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Green Investments - between necessity, fiscal constraints and profit

Marian Catalin Voica^{a*}, Mirela Panait^b, Irina Radulescu^b

^aThe Bucharest University of Economic Studies, Bucharest, 010961, Romania

^bPetroleum and Gas University from Ploiesti, 100680, Romania

Abstract

Climate change affects negatively, in a large extent, the activity of economic agents. Gradually, the companies and the public institutions have realized the need of adaptation to new climatic conditions, which led to the adoption of environmentally friendly behaviour and promotion of social responsible strategies. This article demonstrates the importance of the role played private investors and public authorities that made green investments, mainly in infrastructure, but they also create legal and institutional framework to encourage direct and portfolio investors in this field.

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1. Introduction

The last decades have been influenced by the growing concern regarding the human activities influence on the environment (Nica and Potcovaru, 2014). Those concerns led to the development of new ways to do and evaluate businesses. Governments and international institutions made the necessary steps to develop instruments to drive the change in how our activities act on the environment. All those actions have the goal to help transitioning to a low-

* Corresponding author. Tel.: +40722464948

E-mail address: ec_voicamariancatalin@yahoo.com

carbon, climate resilient and resource-efficiency economy (McCarthy and Vermeulen, 2014).

The main obstacle in achieving this goal is the cost of the transition from a high-carbon emission economy to a low carbon one (Popescu, 2014). There has been many discussions regarding the best way to achieve this goal, like carbon tax or carbon trading, but one of the most important evolution was the promotion of environmental friendly investments, also known as green investments.

There is no universally accepted definition for green investments. In essence a green investment is considered to be a low-carbon or climate resilient investment made in companies, projects and financial instruments in the field of climate change, renewable energy, clean technologies, etc.

In the research to define green investments, we find many definitions, some broader, some technical, some depending on ecological reasons and so on. In his research, Inderst et al (2012) draw the conclusion that the main characteristics of green investments are:

- There are many definitions of green investment depending with economic and government aspects.
- Many intersections of the various definitions exist with some sectors (like renewable energy), commodities (e.g. carbon or renewable energy credits) services (for example waste management) and technologies (e.g. to enhance energy efficiency).
- Major controversy (for example nuclear and large-scale hydro energy), changing consensus (like biofuels, biomass, shale gas), ambiguity (agriculture, green IT, financial services, waste) or uncertainty how to deal with (e.g. biodiversity, conservation) have been detected.
- For some goods or services, it is more easier to define „greenness than for technologies and processes.
- The metric for „greenness“ is difficult to be established for goods, technologies and processes.

Green investments can incorporate other investment approaches like: ESG (environmental, social and governance), SRI (sustainable responsibility investing), RI (responsible investing), SI (sustainable investing), double or triple bottom-line investing, universal ownership concept etc. The relationship between those different aspects might be complementary or in competition.

The motivations to realize green investments are diverse, but the literature groups them in four classes:

- Financial considerations: return, risk, diversification, long-term risk consideration, internalization of externalities;
- Extra-financial considerations: ecological, scientific, religious, ethical, political;
- Reputational: reputation of the investor, reputation of the company, marketing tool, pressure from media;
- Compliance and fiduciary duty: domestic law and regulations, international conventions, voluntary industry codes, disclosure codes, good governance codes.

Regarding the motivations of green investments, we can say that financial considerations are at the top, the other three categories have difficulties in terms of monetary comparability. In other words the extra-financial, reputational and compliance and fiduciary duty, have the role of supporting better financial results resulted from the improvement of companies status in the world of business (Boling et al. 2014). This also depends on the type of the company, for example an investment trust has as main policy the return/risk (Sum and Chorlian, 2014), while an environmental NGO has the ecological as its main policy and a charity may have ethical policy and so on.

Studies made by Brookings Institution, Green Investment Bank Commission of the UK the United Nations Industrial Development Organization (UNIDO), and other researchers exposed the different barriers to green investments financing and development. A study of Duncan Ritchie conclude that the main reasons why green investment are on the losing side are: transactions are smaller, development activities are mainly led by other project developers than the traditional ones, resources are available depending on project, usually projects rely on regulations and carbon pricing mechanisms, and on new emerging technologies.

In a study for World Bank, Baietti et al (2012) concluded that the main impediments for green investments are:

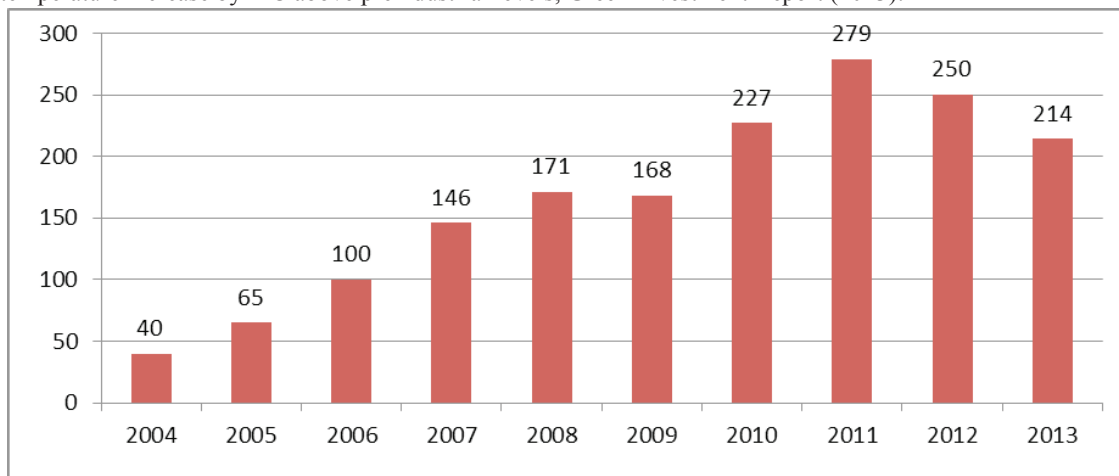
- The price of carbon. Unless the price of carbon became more stable, predictable and reliable, it will not be an attraction for investors. The United Nations Secretary-General's High-level Advisory Group on Climate Exchange Financing (AGF 2010) draw the conclusion that if the price of carbon emissions is set to 25 USD per ton, it will be enough to raise the 100 billion USD per year to address the need of developing countries as it was decided at the United Nations Climate Change Conference in Copenhagen in 2009;

- Fossil fuels subsidies. Because of under-pricing the cost of fossil fuels and traditional technologies prices and resource allocations are distorted, making green investments unattractive;
- High up-front costs and long payback periods. Green investments tend to be costly, even though some of them are viable from a financial point of view; this is not the case for the majority. That is why green investments require higher return rates, many times, those rates are supported by countries through pricing mechanisms or subventions like green certificates;
- Technology risks. Every new technology has its risks, like the viability and the functionality. Financing and developing new technologies tend to be hard, unless it is supported by the public or venture capital. In general the financial community will not finance those projects until their risk-return profiles tend to be more stabile.
- Revenue risks. Because of the uncertainty of new technologies regarding revenues and risks, they are hard to finance by the investors or banks because they have low credit ratings and the necessity to provide collaterals to cover their risks and financing necessities.

Except these main impediments there are others with a lower influence like: high transaction costs, information knowledge and confidence gaps, insufficient international participation, residual value of existing assets that would need to be replaced, high costs to integrate clean energy sources into the system, political and regulatory risks, uncertain intellectual property rights, inadequate domestic financial instruments, etc. (Hoen, 2014)

2. Past, present and future of green investments

Calculation of experts of climate change estimates that investments in water, agriculture, telecoms, power, transport, buildings, and forestry should reach 5 trillion USD per year to 2020, to achieve a sustainable growth. This effort cannot be made from public resources; therefore more attention must be steered in attracting private finance, by creating suitable policy for it. There are additional incremental investments needs of 0.7 trillion USD per year, for clean energy infrastructure, low-carbon transport, energy efficiency and forestry, to limit the global average temperature increase by 2°C above preindustrial levels, Green Investment Report (2013).

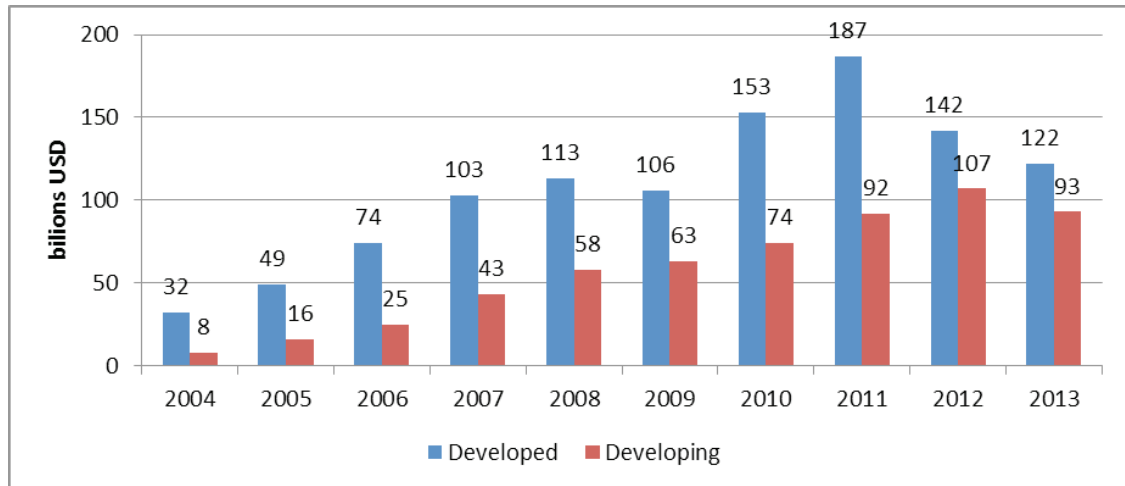


Source: UNEP, BNEF;

Fig. 1 Global new investment in renewable energy, 2004-2013, billion USD

Green investments are the way to create a sustainable economic growth (Dan, 2014) for the needs of our seven billion population of today, and the future one. Data from UNEP and BNEF show that the trend in green investments has been an ascending one between 2004 and 2011, with a fall in 2009. The highest value of green investments was in 2011 with a value of 279 billion USD, which means a seven fold increase since 2004.

The latest studies show that in the years 2012 and 2013 green investments took a downward trend with falls of 11% in 2012 and 14% in 2013. The main reasons of this fall in green investments are the uncertainty in US and EU markets generated by the reorganizing of the green certificates scheme in different countries, and the sharply reduced cost of solar photovoltaic systems. 39GW of photovoltaic systems was constructed in 2013 compared with 31GW in 2012; therefore more constructed systems with a lower production cost. Over a five year period the worldwide average cost of electricity has declined by 53% for crystalline silicon photovoltaic systems and by 15% for onshore wind turbines, over the same years the cost per MWh of coal and gas generated electricity has increased in many countries with the notable exception of US where gas prices remains much lower than elsewhere. Because of cost reduction of the star technologies of green investments, the new projects are closer to become competitive with fossil-fuel alternatives.



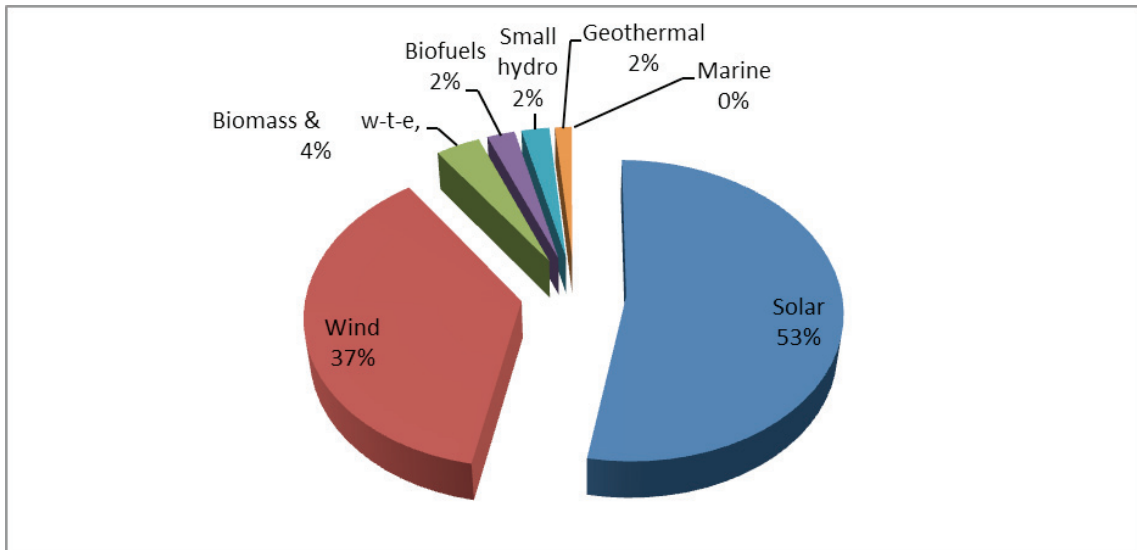
Source: UNEP, BNEF

Fig. 2 Global new investments in renewable energy: Developed vs. Developing countries, 2004-2013

Even though developed countries are the main engine of this growth, developing countries play a growing role as the numbers show an increase of non-OECD investments 15-fold between 2004 and 2011 at a rate of 47% per year, compared with the 27% rate of OECD originating investments.

A comparative study of renewable energy investments of developed versus developing countries shows that, even though at the start of the period, in 2004, developed countries have the majority of new investments, almost four times more than the developing countries, the gap slowly closes and now developing countries almost matched the investment of developed countries. This could be explained by the fact that developed countries did a lot of research and development in the field and as the costs of renewable energy capacities tend to get cheaper and therefore accessible to lower income countries. Another conclusion might be that the financial crisis had a bigger impact on developed countries than developing ones as it is seen in the period 2008-2010.

A lot of wind and solar projects have been developed in Latin America, Middle East and Africa. Many of these countries find themselves in an increased need for power and no indigenous fossil fuel reserves, but with plenty areas with sunshine and wind. As the technologies to harness the wind and solar power became more accessible, sometimes comparable with the effort of using fossil fuel if we take in account the environmental cost, green investments became a normal alternative for sustainable development.



Source: UNEP, BNEF

Fig. 3 Global new investment in renewable energy by sector in 2013, billion USD

The distribution of investment in renewable energy project shows that the most important of them are solar and wind systems, together making up a share of 90% of all investments, with more than 194 billion USD invested. Next in line is biomass and waste to energy with 8 billion USD, biofuels with 5 billion USD, small hydro (projects under 50MW) with 5 billion USD, geothermal with 3 billion USD and marine with 0.1 billion USD.

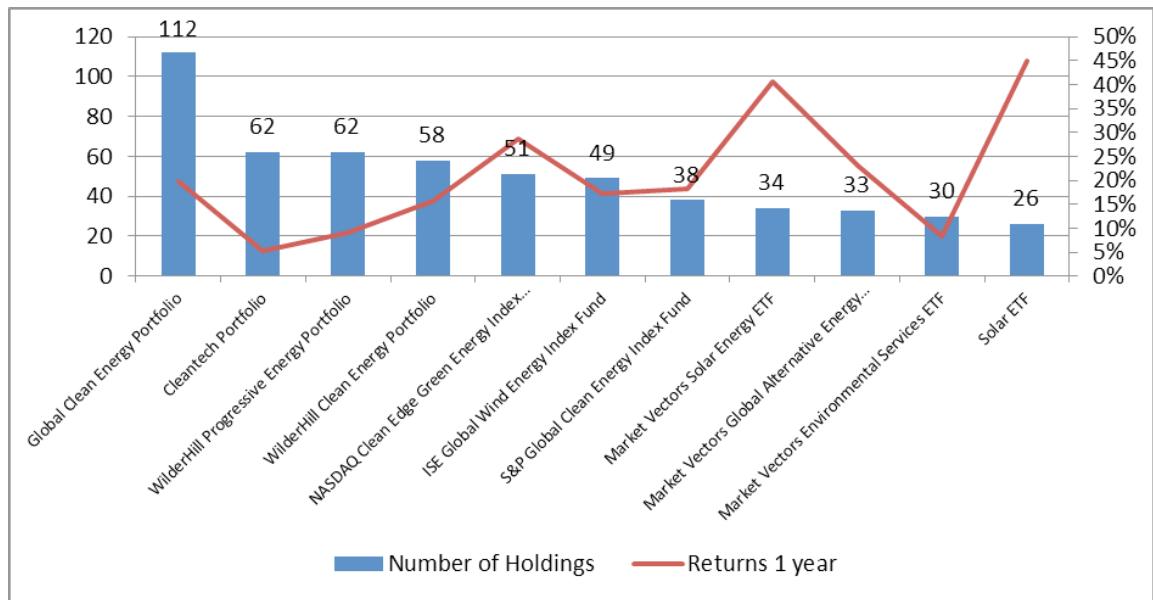
3. Instruments of green investing

In this section, we will explore which are the most used forms of making green investments and the best performing ones from each category. The main forms of green investments studied by us are: green equity and green bonds.

Green equity took many forms and approaches to green investments but they have somehow a low level of clarity and transparency, this being the reason why we decided to investigate equity indices, which have a great level of transparency. They are the most used tool for green investments because of their comparability, and the possibility to provide a point of reference in case of active investments.

Most indices have their roots from social responsible indices or ESG indices which didn't rely only on environmental or climate factors, like FTSE4Good Series and Dow Jones Sustainability. Lately other types have appeared which include a wider component of green investments like energy efficiency, environmental management and others, like FTSE Environmental Market, S&P Eco, Wilderhill New Energy Innovation. Other types of indices narrow its view only to one factor, like carbon emission, for example S&P Carbon Efficient. There are indices that have a sectorial focus like clean technology and innovation, energy efficiency, where we remind Bloomberg Clean Energy.

Another class of instruments is exchange traded funds (ETFs), which are connected to indices. ETFs have a substantial growth lately, and as we can see in Fig. 4 the most profitable, in the last year, are the ones in solar energy field.



Source: ETF database (www.etfdb.com)

Fig. 4 ETFs number of holdings and last year returns

Green funds are another form of green investments. According to World Bank (2010) studies green funds can be classified in three categories: fiscal green funds (Dutch Green Fund), equity funds (Eco Performance UBS Equity Fund, Future Energy UBS Equity Fund) and cat bond funds (Leu Prima Cat Bond Fund). According to BNEF (2012) on new sustainable energy public equity funds launched over time, 2007 was the year with a peak of 47 new launched funds, in 2008 the number decreased by more than half, and the trend kept on a decreasing slope.

Green bonds are another way to raise the necessary capital for green investments. One of the best examples is the World Bank Green Bond program developed in partnership with Skandinaviska Enskilda Banken (SEB) to address the need of investor for triple-A bonds to support projects involved in transition to low-carbon and climate development change actions. The program is running through International Bank of Reconstruction and Development and it includes both mitigation (solar and wind, new tech for GHG reduction, rehabilitation of power plant and transmission facilities to reduce GHG emissions, transportation efficiency, waste management and energy efficient buildings, reforestation.) and adaptation (protection against flooding, food security and resilient agricultural systems, sustainable forest management) to climate change.

In January 13, 2014 International Capital Market Association (ICMA) published The Green Bond Principles (GBP) as voluntary process guidelines for issuing green bonds for better transparency and disclosure of the issuing process.

4. Conclusions

Once the climate change problem got the necessary attention from public, governments and international bodies, the quest for alternatives to business as usual started (Hunter, 2014). All the ways to a greener economy and a sustainable way to do business (Williams, 2014) had the problem of financing the transition (Nica and Molnar, 2014). Most countries have taken the necessary steps to meet their required carbon reduction quota, but, for some, the actions are not enough, and more effort must be involved in this problem.

Even though green investments had an ascending trend until 2011, the financial crisis restrictions on funds circulation generated a decrease of investments after 2011 (Boubacar and Foster, 2014), but new data from 2014 shows a possible increase for the future.

The possible actions presented in this paper shows that new developments in the field of green investment financing instruments is thriving and every year their number increases.

On other hand the technological advances and new innovative techniques of harnessing green energy and lowering costs of these technologies assures them a better profitability (accounting for green cost) in their fight with high carbon emission fossil fuels.

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