the short run. Matuzeviciute, Butkus and Karaliute (2017) outline no significant effect of technological innovations on unemployment. From a microeconomic perspective, Van Reenen (1997) finds a positive effect of innovation on employment by using data on UK manufacturing firms. Piva and Vivarelli (2005) evidence a small positive effect of gross innovative investment on employment. Hall, Lotti and Mairesse (2008) find a positive effect of product innovation but he does not find any impact of process innovation. Bogliacino and Vivarelli (2010) find a positive effect of product innovation on employment, by analyzing, particularly, high-tech manufacturing sectors in eight European countries. Lachenmaier and Rottmann (2011) explore German manufacturing firms by evidencing a positive effect of different innovation measures on employment. Bogliacino and Vivarelli (2012) evidence a job-creation effect of Research and Development (R&D) expenditures in high-tech industries for 15 European countries. Harrison, Jaumandreu, Mairesse and Peters (2014) confirm that process innovation lead to employment displacement, while product innovations have a labor-friendly nature. Ciriaci, Moncada-Paternò-Castello and Voigt (2016) use Spanish Community Innovation Survey (CIS) on 3304 Spanish firms to demonstrate that innovative, smaller and younger firms are more likely to present a high and persistent job-creation effect than non-innovative firms. Barbieri, Piva and Vivarelli (2018) investigate 265 innovative firms and outline a job-creation effect in high-tech and large firms. Cirillo, Pianta and Nascia (2018) explore 36 manufacturing and service industries of five major European countries (Germany, France, Spain, Italy and the UK) and find a different impact of product innovations taking into account the managerial category with respect to other categories. Piva and Vivarelli (2018a and 2018b) confirm a labor-friendly impact of R&D expenditures in medium-high sectors, while they do not find any impact in low-tech sectors. Van Roy, Vertesy and Vivarelli (2018) analyze about 20,000 European firms and outline that technological change, proxied by forward-citation weighted patents, are labor-friendly. We can identify in the literature also the relevance of the role of the knowledge diffusion process in the employment effects of innovation. Indeed, Aldieri and Vinci (2018) find a significant impact of technological spillovers on firms' employment within the Triad. Aldieri, Kotsemir and Vinci (2018) find a labor-creation effect of own innovation and a labor-saving effect of geographical spillovers at a regional level in Russia.

Present implementation Strategy of GE in Developing Countries like India

The third macroeconomic dimension highlighted by Ocampo comes from recognizing that economic growth is nothing else but a process of structural change: one in which some activities expand, based on new technological knowledge, while others contract. In this "structuralist" view, those changes are not just a byproduct of growth but their prime mover: development is nothing other than the capacity of an economy constantly to generate new dynamic activities. This view is essential because the transition to the green economy involves no less than a technological revolution, and will have deep impacts on production structures as well as on consumption patterns. These structural transformations have two types of implications. Since new technologies are largely going to originate in the industrial countries, there are a series of international issues related to how these technologies are disseminated, what changes in trade patterns they will generate and what mechanisms will be put in place by the international community to guarantee that this process will benefit all countries. These issues are dealt with in later sections. Here we will concentrate on a second set of issues that relate to the domestic policy response by developing countries. The major implication in this regard, which is underscored by the three authors, is that active development strategies must be put in place to drive the transformation towards new dynamic green activities. This strategy can be called as an investment-led strategy, or an active industrial and technology policy. In the latter case, it must be emphasized, however, that it involves not only manufacturing or industry but the whole range of economic activities (agricultural transformations, for example, are critical). For this reason, "production sector policies" could be a better term than industrial policies. Developmental states must be at the center of these strategies, but they must be designed to encourage strong private-sector responses. In Khor's terms, the state has traditionally had a strong developmental role in developing countries: it now has to take on a *sustainable* development role. In the view of the three authors, the core of this strategy should be a strong technology

policy with a focus on adaptation and dissemination of green technologies (an issue that will be dealt with more extensively below) and the treatment of green economic activities as "infant industries" that require appropriate support (subsidies, preferably time-bound, access to credit and perhaps some level of protection). In Cosbey's view, a wise industrial policy requires giving preference to new public and private investment that contribute to sustainable development: investment with good prospects for generating backward and forward linkages in the economy, and which aligns with countries' development priorities. In the end, he argues, governments looking to support domestic green sectors will inevitably pick losers as well as winners, but this should not be a blanket admonition against trying, as we have a rich history on which to draw in judging what works and what does not. These actions should be supported by public sector investments that develop the necessary infrastructure and provide access to basic energy and water and sanitation for the poor. Needless to say, besides encouraging faster economic growth, the strategy must also incorporate sustainable development principles and practices. The set of related issues is extensively analyzed in Khor's contribution. It includes regulation, pricing policies, taxes and subsidies to limit pollution and emissions and to control over-exploitation of natural resources and making prices better reflect environmental values, as well as mainstreaming environmental criteria in government procurement policies. In his view, this principle should also be incorporated in the pricing of public services, but in such a way as not to penalize the poor, especially when the products or services concerned are essentials. Thus, if water is generally underpriced, when revaluing its price a system of differential pricing should be put in place that ensures access for the poor. Public expenditure on restoring damaged ecosystems (such as forests, hillsides, water catchment areas and mangroves) is also important. One of the crucial issues is the right of rural communities to a clean environment that enables them to have a sound basis for their livelihoods and their living conditions. One of the most serious potential effects of global warming will be the lower productivity of agriculture in developing countries. For the same reason, however, poor rural communities are also among the main beneficiaries of the green economy. Sustainable agricultural production methods have great mitigation and adaptation potential, particularly with regard to topsoil organic matter fixation, soil fertility and water-holding capacity, and increasing yields in areas with medium to low-input agriculture and in agro forestry. In this context, paying farmers for carbon sequestration may be considered a "triple dividend" policy, as carbon dioxide is removed from the atmosphere (mitigation), higher organic matter levels and moisture retention in soils enhance their resilience (adaptation), and improved soil organic matter levels lead to better crop yields (production). This issue is also related to "food security", a term that has shifted back to the traditional concept of greater self sufficiency and increased local food production. This may require, in Khor's view, putting back many institutions that were dismantled in developing countries due to structural adjustment policies: those that assisted farmers in marketing, credit, subsidies, infrastructure, and protection. It should also include international trade reform that sufficiently reduces or removes harmful agricultural subsidies in the developed countries, while enabling developing countries to have special treatment and safeguard mechanisms to promote their small farmers' livelihoods.

Conclusion

While the prevailing economic growth model focuses on increasing GDP above all other goals, a Green Economy promotes a triple bottom line: sustaining and advancing economic, environmental and social well-being. The persistence of poverty and degradation of the environment can be traced to a series of market and institutional failures that make the prevailing economic model far less effective than it otherwise would be in advancing sustainable development goals. There are many challenges and obstacles facing developing countries in moving their economies to more environmentally friendly paths. On one hand this should not prevent the attempt to urgently incorporate environmental elements into economic development. On the other hand, the various obstacles should be identified and recognized and international cooperation measures should be taken to enable and support the sustainable development efforts. The conditions must be established that make it possible for countries, especially developing countries, to move towards a "green economy." The main conditions and dimensions have been recognized in the negotiations that led to Rio 1992, and are well established in the Rio Principles and in Agenda 21. The treatment of the "green economy" in Rio Plus 20 should be consistent with the sustainable development concept, principles and framework, and care should be taken that it does not detract or distract from "sustainable development". Thus the "value added" to the Green Economy as contrasted to sustainable development should be identified. Care has to be taken to ensure that the "green economy". Hence more and more economical researches and practices must need to carried out and promote towards "Green Economy" and "Green Economic Implementation (GEI)".

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