DEVELOPMENT OF THE GREEN ECONOMY AND INCREASE OF ITS IMPACT ON EMPLOYMENT

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Abstract

The world economic recession caused the loss of jobs for 34 million people between the years 2008 and 2009, thus finding viable alternatives for job creation is a global priority. In this context, our work's objective is to study the effects of green economy development on job creation at global level for the next decades. Based on a detailed documentary analysis, our paper will analyze the estimations regarding the number of jobs that will be created in one sector of the green economy, namely the renewable energy sector. Data prove that the renewable energy sector has a remarkable potential for job creation, the estimations showing that by carrying out smart policies for its support, massive investments would immediately follow and the number of jobs created in renewable energy sector could double in the next ten years and even triple in the next twenty years.

Key-words: *green economy, renewable energy, green employment, sustainable consumption*

JEL Classification: Q_{20}, Q_{42}, Q_{52}, J_{21}

Introduction

Sustainable development refers to the improvement of life quality and the welfare of the present and future generations and it represents the target aimed at by both the developed countries and the emergent economies of the world. The achievement of this objective is, first of all, threatened by the way how people live today, produce and consume – behaviours that greatly contribute to global warming, pollution and waste of natural resources. Scientists are warning that, in order to limit the catastrophic effects of climate changes, the industrialized states must reduce the carbon emissions (compared to 1990), by at least 40% until 2020. To this end, a new economy has emerged fast, 'green economy', as an alternative to 'black economy', based on fossil fuels. The central element of the green economy is the generation of green energy, which will lead to more green jobs, to a sustainable economic growth and to a re-definition of the consumption and

production human behaviour and the man-environment relations. The last years brought evidence in favour of this concept – the scientists, ecological groups or the European and international institutions in the field believe that the green economy is able to generate a sufficient number of jobs and their safety depends little on the context (e.g. economic crisis). This is a quite important element, since both developed and developing countries face an economic decrease and unemployment growth.

The world recession has triggered loss of jobs for 34 millions of people, between 2008 and 2009, hence to find viable alternatives for creating jobs is a global priority. To this end, we aim to study the effects that the green economy development will have upon creating employment at a global level. Based on a solid documentation, the paper herein will analyze the estimations regarding the number of employment places that will be created in the decades in the renewable energy sector.

The paper will start with a conceptual framework for the green economy and green employment and will examine the development stage of the green economy at a global level. The second part is meant to analyze the impact of the green economy development on creating new jobs, based on a case study: the sector of renewable energy and the third part will include the conclusions of our study.

Green economy and green employment: theoretical and empirical framework

The challenges that the mankind is facing at present are a consequence of how we live, we produce and consume, leading to global warming, pollution and waste of natural resources. As per the study *Environmental Impact of Products (EIPRO)* conducted by the Center of Joint Research and the Institute of Prospective Technological Studies (IPTS, 2006), at the EU level, the consumption sector related to food, housing (including heating, water, house gadgets) and transport is the cause for 70%-80% of the effects upon environment. For this reason, there emerged the need and priority that people evolve towards more sustainable consumption and production models. But the climate changes and the surging demand for energy and resources hinder the achievement of this objective – this is why the academia and business people consider this is the time for an energy and resource efficient economy.

Green economy is the economic model that has been witnessing a very fast growth for the last decade and an alternative and in contrast with the current model of the so-called ‚black' economy based on fossil fuels, like oil, coal and natural gas. Green economy relies on the ecological economy, which targets the interdependence between the economy and the natural eco-systems and the negative effects that the economic activities make upon the climate change and the global warming.

The basic idea of the green economy is the substitution of the fossil energy with other sources of *renewable energy* (alternative energy or ‚green' energy), as they are environmental-friendly. The renewable energy comes from natural resources like wind, water (hydraulic), light and solar radiation (solar,

photovoltaic) or the earth (geo-thermal energy). The list also includes the energy derived from biomass (biodiesel, bio ethanol, biogas).

The sector of the renewable energy has been on the fast lane for the last five years. Thus, according to the Renewable Energy Policy Network for the 21st Century (REN21), in 2008, the capacity of producing wind energy has risen by 29% worldwide, photovoltaic solar energy by 70% and hydraulic energy from small power stations by 8%, compared to 2007 and 600%, 250% and 75% versus 2004, respectively.

Despite of criticism brought by certain technologies of producing renewable energy being intermittent, the renewable energy market is in full bloom. The concern about the climate changes, the high oil price, as well as the governmental support given to this sector, makes it develop faster. In this context, the green economy becomes an opportunity to create jobs, considering the world context of financial crisis resulting in job loss for a large number of people. Practically speaking, the green economy stakes on solving two of the most serious problems that we are facing now at a global level: decrease of unemployment (by creating employment places) and the reduction of the pollution level (by decreasing the carbon emissions in the atmosphere, a key factor in starting a chain reaction of recovering the terrestrial eco-system).

The *green jobs* are considered to be those jobs that will substantially contribute to the maintaining or recovering the environment quality. Specifically but not exclusively, the concept refers to jobs that protect the eco-systems and bio-diversity and to the reduction of energy and water consumption via streamlining strategies, to decreasing the carbon emissions and to minimizing or avoiding any pollution problems.

The report *Green Jobs: Towards Decent Work in a Sustainable, Low-carbon World* (2008), conducted by a consortium supervised by the Environment Program of the United Nations and the International Labour Organization believes that employment will be affected by the shift towards a green economy, from at least four points of view: new jobs will be created (eg., in building equipment to control the pollution level), some jobs will be substituted with others (the transition from fossil fuels to renewable ones or from waste incineration to recycling, etc.), some jobs might just disappear without any substitutions (certain packaging will stop from being manufactured), and the content of some jobs will be modified (plumber, electrician, construction worker, etc.).

Case study: The evolution of employment in the renewable energy sector

As said earlier in this paper, the green economy brings opportunity for creating new jobs and decreasing unemployment, two crucial targets at the present moment, when the world is trying to come out of the financial crisis and severe unemployment. Thus, according to the ILO, in 2009, there were 212 million jobless people in the world (6.6% in the employed population), 34 millions more than in 2007, while 40 new million jobs were created during 2008.

The opportunity that the renewable energy sector brings is about creating new jobs, as the sector is expected to rise very fast in the next decade, i.e. from 4.4% to

30% from the global energy consumption, where the main prerequisite of this development is the target of reducing the carbon emissions by 40% until 2020. For now, the production of the renewable energy is concentrated in a few countries. For example, the countries in top five in terms of wind energy production hold 72% of the global capacity. For the photovoltaic solar energy, Japan and Germany have 87% of the global capacity, and for the thermal solar energy, the USA have most of the world production capacity. For the biomass derived energy – bio ethanol, the USA and Brazil hold 90% of the global capacity; for biodiesel, the top five countries hold 78% of this capacity.

As far as the number of people employed in the renewable energy sector, the ILO estimates that there are 2.3 million people globally in 2006 (limited to the countries providing such data). Greenpeace International Organization in its report *Working for the climate: Renewable energy and the green job [R]evolution* (2009) says that for 2006-2007, there were between 1.3 and 1.7 million workers. As per the Environment Program of the United Nations, the developed countries are leaders in technological development in this sector but also the developing economies play their role, too – China and Brazil for solar radiation and biomass-derived energy. The jobs in this sector are to be found both in research-development and in the processing, equipment, maintenance or biomass cultivation.

We repeat that the potential of creating new jobs is enormous in this sector. Besides the developed countries, like Germany, Spain, USA, Japan – the pioneers who have invested huge amounts of money here and will not stop here, countries like Brazil and China are trying to catch up with the top ones.

Thus, the European Commission forecasting, quoted by ILO, indicates that at the EU level, there will be approximately 950,000 jobs in the renewable energy sector at the end of 2010 and 1.4 million until 2020, directly or indirectly linked to the expansion of this sector. These numbers represent net employment figures, also taking into account the potential losses of jobs in the sectors of traditional production of energy. More optimistic scenarios, based on advanced strategies of developing this sector, indicate a number of up to 1.7 million jobs by 2010 and 2.5 million by 2020. Among these jobs, 60-70% of the jobs are estimated to be in the renewable sector, and the rest in the agriculture supporting industry (eg., biomass), while a third will go to the highly qualified people. These estimates under-evaluate the number of new jobs created in this sector, only referring to the EU15, while the new Member States have an important potential for developing this sector (eg., Estonia, Latvia, Lithuania, Romania, Poland). Germany, one of the leaders in the renewable energy sector, has quantified a number of 260,000 employees for 2006, and the estimations for the 2020 indicate 500,000, and in 2030, the number of workers in this sector will exceed 700,000 people.

For the USA, another world leader in this sector, there are currently employed around 446,000 people and by 2030, it is expected to be created 1.3 million jobs in a similar scenario as present, or 3.1 million jobs for a moderate expansion or even 7.9 million people in an optimistic scenario. For two other countries on top positions, Spain and China, which have now 188,000 and 943,000

workers in this sector, the estimates are very optimistic, even if we do not have any numbers yet.

The source of renewable energy that hires the highest number of workers, i.e. the bio-fuels, will have the fastest development in the next ten years; estimates say 12 million workers for 2030. A heated debate is about the quality of the jobs in this sector – mainly the ones in agriculture, which are not decent jobs, wages are inadequate and the health and security conditions are poor.

Greenpeace International and European Renewable Energy Council (2009) have made estimates at a global level in terms of jobs in the renewable energy sector, the existent and the ones that will finally disappear. Thus, for 2020, there will be 5.03 million jobs in this sector, and 6.9 million in 2030, according to the scenario that says that in 2020, 32.5% of the global energy will come from renewable sources, and 42% in 2030. The same report states the fact that there will be a net growth of 2 million jobs in the energy sector in 2030, compared to 2010, despite the fact that there is an estimate for a reduction in the number of jobs in the coal sector (by circa 3 million).

Conclusions

The data presented above clearly reveal that the renewable energy sector truly provides a remarkable potential for creating green jobs. The estimates show that the massive investments will come and by smart support policies, the number of jobs will double in the next 10 years and even triple in 20 years. The sources of the renewable energy that will be the most exploited and generate most jobs will be the bio-fuels (12 million people employed by 2030) and the radiations and solar light (6.3 million people in 2030). The jobs will be generated both in the developed countries in the world, which are the leaders of the renewable energy resources, i.e. USA, Germany, Japan, Spain and other countries of the EU, and also the developing economies, like China, Brazil, India, Kenya that massively invest in this sector.

We may conclude that the development of the renewable energy sector represents both a necessity, for reasons related to redefining the consumption and production models and environment protection, and also an opportunity for creating jobs – thinking that recession has indeed led to the loss of thousand jobs.

Even if the expansion of this sector will lead to the decrease of the employment in other traditional energy sectors, like mining, coal, oil, natural gas and nuclear energy, the specialists estimate that the employment in the renewable sector will counterweight and the net employment will rise globally. Still, the governments should consider that some territories that are dependent on the traditional energetic sectors will be harmed during the first stages of transition to renewable sources.

Another aspect that needs to be mentioned for the jobs is their quality – in some area, like bio-fuels, they do not offer adequate wages and working conditions are not as safe and secure as they should be.

The future research projects in terms of creating jobs in the renewable energy sector will have to go beyond numbers and take a closer look at the changes in the structure of employment, depending on the sectors, regions, gender and qualifications. Likewise, the academic environment, along with the governments, will have to come up with methodologies and statistical systems to register and estimate the occupations and the employment places in the green sector, in order to give a helping hand to the increased accuracy and credibility of the future research and political decisions in this area.

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