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GREEN RECOVERY FROM THE CRISIS: A COMPARATIVE ANALYSIS

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GREEN RECOVERY FROM THE CRISIS: A COMPARATIVE ANALYSIS

KRİZE KARŞI YEŞİL TOPARLANMA: KARŞILAŞTIRMALI ANALİZ

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ABSTRACT

The aim of this study is to examine and to compare the Green New Deal (GND) policy proposals, and the Ecosocialist alternative for the solution of the current economic, social, and ecological crises. After analyzing these two concepts, the study argues that although the Ecosocialist perspective is more ambitious in reaching a more egalitarian and ecologically sustainable future, it lacks a clearly defined set of actors and road map that can radically change the global system in accordance with the Ecosocialist principles in the long run. In that respect, it can be argued that GND policies can help to set the stage for the Ecosocialist agenda to achieve its long term objectives. Hence, from this point of view, both approaches can be seen as complementary rather than substitutes.

Keywords: Comparative Analysis ,Green New Deal, Ecosocialism, Triple crisis

ÖZET

Bu çalışmanın amacı, mevcut ekonomik, sosyal ve ekolojik krizlere çözüm getirmesi açısından, Yeşil Yeni Düzen ve Ekososyalizm tarafından önerilen politikaları incelemek ve karşılaştırmaktır. Bu iki görüşü de analiz ettikten sonra bu çalışma; Ekososyalist görüş daha eşitlikçi ve ekolojik olarak sürdürülebilir bir geleceğe ulaşmakta daha istekli olsa da Ekososyalist prensiplerle uzun vadede varılmak istenen ve küresel sistemin radikal değişiminin gerçekleşmesi için açık bir şekilde tanımlanmış aktörler ve yol haritasından yoksundur, argümanını getirmektedir. Bu bağlamda, Yeşil Yeni Düzen politikaları, Ekososyalist bakış açısını, uzun vadeli hedeflere ulaştırmakta yardımcı olabileceği söylenebilir. Dolayısıyla, bu noktadan bakıldığında, her iki yaklaşım birbirinin ikamesi olmaktansa tamamlayıcı olarak görülebilir.

Anahtar Kelimeler: Karşılaştırmalı Analiz,Yeşil Yeni Düzen, Ekososyalizm, Üçlü Kriz

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TERMINOLOGY & ABBREVATIONS

ARRA	American Recovery and Reinvestment Act of 2009 (USA)
CDM	Clean Development Mechanism of United Nations Framework Convention on Climate Change
EEA	European Environment Agency (Denmark)
FAO	United Nations Food and Agriculture Organization (Italy)
GDP	Gross Domestic Product
GHG	Green House Gas
GND	Green New Deal
IEA	International Energy Agency
ILO	International Labour Organization
IMF	International Monetary Fund
KfW	Kreditanstalt für Wiederaufbau Banking Group (Germany)
LULUCF	Land Use, Land-Use Change and Forestry
MDGs	The eight Millennium Development Goals of United Nations
NEF	New Economics Foundation (United Kingdom)
OECD	Organisation for Economic Co-operation and Development (France)
SPO	State Planning Office (Turkey)
UNEP	United Nations Environment Programme
UN ESCAP	United Nations Economic and Social Commission for Asia and Pacific
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
WB	World Bank Group
WEF	World Economic Forum
WRI	World Resources Institute (USA)

TABLE OF CONTENTS

Page #

LIST OF TABLES AND FIGURES

Tables **Page #**

Figures

1. INTRODUCTION

In 2008, the world economy confronted with a global crisis. Coupled with the intensified ecological disasters mainly triggered by the global climate change, and resulting social problems quickly turn the economic crisis into a multi-dimensional one. What made this crisis different than its predecessors were its multi-dimensional characteristics. Even in the early days of 2008, many people started to liken the current crisis to the 1929 Great Depression. And they were partially right in their description. During the Great Depression, world GDP fell dramatically as unemployment soared to unprecedented levels in many countries. Through 1933 to 1934 the overall unemployment rate in US economy was 25 per cent with another 25 per cent taking wage cuts or working part time (Feinstein 2006). GDP fell by almost 50 per cent. In the aftermath of the 2008 crisis, many countries were confronted with similar problems. But the world faced with another problem in 2008 which was absent in 1929; the ecological crisis often represented by food and energy insecurities and climate change.

Several proposals have been put forward by several groups to overcome the triple crisis; economic, social and ecological. GND, inspired by the Roosevelt's New Deal policies in the 1930s, is one of the most popular of these proposals. But it is not the only one. Ecosocialists have long been ardent critics of the ongoing capitalist economic model and have developed several ideas that can also be considered as another set of alternatives to tackle the triple crisis.

In this study the aim is to analyze comparatively the ideas put forward by GND and

those of Ecosocialists on the triple crisis.[1] In this respect, the study will start by describing the different dimensions of the current crisis. After discussing why "green" recovery is crucial for overcoming triple crisis, this study will comparatively analyze these two alternative perspectives. The study will be concluded the study with an argument that both GND and Ecosocialist approaches can be seen as complementary rather than substitutes to overcome triple crisis.

2. ECONOMIC DIMENSIONS OF CRISIS

Today the world economy is still trying to recover from the negative effects of the current financial crisis which started in 2008. The starting point of the current global financial crisis is heavily related to the mispricing of credit-default swaps and the blowing up of the US subprime mortgage bubble (Murphy 2008).

United States subprime mortgages provided an opportunity for borrowers with poor credit histories and weak documentation of income to borrow loans with incentives such as easy initial terms and the promise of a long-term trend of rising housing prices. As a result, the share of subprime mortgages in the overall mortgage market increased from less than 10 per cent in 2001 to almost 21 per cent in 2006 (Harvard Report 2008). Therefore, they believed that they could easily refinance their debts. The problems were amplified by the advent of the financial operation called securitization. Traditionally, banks originate a loan to the borrower (homeowner) and retain the credit (default) risk. Securitization, however, led the banks to distribute credit risk to investors through financial tools known as mortgage-based securities (MBS) and collateralized debt obligations (CDO). This practice enables banks to replenish their funds, which are then

[1] Appendix A will briefly indicate Turkey's position on triple crisis and green dimensions.

used to issue even more loans, since more loans mean more transaction fees earned. These MBS are valued according to mortgage payments and house prices. So, when the housing prices started to decline most of the financial institutions which had borrowed mostly from subprime MBS started to report significant losses. Just after these losses, several defaults and losses on other loan types also started to rise. In October 2008, the 10-City and 20-City Composites, posting annual declines of 19.1 per cent and 18.0 per cent, respectively (S&P/Case-Shiller U.S. Home Prices Indices 2009). The credit crisis forced households to increase their savings. Significant losses in the financial markets and mortgage bubble burst caused consumers to spend less, thus leading to global financial panic *a la* Kindleberger (2005).

The financial meltdown in US economy quickly transmitted to the real sector and then to the global economy through trade and financial linkages which have steadily intensified during the so-called second wave of globalization. Advanced economies were confronted with a 7.5 per cent decline in real GDP as emerging economies contracted 4 per cent during the fourth quarter of 2008 (IMF 2009).

Worried about the negative spillover effect of the financial instability over the real sector, the U.S. Government pushed the Federal Reserve (FED) to take action to stabilize financial markets. Also the U.S. Government bailed out key financial institutions like the American International Group (AIG) which was the largest U.S. insurance company at the time. These actions put enormous strain on the federal government budget. In US alone the cost of bailing out these institutions put a bill reaching to some $9.7 trillion on the shoulders of US taxpayers (Bloomberg 2009).

The global economy is still trying to recover from the crisis. Before the crisis hit in

2008, global economic growth was 5.2 per cent in 2007 with a significant drop to 0.6 per cent in 2009. The forecast for 2011 global economic growth is only 4.3 per cent that is still less than the figure before the financial crisis (IMF 2010, p.155).

Expectedly, economic crisis has aggravated the social problems and carried it to the point of crisis in many countries represented by increasing poverty, income inequality, and unemployment. Moreover, food shortages due to the negative effects of the climate change represent another face of the social crisis. In the coming section, I will try to focus on the social dimensions of the current crises.

3. SOCIAL DIMENSIONS OF CRISIS

The economic and ecological crises have social consequences. Increase in food/commodities/energy prices; raise in unemployment rates increase the vulnerability of lower strata of societies in many countries. Contraction in the economy owing to recent financial turmoil has caused an increase in unemployment. The global unemployment rates are 6.2 per cent (preliminary estimates) in 2010, in comparison to 6.3 per cent in 2009, but still higher than the rate of 5.6 per cent in 2007 (ILO 2011).

Increasing rates of unemployment and reduction in economic growth due to recent financial crisis has an impact on vulnerable groups. Even though the recent financial crisis started in the US and UK economies, it spread rapidly all over the world, notably to emerging countries. After the financial turmoil, the reduced growth in 2009 due to global financial crisis will affect 390 million in sub-Saharan Africa living in extreme poverty (UNESCO 2009). According to the study, their income fell by $18 billion which corresponds to a 20 per cent drop of the per capita income of an average African.

Rising food prices also fuel poverty. At a global level, the demand for food will

continue to increase towards 2050 as a result of the population growing by an additional 2.7 billion people (UNEP 2009)[2]. Increasing food prices due to rising demands for food can be expected to lead to higher rates of infant and child mortality because of malnutrition and poverty. FAO annual real food price indices consisting of the average real prices of commodity groups, such as meat, dairy, cereal, oils and sugar depicted that for 2011, the index is at its highest level since being tracked in 1990 (FAO Food Price Index 2011). The highest increase occurred in sugar and oil prices. Furthermore, an additional 44 million people fell below the $1.25 poverty line as a result of higher food prices (WB 2011).

In order to prevent price volatility, and increase productivity, new regulations and the reorganizing market structures and institutions should be taken into consideration. These concepts will be examined in the context of GND and Ecosocialist perspectives in the proceeding sections.

In addition to the social dimension of the food crisis related to the current financial crisis, the problem of energy insecurity also has an effect on vulnerable groups resulting in an increase in poverty. IEA (2008) predicted that the price of oil may reach US$200 per barrel by 2030 due to rapidly increasing demand, in contrast to "increasingly constrained supply", and at such levels many developing economies may no longer be able to afford oil imports. Due to the high crude oil prices, reliance on crops as biofuels is rising therewithal. This means the arable lands are increasingly devoted to the biofuel

[2] Also, Under-Secretary-General and UNEP Executive Director Achim Steiner declared, "We need to deal with not only the way the world produces food but the way it is distributed, sold and consumed, and we need a revolution that can boost yields by working with rather than against nature".

crops which pose another threat to food insecurity.[3] In this respect, volatility in energy prices also triggered the fluctuations in food prices that lead to social degradation through income inequality and poverty.

Recent financial crisis boosts social vulnerabilities. As briefly indicated above, the impact of the current financial crisis on poverty issues and vulnerable groups can be observed from rising unemployment rates, declining economic growth rates, rising food and energy prices. Another crucial concern which is related with both economic and social dimension of current financial crisis is that the ecological degradation. Both food crisis and energy insecurity issues have ecological dimensions related to global warming. In the next section, we will examine the ecological extent of current crisis.

4. ECOLOGICAL DIMENSION OF CRISIS

The third dimension of the triple crisis is the ecological crisis. One can define the ecological crisis in terms of the increasing pace of biodiversity loss, the extinction of species due to climate change, global warming due to high levels of greenhouse gas emissions, and air, soil and water pollution.

Climate change constitutes the primary challenge facing humanity today. The Stern Review on the Economics of Climate Change (2006) indicates that average global temperature increases of only 1-2°C (above pre-industrial levels) could commit 15-40 per cent of species to extinction. According to the review, global temperature rise will lead to melting glaciers, declining crop yields, rising sea levels and accordingly causes malnutrition and heat stress.

[3] U.S. Department of Agriculture (USDA) (2011) reports that the use of corn for biofuels in the United States has increased from 31 per cent of total corn output in 2008/9 to a projected 40 per cent in 2010/11.

Total greenhouse gas (GHG) emissions (CO_2) data, developed countries seem to be the major culprits for high levels of GHG emissions in the atmosphere. As seen in Table 4.1, 56 per cent of world's CO_2 emissions were shared by China, the USA and the European Union (27) in 2007 (WRI 2011).

TABLE 4.1 Total GHG Emissions in 2007 (CO_2) (excludes land use change), Top Ten

	Country	% of World Total
1	China	22.70%
2	U.S.A	19.73%
3	European Union (27)	13.76%
4	Russian Federation	5.51%
5	India	4.78%
6	Japan	4.30%
7	Germany	2.77%
8	Canada	1.98%
9	United Kingdom	1.80%
10	Korea (South)	1.75%

Source: WWI Climate Analysis Indicators Tool (CAIT) Version 8.0, 2011

In order to reduce their GHG emissions to certain levels, parties of the 1992 United Nations Framework Convention on Climate Change (UNFCCC) adopted the Kyoto Protocol in December 1997 and which was entered into force on 16 February 2005. The target agreed upon was an average reduction of 5.2 per cent from 1990 levels by the year 2012. In order to present the current situation, one would analyze the Greenhouse Gas (GHGs) emissions without Land Use, Land-Use Change and Forestry (LULUCF) in Gigagrams (Gg) CO_2 equivalent for selected countries (e.g. European Union, Germany, Turkey and US. For Germany, GHG emissions in 2008 increased about 7.2 percent on a year-on-year basis. On the other hand, Germany has decreased its GHG emissions by about 2.7 percent relative to 1990 levels and remains still below the Kyoto

target in 2008.[4] EU emissions have been declining steadily since 2003. According to the European Environment Agency (2010), this reduction is a result of improvements in energy efficiency and increased use of renewable sources. In Turkey however, emissions have almost doubled since 1990. The increase has been driven by economic and demographic growths, which resulted both in increasing energy demand and energy production. Finally, US have the largest proportion of GHG emissions in the figure. From 2007 to 2008, there was a decline in US total GHG emissions. The US Energy Information Administration linked this drop to a decrease in CO_2 emissions in 2008 rather than other GHGs such as water vapor (H_2O), methane (CH_4), and ozone (O_3).

In short, an important cause of ecological degradation is formed by the effects of climate change. The Stern Review (2006) estimated that the total cost of 'business as usual' (BAU) climate change over the next two centuries equates to an average welfare loss equivalent to at least 5 per cent of the value of global per-capita consumption, now and forever. Also, it is predicted that stabilizing at or below 550ppm CO_2 equivalent would cost, on average, around 2 per cent annual global GDP by 2050.

The above mentioned GHG emissions data depicted that although the values for 2008 seem to be relatively lower than previous years, this could not be the direct effect of the "green" policies for overcoming climate change but the result of a slowing down in industrial activities due to financial breakdown in mid-2007, and moderate climatic conditions.[5]

The preceeding sections briefly explained the economic, social and ecological

[4] See http://www.umweltbundesamt.de/uba-info-presse-e/2011/pe11020_greenhouse_gases_well_below_the_limit.htm

[5] UBA (2011) declares that the rise in 2010 CO_2 emissions is the result of improvements in renewable energies via economic recovery and cool weather.

dimensions of current global financial crisis, namely the triple crunch. To overcome this triple crisis, this study will attempt to present and analyze comparatively the policy recommendations of the two alternative perspectives as mentioned in the previous sections. The first alternative I am going to evaluate is the GND.

5. GREEN NEW DEAL

In response to the growing concerns over ecological and social devastation along with the ongoing economic crisis, several institutions propose a set of policies to address economic, social and ecological problems at once.[6]

Reports published by several institutions on GND notion mainly argue that the world economy is confronted with a 'multiple crisis', called often as triple crisis or triple crunch (NEF 2009). In this context, GND targets UNEP established global GND policy brief in 2009 with the purpose of providing guideline for nations to confront current environmental and economic crisis, saving and creating jobs and protecting vulnerable groups, and ending extreme poverty by 2015. As can be understood from the latter objective, the global GND does not only focus on policy proposals at an international level, but also addresses the needs of local economies under the guidance of Millennium Development Goals (MDGs).[7] Several proposals including maximizing energy efficiency systems, creating "green collar jobs", establishing an Oil Legacy Fund, constructing a new financial system that is able to bring financial stability, social justice and environmental sustainability, and so on (UNEP 2009).

[6] See, for example, Pollin, Robert, Heidi Garrett-Peltier, James Heintz, and Helen Scharber, 2008. *Green Recovery: A Programme to Create Good Jobs and Start Building a Low-Carbon Economy.* Center for American Progress, Washington D.C., Green New Deal Group, 2008. *A Green New Deal: Joined-up policies to solve the triple crunch of the credit crisis, climate change and high oil prices.* New Economics Foundation, London.

[7] In 2000, world leaders came together at the Millennium Summit and adopted the United Nations Millennium Declaration consisting of eight Millennium Development Goals (MDGs). The seventh target set is about ensuring environmental sustainability.

Overall, the general proposition of GND reports (UNEP 2009; NEF 2008; Renner et al. 2009) would be described as re-regulating the financial system and taxation system so as to scale down the use of fossil fuels, reducing unemployment and declining demands caused by the credit crunch. Before assessing the policy proposals in depth, it would be useful to have a quick look at the historical background that helped to shape the GND concept.

5.1. Historical Roots of Green New Deal

5.1.1 From New Deal to Green New Deal

The historical roots of GND go back to the 1930s when US President Franklin Delano Roosevelt introduced a set of policies, known as New Deal (ND), in response to the Great Depression. The beliefs regarding the self-regulating markets and viewing crisis as a process of creative destruction have been tarnished following the unprecedented social and economic consequences of the 1929 crisis. This led to the development of theories giving state a bigger role in the economy. John Maynard Keynes' earlier works had inspired many in the world in crisis, notably Roosevelt in shaping the New Deal program.[8] Especially during 1937 recession, Roosevelt inspired make use of John Maynard Keynes' (1936) arguments on governments had to use both monetary policy and fiscal policy instruments in order to protect the economy from crisis (Wallace 1977). Keynes rejects the self-regulating nature of the markets. Rather, he argues that during the crisis when the economy suffers from lack of demand, governments should stimulate the economy by increasing public investments. The boost to the aggregate

[8] The New Deal was a series of Relief, Recovery and Reform programs for US economy and was implemented in the US between 1933 and 1936. For additional information and critics of New Deal see Hannsgen et al. (2009).

demand in the economy would help to solve the unemployment problem.

Although both ND and GND propose public investments and regulation to tackle crisis, they are different both in the interpretation of the crisis and in the sectors to be intervened. In order to clearly determine the differences between ND and GND, first I should briefly mention the building blocks of the respective policy proposals. In general, ND programs focused on relief for unemployment, recovery of the economy, and a reforming of the financial system. In particular, the ND programs include several sets of stimulus measures and regulations in several industries and markets including the banking, transportation, construction, farming, and labor markets. The promotion of labor unions was the aim of the National Labor Relations Act of 1935 (also known as the Wagner Act); the Social Security Act of 1935 and the Fair Labor Standards Act of 1938 were enacted; and the Works Progress Administration of 1935 (WPA) relief program was introduced. New institutions were developed, such as the United States Housing Authority and Farm Security Administration in 1937. In agriculture, the Agricultural Adjustment Act of 1938 aimed to address the problems in the agriculture sector.

The priority of these measures and regulations of ND was to get the US economy on its feet again. But the New Deal is not exempt from criticism. One of the assertion is that it was not civilian government spending in ND which overcomes the Great Depression but it is the expansion of military spending in preparation to the impending Second World War that started in 1939 (Foster et al. 2009, p. 22). In addition, although New Deal mainly focused on the United States' economic and social problems in the era of the Great Depression, perhaps expectedly, it had no concern over the environmental impact of stimulus plans and regulations. And many authors, including Kovel (2002)

see it as the major reason behind the start of the environmental movement in the US in the 1950s and ‘60s. Rapid industrialization during the 1960s, with the help of the import-substitution policies in developing as well as developed countries, led to increasing pressure on nature. And these developments add a new dimension to the crisis faced by humanity in 2008, known as the ecological crisis.

It is clear that New Deal type policies, which helped to revive the economies in the 1930s, cannot solve but can only aggravate the problems in today’s world. Hence it is the reason why policy proposals were packaged under the brand of Green New Deal rather than just New Deal.

5.2 Components of Green New Deal

UNEP (2009) argues that today’s triple crisis demands government leadership on a global scale and one that constitutes a comprehensive environmental vision. In this sense, global GND concept can be accepted as a manifestation of this kind of leadership and it addresses the three major objectives. The first objective is to represent a common desire to restore to health a disrupted financial system, an economy in recession, and severe job losses. The second objective is to ensure that the “post-crisis” economy follows a sustainable model and does not continue to add to the two most significant risks faced by society: ecological scarcity and climate instability. Finally, the third objective suggests inclusive growth, achievement of the MDGs, and an end to extreme poverty by 2015.

In order to achieve these objectives, GGND determined four key components. The first one is to reduce carbon dependency of the world economy to control the global average temperature increase. The second one is to reduce ecological scarcity and poverty by

improving the sustainability of primary production for creating sustainable resource-dependent economies. The third component is to eliminate the challenges, such as "capital gap" and "skills and technological gap", faced by developing countries. For example, global GND proposes a new trade and financial mechanism in order to balance the capital gap in private and public financial investments. The last component is the national actions necessary for the implementation of GND, such as the assertion by UNEP (2009) that each country should spend at least 1 percent of their GDP within a two-year period on reducing carbon dependency, and increasing access to clean water and sanitation.

The main idea of green proposals is to improve the quality of life of all the beings on our planet. In order to solve the multiple crises simultaneously, adapting the economic system in accordance with environmental sensitivity is the crucial point. If countries wish to orient their economies toward an environmentally sustainable path in the long run, GND advices green job and green investment alternatives to transform the mainstream economic structure into a "green" one.

In line with the objectives and key components stated above, GND reports (UNEP 2009; Renner et al. 2009; NEF 2009; Pollin et al. 2008) indicate the key industries of a green new deal as energy, transportation, construction and basic materials including steel, aluminum, cement and paper. Regarding the implementations of these key industries, Renner et al. (2009) represents the core areas of GND. One of the core elements of GND is to build a green public infrastructure via smart grid technologies, green transportation through investing in rail, public transportation and electric cars, and also by establishing recycling markets. The second one is leapfrogging opportunities. These opportunities can be provided from implementing green technology, improving

efficiency, and restructuring management practices. The third element states that for green transition, high quality digital infrastructures reduce environmental impact. A fourth, additional element is the restructuring of prices and markets to promote a green economy.

The financing of green projects, supporting newly emerging industries and helping to achieve green employment is indispensable. Next section summarizes the green investments and green job alternatives to overcome triple crisis.

5.3 Green Investments

The current global financial crisis and ongoing threats of energy insecurity and climate change force governments to stimulate green investments particularly in clean energy sector. In 2009, World Economic Forum (WEF) published a report about green investment opportunities in smart grid architecture, energy storage systems, carbon capture and storage systems. The report indicates "eight emerging large scale clean energy sectors" as Onshore/Offshore Wind, Solar Photovoltaic (PV), Solar Thermal Electricity Generation (STEG), Municipal Solid Waste-to-Energy Cellulosic and Next Generation Biofuels, Sugar based Ethanol, and Geothermal Power. For investing in these clean energy systems, WEF (2009) estimated that $500 billion per year of financing is required by 2020 to limit global warming to 2°C. However, only a half of the financing target has been achieved so far (the clean energy investment has been increasing by about US$ 250 billion per annum.) (WEF and Bloomberg 2011).

Along with renewable energy investments, transportation has been viewed as another key sector. In order to reduce the reliance on motor vehicles which use fossil fuels, green transport investments are advised by GND. For example, in Europe, remarkable

investments have been made for urban public transport and sustainable mobility programmes -which will represent in Section 6.1.2.

In addition, steel, aluminum and paper recycling markets are also a green investment component included in GND. Almost all the amounts of steel can be recycled in the automotive and construction industries (Renner et al. 2009).

The most important investment type that GND proposes is to invest in "Nature's infrastructure" with an aim to protect the ecosystem. Along with government investments, GND proposes carbon markets, wetland banks, water banks, and conservation banks to protect biodiversity and the ecosystem (Renner et al. 2009, p.14).

In order to understand the contributions and components of different GND policy proposals, i.e. the local and global context, the following section will present the key economic sectors and core elements indicated in each of these GND reports.

5.3 Green Jobs

The Green Job Report by the Green Job Initiative[9] describes green jobs as "work in agricultural, manufacturing, research and development (R&D), administrative, and service activities that contribute substantially to preserving or restoring environmental quality. Specifically, but not exclusively, this includes jobs that help to protect ecosystems and biodiversity; reduce energy, materials, and water consumption through high efficiency strategies; de-carbonize the economy; and minimize or altogether avoid the generation of all forms of waste and pollution" (2008, p.3).

[9] The Green Job Initiative is a joint initiative by the United Nations Environment Programme (UNEP), the International Labour Organization (ILO), the International Employers Organization (IOE) and the International Trade Union Confederation (ITUC)

The report attempts to emphasize in particular the green jobs that not only refer to the workers who are employed in the key sectors explained above. Also, there need to be decent working conditions besides being employed in "green" sectors. A combination of decent work and jobs in key sectors are what makes the definition of a green job. A worker in a renewable sector without occupational safety is not a good example of a green job. Rather, the ideal green workplace should provide occupational health and safety, adequate wages, job security, gender equality and worker's rights.

Employment can be positively affected by shifting energy generation from fossil fuels to renewable and doing so, the number of people presently employed in the renewable energy sector runs to about 2.3 million as seen in (Table 5.2). Brazil, US, Germany, and China are targeting to achieve high levels of job creation via renewable energy sector. The number of people presently employed in the renewable energy sector is about 2.3 million along with expanding investment flows and growing production capacities (Table 5.2).

Table 5.2 Estimated Green Collar Employment in Green Investments, Selected Countries and World, (2006)

Investment	World*	Selected Countries
Wind	300.000	Germany, United States, Spain, China, Denmark, India
Solar PV	170.000**	Germany, United States, Spain, China
Solar Thermal	624.000-plus	Germany, United States, Spain, China
Biomass	1.174.000	Brazil, Germany, United States, Spain, China
Hydropower	39.000-plus	Europe, United States
Geothermal	25.000	Germany, United States
Total Renewable Energy	2.332.000-plus	World

*Countries for which information is available. **Under the assumption that Japan's PV industry employs roughly as many.

Source: UNEP Green Jobs Report 2008

Within selected countries as seen in the table, it is estimated that about 300,000 workers are employed in wind power, 170,000 in solar photovoltaic (PV), more than 600,000 workers are employed in the solar thermal sector, and more than 1.2 million people are employed in biomass, hydropower and geothermal energy production in total. In addition to the green job opportunities in the renewable energy sector, there are also green job alternatives such as building sector, recycling sector, organic agriculture and vehicle manufacturing sector.

In order to achieve sustainable green employment, Green Job Report (2008) proposes that the traditional industry and sector definitions may be forced to change so as to achieve low-carbon emissions and decent work place conditions. The creation of green and decent jobs through green investment is an important part of the green recovery. In this respect, types of green investments will be examined in the next section.

6. GREEN NEW DEAL IN THE GLOBAL AND LOCAL CONTEXT

GND was first proposed on the global scale just after the start of the economic crisis. UNEP (2009) and Renner et al. (2009) are the ones that evaluate the GND in a global context. On the other hand, NEF (2008) report specifically focuses on UK's green recovery while Pollin et al. (2008) takes into consideration of American recovery and progress in particular. These reports differ in the scale of actions to be taken, in targeted sectors and in core elements they involve, but at the same time each shares some common grounds, which will be explained below.

Table 6.1 presents the institutions that published GND reports in the segmentation of global and local policy recommendations. In respect to their policy proposals, UNEP (2009) and Renner et al. (2009) GND reports consist of global concepts and case

studies. Although reports have global and local specifications about key economic sectors and core elements, there are several common grounds in the meaning of supporting each other with their analysis.

Table 6.1 Key Economic Sectors and Core Elements of GND Policy Proposals

	KEY ECONOMIC SECTORS	CORE ELEMENTS
GLOBAL		
Toward a Transatlantic Green New Deal (Renner et al. 2009)	Energy, Transportation, Buildings, Basic Materials	Building a Green Public Infrastructure, Leapfrogging, Turning the Digital Revolution into Green Revolution, Prices and Markets for Sustainability
Global Green New Deal (UNEP 2009)	Buildings, Sustainable Energy, Sustainable Transport, Freshwater, Ecological Infrastructure, Sustainable Agriculture, International Finance	Sectoral, Domestic and International Policy Reforms
LOCAL		
A Green New Deal: Case of UK (NEF 2008).	Financial System, Climate and Energy Policies	Renewal of Financial System, Policies and financing of climate and energy crunches
Building the GND in the US (Pollin et al. 2008)	Clean Energy, Buildings, Public Transportation, "Smart Grid" Electrical Transmission Systems	Clean Energy Economy, Job Creation, Economic Opportunity

Policy proposals including global level actions mainly focus on improving global governance and facilitating national governments for implementing GND strategies. With the help of global governance, these policy proposals seek to overcome the economic, and policy making challenges in order to implement GND.

UNEP (2009) presents the United Nations system and global policy forum like the G20 group of the world's 20 largest rich and emerging economies are the suitable agents to take a role in promoting, developing and enhancing a GND. In this respect this agents

could guide several policy actions including immediate actions for responding the effects of economic, social and ecological crisis, reduction of carbon dependency, coordinating adoption of market-based instruments, and facilitating transboundary governance of water and other shared resources.

Achieving a sustainable financial structure, UNEP (2009) advices that international actor and agents should adopt reforms to increase transparency and improve the alignment of incentive structures, increase development assistance of bilateral and multilateral aid donors and these actions should comprise the key components of the global GND including the development and expansion of innovative financing mechanisms, such as the International Finance Facility, Climate Investment Funds and Global Clean Energy Cooperation.

In this respect GND at a global level recommends new financing facilities providing an expansion of trade finance focused on trade liberalization that provides opportunities for promoting several sectors, such as limiting fisheries subsidies, reducing tariff and non-tariff barriers on clean technology and services, and reducing agricultural protectionism.

At national level, UNEP emphasizes that countries like United States, the European Union and other high income OECD economies, remaining middle and high income economies of the Group of 20 (G20) should spend at least 1 per cent of their GDP over the next two years for reducing their carbon dependency, and adopting complementary carbon pricing policies. Besides for developing economies, the GND report of UNEP (2009) could not determine the exact amount of spending for implementing GND since current economic conditions are tough but whether the amount is not clear, the report indicated that they should develop national actions for improving clean water and

sanitation for the poor. They should also develop urgently comprehensive, well-targeted safety net programs and at least maintain educational and health services for the poor.

The report emphasizes that the international agents should agree on extending and reforming the CDM beyond 2012, as part of a global climate change agreement, and also including the coverage of developing economies, the sectors and technologies and the overall financing of global GHG emission reductions. In this direction, development and adoption of financial systems such as the International Finance Facility, Climate Investment Funds and Global Clean Energy Cooperation that formed with transparency and simplicity, and improve the alignment of incentive structures is expected by these agents. Also the report requests that bilateral and multilateral aid donors should increase their development assistance over the next few years in a way that targeting them to the sectors and actions that comprise the key components of the GND. Together with the financial system improvements; the report suggests reviewing currently used trade agreements in favor of GND proposals such as reaching successful conclusion of the Doha Round trade negotiations, especially on fishery subsidies, clean technology and services and reducing agricultural protectionism.

To sum up, GND policy proposal of UNEP recommends several international actions under the leadership of international community. These actions include development and implementation of global climate change agreements, financial systems, and trade agreements. Besides international actions, the report recommends national actions of implementing by governments through their fiscal and other policy instruments thus GND expects to accelerate economic recovery, create jobs, and reduce carbon dependency and extreme poverty. The report gave an approximate indication of what governments should spend in broad priority areas of the GND rather than estimating

precise amounts of costs of policy actions that the national governments expected implications.

One of the priority areas is described as a "green recovery" programs that involves immediate economic recovery and job creation that also promote the transition to a low-carbon economy through removal of fuel subsidies, clean energy investments and market-based incentives. Based on economic recovery priority area, the report suggests middle and high income economies that they should spend at least 1 per cent of their GDP on the national green recovery actions including reducing carbon dependency, including removing subsidies and other perverse incentives and adopting complementary carbon pricing policies. On the other hand it should be recommended that developing economies should also implement the national actions proposed for reducing carbon dependency according to their capability to spend under their current economic conditions.

The distinctive policy actions of UNEP report, along with other institutions' policy proposals, are the emphasis on safety-net programs targeting to the poor and vulnerable groups, and the expected sustainability of the primary production activities of developing economies. The report addresses the importance of maintaining and expanding educational and health services, providing safe drinking water and sanitation for millions of the poor in developing regions, low and middle income economies and recommends to spend at least 1 per cent of their GDP for improved water and sanitation. The report also laid emphasis on the possible actions for improving the primary production activities such as generating sufficient investible funds for diversifying the economy, building up human capital, and investing in social safety nets and other investments targeted at the poor.

The GND reports prepared by several institutions depicted in Table 6.1 addresses key economic sectors as energy, transportation, buildings, and basic materials. International IEA (2011) indicated that shares of electricity consumption of these sectors in 2009 are as follows: 1.6 per cent for transportation, 40.2 per cent for industry and remaining 58.2 per cent for other activities such as agriculture, commercial and public services, residential, and non-specified other. In line with these key sectors demonstrated in Table 6.1, this study tries to determine core elements for each GND policy proposal.

On the basis of building a public infrastructure, with regarding growing energy use - including enhanced data transmission and storage needs of the IT-based systems- Renner et al. (2009) asserts that a smart grid can better balance supply and demand via smoothing out demand peaks and shifting loads to low-demand periods – and reduce line losses through the use of more local, distributed electricity generation. Energy management systems associated with smart grids can reduce electricity use by 10-15 per cent, and up to 43 per cent of peak loads Smart grid projects (Energy Future Coalition 2009).

In Europe, investments of up to €200 billion in transmission and distribution networks are being planned by 2020 – some €90 billion of which directly relates to smart grid technology (Renner et al. 2009). Private projects by companies like Iberdrola, EDP, ZigBee, Pepco, Gazprom, Siemens and eMeter; Ireland's announcement that it will invest almost two thirds of its €12 billion budget for renewable energy and cleantech projects in smart meters and smart networks; and the Netherlands' goal of a "base level" of smart metering and replacement of all 7 million household meters by the fall of 2012.(Setters, 2008) For the sake of spreading benefits of smart grid technology, in 2005, the European Technology Platform SmartGrids was set up, bringing together key

stakeholders to develop a shared vision, align various projects, and draw up a strategic agenda on the national and European levels. (European Technology Platform SmartGrids, 2007)Smart grids will also be part of an emerging new transportation system as electric vehicles become more conventional.

Another important green infrastructure is presented as electric vehicle charging stations. A California based company Project Better Place is an example for this sector, and in collaboration with Israel, European Union, Australia, California, Japan, and North America to build stations for recharging electric vehicles and exchanging batteries.[10] Prospective urging demand for electric cars on a large scale thus also makes it essential that electricity production be switched from fossil fuel plants toward renewables. Broader green transport policy that reduces the dependence on motor vehicles provides substantial and long-term investments in public transport and rail also with walking and biking.

In the case of US, the quality and extent of urban public transportation is highly uneven across the country because the ARRA stimulus program offers some money, but represents no more than a first down payment. The report proposes that US may think about ways to convert and reorient applicable portions of its productive capacities toward both light and heavy rail.

Another crucial aspect for green public infrastructure that the report asserted is that compared with producing materials like steel, aluminum, and paper from scratch, using scrap materials saves substantial amounts of energy. International Iron and Steel Institute (2007) indicated that in the steel industry, for instance, savings run between 40

[10] See http://www.betterplace.com/global-progress

and 75 per cent. Worldwide, slightly more than 40 per cent of total steel production is based on recycled steel. The share has been stagnant for some years, but the absolute amounts are increasing. Further expansion of the recycled share is problematic due to because overall demand is rising rapidly, and the time span within which old steel becomes available for recycling can stretch to decades.

The report demonstrated that the global recycling rate for aluminum averages 63 percent. These rates vary for each country. For example, Scandinavia and Germany have strong government regulations and high recycling rates, whereas Greece, Portugal, the United Kingdom, and Eastern Europe fare far less well.

Another green public infrastructure that the report presents is “natural infrastructures”. The Ecological Society of America explained that 'ecosystem services', "refers to a wide range of conditions and processes through which natural ecosystems, and the species that are part of them, help sustain and fulfill human life." (Daily et al. 1997). Moreover ecosystem services that consist of flows of materials, energy, and information from natural capital stocks which combine with manufactured and human capital services to produce human welfare (Costanza et al. 1997).

Another core element that Renner et al. (2009) classifies the leapfrogging opportunities in three areas: the development and introduction of green technologies, advances in efficiency, and changes in management practices. The green technologies include transportation, renewable energy, heating and cooling. Although the report cannot find Europe’s efforts on sustainable transportation sufficient, there are global initiatives such as Global Fuel Economy Initiative, aiming for a reduction in fuel consumption per

kilometer of 50 percent by 2050.[11] Improvements in propulsions systems are suggested in this GND policy proposal. These are supposed to be used for gasoline-electric hybrids, diesel hybrids, electric hybrids, plug-in hybrid electric vehicles.

Transformation of conventional energy system to renewable energy is also taken into consideration in the proposal. Investing to wind power, solar photo-voltaic cells, and biodiesel production is suggested for leapfrogging. Further leapfrogging opportunity is the advances in efficiency of buildings, water, and steel industry. The new technologies for energy efficient buildings are presented as passive solar orientation for heating and day lighting; efficient lighting and appliances; super insulation and ultra-tight air barriers on doors and windows; and heat recovery ventilators. Besides energy efficiency, the importance water efficiency is pointed out. The option of water harvesting via capture of rain water is suggested. Also the steel industry has to become energy efficient to properly tackle with high CO_2 emissions. GND proposed that there needs to be a growing recognition of governments for supporting the initiatives for advancing and developing cutting-edge strategies for reducing CO_2 emissions of steel industry.

Along with technological advances and efficiency issues, GND defended that governments can support the shift to a service economy. In this respect, the report suggests car sharing, the subscription-based transportation service that allows people to substitute short trips in their own car with trips made in a vehicle rented by the hour. Bike sharing is also supported by the report.

Even more, digitizing economic activity and "dematerializing" several services via

[11] See http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=562&ArticleID=6097&l=en

advancing IT infrastructure can help to minimize environmental impacts of those activities is expressed as a core element for Renner et al. (2009). In this respect, this report suggests some prototypes such as matching people, via web site, who need rides with people who have open seats in their vehicles, reducing trips overall and the pollution this represents. Also teleconferencing reduces need for travelling thus reducing CO2 emissions. Another example is smart energy meters that help to match energy demand and supply and letting consumers know the price and availability of energy. For reducing printed materials like books and CDs/DVDs, GND offers an online e-book and downloading facilities for reducing paper and materials consumption.

Within the context of core elements described above paragraphs, proceeded section is trying to describe and analyze the key economic sectors of GND policy proposals addresses and policy recommendations for tackling triple crisis.

6.1 Key Economic Sectors

6.1.1 Low-Carbon Energy Sector

New renewable energy technologies, with the combination of energy-efficiency advances, will allow global energy needs to be met without fossil fuels and by adding only minimally to the cost of energy services. The more robust carbon-free energy option is accepted as a renewable energy that includes solar, wind, biomass, and geothermal energy. In the longer run, ocean energy—from tides, waves, currents, and thermal convection—is another strong possibility (Worldwatch Institute 2008).

UNEP (2008) indicated that globally around US$300 billion annually -or 0.7 per cent of world GNP- is spent on fossil fuel subsidies, which are employed mainly to lower the prices of coal, electricity, natural gas and oil products. In order to eliminate the

dependency on usage of fossil fuel, GND proposes to remove such subsidies eliminates perverse incentives in energy markets and provides an immediate source of financing for low-carbon strategies.

Markets and prices are viewed as a powerful driver of individual and institutional behavior to help the effort to green economic activities (Renner 2009). In this direction the report suggested governments to use taxes and subsidies to influence prices directly such that using eco-tax revenues to fund national health or social security programs rather than payroll taxes so that can support lowering indirect labor costs and boost job creation without hurting workers' interests. According to subsidy reform, GND offers cheap energy policies that promote over-consumption of fossil energy, or transfer risks or costs from private entities to taxpayers.

In the case of US for instance, for creating an additional source of funding for the green recovery to be performed over the next two years, US$6 billion fossil fuel subsidies could be removed by the United States (UNEP 2009). Moreover global figures indicated that energy subsidies in high income OECD economies amount to about US$80 billion annually; 20 non-OECD countries account for US$220 billion; Russia has US$40 billion in energy subsidies annually; Iran's energy subsidies are around US$37 billion; China, Saudi Arabia, India, Indonesia, Ukraine and Egypt have subsidies in excess of US$10 billion per year. To inhibit the negative effects of fossil fuel subsidies on tackling triple crisis UNEP (2009) offers complementary pricing policies for providing the correct incentives for reducing carbon dependency and ecological scarcity. These policies are introduced as including both additional taxes, tradable permits and other market-based instruments. In this respect, it is suggested that the resulting financial savings of US$80 billion in OECD economies and US$220 annually in developing

countries could be spent for investments in clean energy R&D, renewable energy development and energy conservation through the complementary pricing incentives that could be including energy and carbon taxes, carbon and other tradable permit schemes and temporary subsidies to initiate clean energy R&D. It is expected that these actions would contribute to less economic waste, reduce pollution and congestion, foster greater transport choice and facilitate sustainable transport strategies that would boost economic recovery and employment. In the case of low and middle income countries, UN ESCAP (2008) depicted that every US$1 invested to improve the energy efficiency of electricity generation can save more than US$3 in investment costs in these economies. As indicated in the GND thinking of 25 million households depend on biogas for cooking and lighting, and 2.5 million household use solar lighting systems, spending on energy efficient sectors will not only increase the availability of affordable and sustainable energy services for the world's poor but also provide much needed employment opportunities in developing economies.

The Climate Network (2011) pointed out that regional success stories in the area of low-carbon growth of Europe and United States. Although certain regions of these countries remain bound to carbon-intensive electricity production and manufacturing, the report indicated that, with the right set of policies, ease of both the economic and the climate crisis, and lay solid foundations for future sustainable growth could be real as shown in the case of Germany where the so-called clean contracts—known there as "feed-in tariffs"[12]—have spurred investment in renewable energies and the country can now

[12] US National Renewable Energy Laboratory Policymaker's Guide (2010) defines feed-in tarif as an energy supply policy focused on supporting the development of new renewable energy projects by offering long-term purchase agreements for the sale of RE electricity. Klein (2008) and Lipp (2007) indicates that these purchase agreements are typically offered within contracts ranging from 10-25 years and are extended for every kilowatt-hour of electricity produced.

reached to emissions reductions of 28 per cent since 1990, more than 370,000 new jobs, and slow but stable growth despite the economic crisis.

The report continues with the cases energy transformations of two German states, Schleswig-Holstein, and North Rhine-Westphalia in the west. Schleswig-Holstein is indicated that a rural state in the north where more than 40 per cent of power consumed is produced from renewable -primarily wind. In this state, three nuclear power plants are to go offline, and will require the installation of 9 Gigawatts (GW) of wind-turbine capacity to replace them, as well as major new power lines to carry the renewable electricity to high-use states. North Rhine-Westphalia in the west is shown as a major industrial hub and a leading supplier for the renewables industry, particularly the wind industry. In the Germany, feed-in tariffs has an opportunity for local residents and farmers to having found cooperative businesses that own and run entire "citizens' wind parks", so-called Bürgerwindparks so this type of community investments generate local wealth, jobs and hence public support for renewable energy.

6.1.2 Transportation

The transportation sector accounts for over a quarter of total world energy use and 14 per cent of total GHG emissions so that world transportation energy use is expected to grow at 2 per cent per year, with energy use and GHG emissions about 80 per cent above 2002 levels by 2030 (Barket et al. 2007).

Common transportation preferences have several undesirable outcomes for urban development, land use planning and employment opportunities. Baum (2007) exemplified that in the US, the rapid expansion of the highway system between 1950 and 1990 contributed significantly to the population decline of major cities. But, this

model caused automobile use increases as per capita income rises so that this highway system urban structure, rather than improving the accessibility of jobs, may have worsened it. This adopted transport system leads to greater motorized vehicle use, road transport and increased energy use is further exacerbated by sizable transportation market distortions, including the "under pricing" of motorized travel, current urban and land use planning practices that encourage automobile use, and distortions in public investment in favor of road transport over other modes of travel (UNEP 2009). In addition in Mumbai, India, over 44 per cent of all commuters walk to work, and 63 per cent of the poor walk to work and the poor who rely on transport generally use public transit; 21 per cent of the poor in the urban center take the bus to work and 25 per cent of the poor in the suburbs take rail to work. This figures shows the importance of access to public transit has a significant factor on rates of labor participation and employment of inner-city residents (Baker 2005).

In order to transform current transportation preferences, UNEP (2009) suggests multiple goals such as developing next generation of fuel-efficient cars, low carbon biofuels and the delivery system infrastructure for the new fuels and cars; encouraging rail and public transit; improving the accessibility to affordable transport by the poor; and implementing market-based instruments and regulations to improve the sustainability of transport systems.

Travelling and commuting preferences of individuals have impacts on global warming, peak oil and energy security on a global level. In this direction, Grünig et al. (2009) depicted the linkages between public transportation, car and bike with sharing programs with eliminating side effects of pollution and global warming. In order to assure commuters to end their dependency on private automobiles, the paper argues that

municipalities should revise current public transportation systems involving bus, subways, and commuter rail. Instead of this, innovative solutions like new light rail systems and bus rapid transit is offered. Also new innovations in car and bicycle sharing are offered to bridge the gap between communal and individual transport modes.

Integrated transportation planning is depicted as involving of public transportation, bicycles, walking, and cars. Integrating car sharing and bicycle sharing systems into transportation plans and combining them with public transportation is explored in the paper.

This composition is viewed as a key element to provide mobility while eliminating the problems of energy usage, greenhouse gas emissions, and noise and air pollution. The paper continues with the case studies of the US and European countries' transportation systems practices which depend largely on private passenger cars for personal transportation. In the US, the modal share of passenger cars is 87 per cent of passenger kilometers traveled, while in the EU-15 it was 76 per cent in 2005 (OECD 2006). At the same time, the trend towards urbanization continues unstopped both in the US and in the EU. Some 80 per cent of the US population now lives in metropolitan areas, although density levels continue to decline at the urban fringe. In the EU, approximately 75 per cent of the population lives in urban areas (EEA 2006).

Due to the urban population expansion and acceleration of road networks over the decade extends road congestion, air pollution, noise, and road accidents as well. In order to overcome negative impacts of current transportation habits the report proposes several approaches to urban transport that work with the infrastructure that exists today. These approaches are not an ultimate mode of transport systems but especially for an

optimal mix of modes. These combine approaches are set as: *"1. Improve system efficiency by fostering the use of more energy efficient modes of transport; 2. Change the profile of fuels used; and 3. Reduce transportation demand. These strategies are not mutually exclusive*." (French et al. 2009, p.11)

Integration of existing transportation network to bicycle and car sharing programs is the main argument of the paper. Two types of car sharing programs are taken into account. One of them is integration of station-based car sharing systems. This type suggested that rental stations can be located at major transport hubs: railway stations, metro stops, bus terminals etc. The Liselec stations in La Rochelle is an example for all linked to other transportation modes that includes bus, ferry boat, train, Liselec car sharing, taxi, and park and ride. On the other hand, station-based bicycle sharing is suggested for linking closely with existing transportation networks. The SmartBike system is an example located in Washington, DC and all its 10 stations are within walking distance of a subway stop and these stops chosen for the stations are in the central business district. Next section will try to explain another key economic sector that both GND proposals focus which are the energy efficient buildings

6.1.3 Buildings

Another key economic sector proposition of both GND reports are considering is energy efficient buildings. Taking into account that the buildings are responsible for 30- 40 per cent of all energy usage, greenhouse gases and waste generation, UNEP (2009) asserted that the retrofitting of the existing building stock could create large investment opportunities and jobs in the immediate term. In this sense the paper suggested that governments could begin with direct spending on retrofitting all public buildings,

including government offices and public schools, universities, hospitals and social housing, to achieve much higher energy efficiency and the use of renewables. Also tax incentives provided by governments to private companies and individual households could provide insulation and installing energy and resource efficient appliances in office and residential buildings.

Pollin et al. (2008) describes retrofitting buildings program which would rely entirely on known technologies such as high-performance windows, efficient heating, ventilation and air conditioning systems, geothermal heating and cooling systems, efficient lighting and day-lighting, building-integrated photovoltaic-powered energy, and the installation of efficient appliances. For the case of United States, Pollin et al. (2008) indicated that the U.S. state and local programs to retrofit public buildings are already operating throughout the country[13] It is stated that these programs could be financed through existing federal grant programs. On the other hand retrofitting privately owned buildings - including residences and commercial structures- is indicated to be financed through strong incentive programs both loan guarantees and tax credits. The examples of such incentives for green recovery are represented as residential solar and fuel cell tax credit, business energy tax credit, energy efficient commercial buildings tax deduction, energy-efficient new homes tax credit for home builders, energy efficient mortgage federal loan programs.

For providing a comparative advantage on building technologies sector, the GND highlighted that Europe is supporting the sector with policies that encourage energy

[13] Among them Minnesota's Guaranteed Energy Savings Program, Utah's State Building Energy Efficiency Program, California's Green Building Action Plan for State Facilities, and the Energy Efficiency Partnership of Greater Washington. See Pollin et al. (2008) for more information.

efficiency and renewable energy in buildings and have created a comparative advantage for many European companies in the building technologies sector. Examples of a Europeans large market share sectors are such as foundation insulation systems, insulated triple-glazed windows and frames, motorized integrated exterior awning systems, integrated air-sealing product systems, passive housing standards, and integrated plug-in ducting systems for ventilation systems.

In Germany, due to aggressive national-level legislation, efficiency in the buildings is twice that in the US (Renner et al. 2009). The report evaluated the US and Europe's experiences about energy performance criteria of buildings that are not uniform for each country since the obligatory standards are not unique. Energy performance indicators for buildings is viewed as labels for measuring costs and energy performances so that building labels can also be relatively easily applied on a voluntary basis in the US, as in the case of Europe. GND report recommends the Top Runner rating system, which is applied by Japan and is in use and is also adapted in Germany. Unlike United States uses rating initiatives such as the Energy Star labeling system which relies on consumer response to ratings to drive efficiency improvements.

The Economic Benefits of Investing Clean Energy report by Pollin et al. (2009) states that a total level of clean-energy investment spending in this range would represent about 8 per cent of total annual private investment in the US economy as of 2007 and about 1.1 percent of 2007 US gross domestic product. The report estimated that for producing a 30 per cent cost saving, an average-sized single-family home in the US would require an investment of as $2,500 in energy-efficiency retrofits and for an additional $2,500, further energy savings are available through replacing windows with air leaks and installing energy efficient appliances. In order to encourage households to

retrofit their buildings, it is specified that banks, utility companies, nonprofit groups, and construction crews should become as a supplier of the upfront financing for these projects.

6.1.4 Basic Materials

Last key economic sector that the GND reports mainly pointed out is the basic materials sector such as steel, aluminum, cement, and paper. Renner et al. (2009) indicated that on average, the production of one ton of primary steel results in emissions of about two tons of CO_2 and steelmaking accounts for 5-6 percent of anthropogenic CO_2 emissions, and 27 percent of the total emissions of the world's manufacturing sector. In this respect the GND suggested that besides producing materials like steel, aluminum, and paper from scratch, using scrap materials saves substantial amounts of energy. Although further expansion of the recycled share in the short run is not easy -because of the rapidly rising demand- strong recycling standards and functioning scrap markets are a must, and governments need to step up their rules and incentives for greater recycling.

After presenting the Green New Deal's common key economic sectors of both policy proposals, next section will try to present the green recovery practices of China, US, Germany and France.

7. GREEN NEW DEAL IN PRACTICE

Next section would be trying to present Top 3 (Table 4.1 in Section 4)[14] GHG emitter economies' green recovery practices in the era of triple crisis. These economies not only structure their fiscal policies in their country based decisions but also follow the global institutions' policy recommendations whether they are binding or not.

[14] In this section Germany and France green recovery practices will be discussed as part of a EU (27) country in Table 4.1.

7.1 Green Stimulus in China

As opposed to US and Euro Area growth performance during the current economic crisis, China's economy, has performed relatively well. World Bank (2010) predicts that real GDP slowed to 9, 6 per cent in the year 2008, from 11.9 per cent in 2007, but in 2009 the GDP growth would significantly slow down to 8.7 per cent. China has competed with this global economic downturn with a massive investment led stimulus program.

In contrast to the 1997–1998 Asian financial crisis, which the Chinese government spent only 0.9 trillion Yuan over a six year time period (Leightner 2009), the government announced an economic stimulus package for two years at an amount of 4 trillion Yuan (US$586 billion) on November, 5 2008. Total package will be spent over the years between 2008 and 2010. A total of 1.18 trillion Yuan (29.5 per cent of the total package), is offered by the central government while the remaining fund will be provided by local governments and the private sector (PRC 2009).

The package contains infrastructure investments with 1.5 trillion Yuan (37,5 % of total stimulus) to be spent on construction projects, including railways, roads, airports, urban power grids and irrigation projects; 1 trillion Yuan will be used for reconstructing the areas hit by the May 12 Wenchuan earthquake; affordable housing will get 400 billion Yuan; public facilities in rural areas and industrial restructuring will get 370 billion Yuan each, 210 billion Yuan will be spent for energy-saving and eco-friendly projects; the rest of the stimulus fund (150 billion Yuan) will be distributed to health care, education and cultural development. Among the 1.18-trillion-yuan newly added

investment from the central government, 104 billion Yuan is allocated for the fourth quarter of 2008, 487.5 billion Yuan for 2009, and 588.5 billion Yuan for 2010. [15]

In addition to the stimulus actions, China promotes green economy in its five year plans. 12th five year plan (2011-2015), which approved in October 2010, China seeks to promote green growth and will invest US$468 billion to create green economy sectors compared to US$211 billion over the last five years (UNEP Advisory Services 2011).

Growing pressure on ecology via industrialization, urbanization and agricultural activities China's growth performances can lead to severe environmental degradation and exploitation of soil, China expressed its key characteristics of green economy as development model as cost-efficient, economically viable/beneficial, low- emission and sustainable (Chaofei et al. 2011).

These stimulus and investment programmes have been creating green job opportunities in China. Worldwatch Institute (2011) presented that during the 11th Five-Year Period (2006–10), China's created 2,700 direct jobs and 6,500 indirect jobs annually in solar PV power sector, on average[16]. Also China's wind power industry generated an average of 40,000 direct green jobs annually between 2006 and 2010.[17]

Although China commits to transform its economy into a green one, there are several challenges that the country faces. China is a fastest growing economy with its

[15] See for more information http://english.gov.cn/2009-12/27/content_1497729.htm

[16] This is projected to increase to an average of 6,680 direct jobs and 16,370 indirect jobs annually between 2011 and 2020. For more information see Pan et al. 2011

[17] China's wind power development between 2011 and 2020 is projected to generate some 34,000 green jobs annually on average. For more information see Pan et al. 2011

development stage of industrialization and urbanization. China has 150 million poor people in its regional parts.

7.2 Green Stimulus in US

The USA's fiscal stimulus package includes the Emergency Economic Stabilization Act, which was approved in October 2008, consisted of US$185 billion in tax cuts and credits, and the package contains the American Recovery and Reinvestment Act (ARRA) of February 2009, incorporated an additional US$295 billion in tax measures as well as US$492 billion in government spending.

The range of measures that the stimulus program enacted in February includes to begin building a clean energy economy as follows; US$24.4 billion in federal government spending to promote energy efficiency, US$23 billion for transportation investments, and US$25.3 billion for renewable energy and some of this funding will be in 2010, but a significant amount will also spark new economic activity between 2011 and 2014. The categories of federal spending is renewable energy, energy efficiency, transportation, the electrical grid, nuclear decontamination, carbon capture-and-storage technologies for fossil fuels, basic science, other and government administration (Robins et al. 2009). Approximately half of the environmental spending through ARRA is devoted to renewable energy and energy efficiency. Roughly US$100 billion of environment investments identified below are allocated according to various financial mechanisms included direct spending by the federal government (for efficient fleet procurement, for example), as well as grants, loan guarantees, bonds, and tax incentives. Eight year time frame is developed by the CBO to disburse ARRA's investment funds on renewable energy and energy efficiency and massive amount of these funds will be distributed between 2010 and 2014 as shown in Table 7.1.1 (Pollin et al. 2009, p.8). The table

indicates that only about 15 per cent of the total spending is being used by ARRA in 2009-2010 time periods, the rest of the funding will be distributed within the following six year time period. From the table we see that substantial amount of investment will be made until 2014.

Table 7.1.1 Environmental Spending Through the ARRA (Billions of US Dollars)

Funding Type	Direct Public Spending	Grants	Tax Incentives	Loan Guarantees	Bonds	Total
Federal Spending						
Renewable Energy	$2,5	$2,3	$16,0	$4,0	$0,6	$25,3
Energy Efficiency	7,2	14,4	2,0	0,0	0,8	24,4
Transportation	0,6	20,1	2,1	0,0	0,3	23,0
Grid	6,6	4,4	0,0	2,0	0,0	13,0
Nuclear Decontamination	6,0	0,0	0,0	0,0	0,0	6,0
Fossil		3,4	0,0	0,0	0,0	3,4
Science	1,6	0,0	0,0	0,0	0,0	1,6
Other	2,3	0,7	0,0	0,0	0,0	3,0
Government Admin	0,75		0,0	0,0	0,0	0,0
Total	$27,6	$45,3	$20,0	$6,0	$1,7	$100,5
State/Local government and Private spending induced by federal funds: *as a proportion of federal spending*	0	Ranges between 0-3 times of federal spending	Up to 2,3 times of federal spending	Up to 10 times of federal spending	Up to 3 times of federal spending	
Grand Total	$27,6	Up to $113,3	Up to $66	Up to $66	Up to $6,8	Up to $280,0

Source: Pollin et. al 2009

Table 7.1.2 Congressional Budget Office Estimated Rate of ARRA Spending on Renewable Energy and Energy Efficiency in US

Year of ARRA	Percentage of federal spending in given year
2009	2,6%
2010	12,2%
2011	19,9%
2012	22,1%
2013	17,6%
2014	15,1%
2015	6,2%
2016	1,6%

Source: Congressional Budget Office 2009

Pollin et al. (2009) states that spending on clean energy will create a higher net source of job creation in the United States relative to spending the same amount of money on high-carbon fuels because of the three sources of job creation associated with any expansion of spending—direct, indirect, and induced effects and these three effects in, say, investments in home retrofitting and building wind turbines can be described in this way:

Direct effects: Construction jobs created by retrofitting buildings to make them more energy efficient, or manufacturing jobs created to build wind turbines;

Indirect effects: Manufacturing and service jobs created in associated industries that supply intermediate goods for building retrofits or wind turbine manufacturing, such as lumber, steel, and transportation.

Induced effects: Retail and wholesale jobs created by workers in these construction, manufacturing, and service industries when they spend the money they earn on other products in the economy (Pollin et al. 2009, p.27)[18].

Finally, the study argues that the total employment creation through alternative energy sources and total job creation relative to oil for US$1 million spending produces a much larger expansion of employment than spending the same amount on fossil fuels. Under the assumption of the level of induced job creation is about 40 per cent of the level of direct plus indirect job creation, the study presented that the total level of job creation

[18] Pollin et al. (2009) states that the analysis of this study was done on the basis of the U.S. industrial surveys and input-output tables in order to generate results on direct and indirect job creation, therefore input-output modeling approach helps to estimate the effects on employment resulting from an increase in final demand for the products of a given industry. It is argued that the input-output model allows researchers to estimate the economy-wide employment results from a given level of spending.

range through spending US$1 million in each energy area is between 5.2 jobs in the oil industry to 22.3 jobs in mass transit.

Moreover, Pollin et al. (2009) defines the aim of the cap and trade system is to steadily reduce carbon dioxide and other greenhouse gas emissions from economic activity as part of a larger plan for curbing global warming and then continues to define the cap and the trade system as; each large-scale emitter, or company, will have a limit on the amount of greenhouse gas that it can emit therefore the firm must have an "emissions permit" for every ton of carbon dioxide it releases into the atmosphere hence these permits set an enforceable limit, or cap, on the amount of greenhouse gas pollution that is released. In the long run, the amount of limits becomes stricter, until the fundamental reduction goal is met. Required limits of emissions are easily met by some companies than others the trade will be relatively cheaper or easier for some companies to reduce their emissions below their required limit than others. These companies can sell their excessive permits to companies that are not able to make reductions as required.

This system is rewarding the most efficient companies and ensuring that the cap can be met at the lowest possible cost to the economy. If the federal government auctions the emissions permits to the companies required to reduce their emissions, it would create a large and dependable revenue stream and these financial resources could be used to achieve critical public policy objectives related to climate change mitigation and economic development. If the revenue from permit auctions is returned to the public as equal per capita dividends, consumers will be partially or fully insulated from the impact of higher prices. Households with small carbon footprints will come out ahead, receiving more in dividends than they pay in higher prices. (Boyce et al. 2009, p.2)

7.2 Green Recovery Practices in Germany

The German stimulus package consists of two separate plans brought into action in fall 2008 and winter 2009. Recovery packages provide €80 billion in stimulus to the German economy, representing 1.5 per cent and 2 per cent of GDP in 2009 and in 2010 respectively. The green measures in the stimulus package –which is about 13 per cent of stimulus package- heavily favor energy efficiency and low-carbon vehicles and energy efficiency improvements that are encouraged partly through grants and loans and partly through direct government investment. Lack of coverage about renewable energy measures in the stimulus package can be explained by the fact that renewable energy was already receiving a great deal of support in Germany before the economic crisis (Boyce et al. 2009 p.25). As a result of Germany's renewable energy investment policies, German Ministry of Environment (2009) indicated that approximately 280,000 jobs have been created in renewable energy sector.

Germany proposed fiscal stimulus measures for overcoming crisis. Within these measures, there are several funding opportunities available. For example a renovation work on buildings aimed at cutting CO_2 emissions started to be raised by US$3.78 billion from 2009 through to 2011. Moreover, urgent investment in transportation is started to be accelerated in 2009 and 2010 -that consists a new program of US$1.26 billion in each of those years. Also, the expansion of rail and waterways is proposed to be subsidized. The amount that is tax-deductible for housing repairs and modernization will be doubled to over US$1.500. New cars would be available as tax free for one year and those with low emissions would be tax free for two years. The tax break was ended on Dec. 31, 2010 (UNEP 2009, p.93).

Several practices of policy proposals are continued to be implement in Germany in

order to prevent negative effects of triple crisis. Through this objective of green recovery, Drewes et al. (2010) states that Germany's national urban development policy, for example, 865.000 apartments have been built or renovated with the support of KfW development bank[19] for promoting energy efficient construction. The aim of this policy is to create an additional 25 percent of Germany's residential buildings could be brought up to current energy efficiency standards[20] by 2030.

Moreover Germany successfully practices sustainable mobility programs for promoting low carbon transportation as indicated in section 6.1.2. For instance, a campaign in Germany aims to implement bicycle sharing program for encouraging car owners to travel short distances below 6 km with their own bicycle or with one that shared. Also mass transportation options are implemented with an integration of sharing programs. Deutsche Bahn (2009) offers a station-based car sharing service at train stations in 120 cities throughout Germany with over 1,600 cars and these cars connect directly with regional and national train services.

In light of this ongoing policy practices, we can say that Germany's contribution to green recovery is compatible with GND proposals.

7.3 Green Recovery Practices in France

France narrowly escaped recession in 2008, but when it comes to 2009 the economy is expected to shrink by 1.4 per cent -with a resumption of anemic growth in 2010. Just after the crisis, the French government announced €26 billion revival plan in December 2008. This stimulus plan represents the 1.3 per cent of GDP (Robins et al. 2009, p.27).

[19] Kreditanstalt für Wiederaufbau (i.e. Reconstruction Credit Institute) is a banking group owned by the Federal Republic of Germany (80%) and the States of Germany (20%).

[20] The primary energy consumption ceiling of 70 kWh per m^2 per year stipulated in the German Energy Conservation Ordinance (ENeV) of 2007.

Électricité de France (EDF)[21] commits an additional €2.5 billion to investments as part of this stimulus package and EDF has focused on minimizing CO_2 emissions by concentrating on nuclear power generation, instead of using green energy opportunities like wind or solar power generation.

Reid (2009) indicates that the recovery package comprises several energy efficient investments such as; €2.5 billion increase in investment by EDF includes €600 million for grid infrastructure, €300 million for renewable energy, €300 million for new methods of production, €800 million for maintenance of and improvements in the current production park, and €200 million for international nuclear energy projects.

The transportation side of the recovery program offers government investments amounted €300 million for railway transportation projects. Moreover, Societé nationale des chemins de fer français (SNCF)[22] has committed to increase its investments by €400 million and also the Régie autonome des transports Parisiens (RATP)[23] is setting aside an extra €450 million for investments in public transportation in Paris, which includes buses, metro, trams, and commuter, trains. Ports and waterways are also receiving €170 million in national support.

Energy efficiency is the other important theme of the French revival plan that offers a €200 million *État exemplaire* that will promote the energy-efficient renovation of public buildings; the post office has allocated €120 million for sustainable development and the Ministry of Defense has committed €10 million to energy efficiency; and another €200 million is flowing into grants for housing renovation with a focus on energy

[21] EDF is the second largest French utility company.
[22] *i.e.* National Corporation of French Railways.
[23] *i.e.* Autonomous Operator of Parisian Transports

efficiency.

Robins et al. (2009) attracts our attention to the cash for clunkers program in France, offering customers €1000 for scrapping a vehicle over 10 years old when a new vehicle that emits less than 160g CO_2/km is bought and this does attach some measure of environmental ethics to the scrapping bonus, 160 g CO_2/km represents an average CO2 emission for a new car in Europe.

Other environmental measures include cleaning up former industrial sites (€20 million) and Ministry of Defense sites (€10 million). As a result France has committed over 21 per cent of their stimulus money to environmental and low carbon programs. Over the next two years France is planning to spend US$1.9 billion on green housing developments and $38 million will go to sustainable agriculture. The incentive program designed to encourage people to replace inefficient vehicles will be allocated US$632.5 million and they have committed $1.27 million committed to high speed rail.

After presenting the Green New Deal key economic sectors and country practices it can be argued that GND represents yet another exit strategy of the mainstream capitalist system to overcome the crisis situation. It is a reformist proposal seeking to transform the economy within the system by making it greener. For its reformist agenda, GND attracts many criticisms mainly from the left notably from the Ecosocialist school of thought. In the following section we will attempt to examine the alternative policy proposals of Ecosocialism for overcoming the triple crisis.

8. ECOSOCIALISM

As an alternative perspective for overcoming the current crisis, this section attempts to represent the diagnosis of and the set of policies proposed by the Ecosocialist school of

thought. Although they share more or less a similar vision of future which is the creation of an economy at the service of all beings populated our planet, the GND and the Ecosocialist approaches are quite different in their approaches. Before starting to describe the components and radical changes that Ecosocialists advocated, the first part of this section gives an overview of the historic roots of the Ecosocialism.

8.1 Historical Roots of Ecosocialism

The root of Ecosocialist school of thought goes back to 1980s and 1990s in response to the increasing ecological destruction caused by the capitalist global system as well as the socialist regimes of the day.[24] For Kovel (2005) Ecosocialism can be described as socialism that is ecologically rational.

Links between nature, society and Marxism are explained by Benton (1989) as *"each form of social/economic life has its own specific mode and dynamic of interrelation with its own specific contextual conditions, resource materials, energy sources and naturally mediated unintended consequences (forms of 'waste', 'pollution', etc.)"* (p.77). This statement gives the idea that in order to construct policies for overcoming the triple crisis, one should take ecological issues as the central point from which to create solutions for both social and economic problems as well as ecological ones.

Marxist Ecologist[25] perspective developed the following notions in relation to the crisis. The first concept, *the treadmill of production* (Foster 2005), criticizes the capitalist

[24] Although GND and Ecosocialist views are being seen as diametrically opposite, in an interview, Frieder Otto Wolf stated that GND-type policies were first proposed by the left herself in the West mainly inspired from the Gorbachev project of perestroika. See http://turbulence.org.uk/turbulence-5/green-new-deal/ .

[25] Marxist ecologist scholar like John Bellamy Foster, does not have tendency to use the term of "Eco-Socialism" on his work. However Ecosocialist Michael Löwy declares that *"I much admire John Bellamy Foster's works and highly value his contribution to a Marxist ecology. I regret that he doesn't use the term "Ecosocialism", but since he advocates an ecological socialism, I think the difference is not so important."* See http://www.ecosocialistsunite.com/esu-blog.html). In this respect, this is important to include the notions that Marxist ecological perspective contributions to the Ecosocialist perspective.

mode of production for seeking to maximize its profit and accumulation, causing the absorption of natural resources and raw materials that increase environmental degradation. The next notion, *the second contradiction of capitalism* (O'Connor 1988), asserts that capitalism leads to crisis with the motive of increasing its production scale, and thus causes damage to natural conditions of production. For example, industrial waste that pours out into rivers has a major effect on water pollution. If capitalist production passes over this damage in order to maximize its profit, natural resources will start to be annihilated such that the cost of natural resource damage becomes a crisis. The last notion is the *metabolic rift* (Foster, 2000). The *metabolic rift* is related to Marx's discussions of capitalist agriculture with an explanation of how large-scale industry and large-scale agriculture combined to impoverish the soil and the worker (Foster 2009, p.49).

Following the Russian Revolution in 1917, several scientists (e.g. Aleksander Aleksandrovich Bogdanov) started to study ecological issues, especially to provide an understanding of connecting thermodynamics and energetics to ecology. Bogdanov ideated humans as part of nature, existing with their capacity to obtain and process usable energy (Gare 1996). In this respect, these themes were debated in the Proletarian Cultural and Educational Organizations (Proletkul't)[26] in 1918. However, Stalin preferred to put industrial growth policies forward to gain strength over Western Europe and neutralized the assumptions of the Bolshevik leaders including Bogdanov's above mentioned studies.[27] Therefore, movements and workings on ecology and the environment within the perspective of Marxist and socialist concepts were decelerated in that period.

[26] See e.g. Mally (1980) for more details.
[27] See e.g. Cohen (1980) for more details.

Through the 1970s to 1990s the issue of socialism and ecology was debated on several grounds including new movements, such as the Chipko movement in 1974[28], and the Greenbelt Movement in 1977[29]; further contributions for Ecosocialist literature have been provided by the journal of Capitalism, Nature, and Socialism (CNS). The CNS was published first in 1988 with James O'Connor as a founding editor. In addition, Chief Editor of CNS Joel Kovel and Editor Michael Löwy jointly launched the Ecosocialist Manifesto.[30] They stated that the Manifesto's *"goal is to invite dialogue, debate, emendation, above all, a sense of how this notion can be further realized."* (Kovel and Löwy 2001). The manifesto advocates that the capitalist system collapsed historically and there needs to be an ecological production under socialist conditions in order to overcome the present crises.

Globalization and neo-liberal agenda debates have regained ground since 1980 onwards. In these circumstances various radical debates over the capitalist mode of production have emerged. In 1993, Pepper published his work, *Ecosocialism: From Deep Ecology to Social Justice*, and asserted that Marxism, Anarchism or deep ecology may have different solutions for the same problems but in fact these different approaches could be combined together under the name of Ecosocialism.

Related to the globalization debates, Blowers (2000) analyzed the social implications of environmental change from a Neo-Marxist perspective and Ecosocialism. The first item

[28] The Chipko movement is an ecological and social movement and non-violent resistance, with growing awareness towards rapid deforestation. The modern Chipko movement started in India on March 26, 1974. A group of peasant women in Reni village, India acted to prevent the cutting of trees through the act of hugging trees to protect them from falling (Haynes, 2002, pp.229).

[29] The Green Belt Movement is a non-governmental organization located in Nairobi, Kenya. Professor Wangari Maathai established the organization. The movement brought women together under the roof of ecological and social sensitivity. Since 1977, over 40 million trees have been planted and over 30,000 women trained (See http://greenbeltmovement.org/index.php).

[30] CNS comprises various articles about Ecosocialism and its critique. It also covers the Ecosocialist Manifesto, available at: http://www.cnsjournal.org/manifesto.html

of this analysis is the social implications of environmental change. It is related to the globalization and its side effects which lead to local pollution and degradation problems and affected the social and environmental dynamics. The second item is that not only one generation is affected by these crises but also following generations have to bear the burden of living with serious threats like global warming, biodiversity loss and potential water scarcity. The third item is that within the process of modernization, natural resources are tried to be replaced by instrumental values without considering its intrinsic value. The next item emphasized the importance of environmental problems alongside ecological and economic issues. In this sense, the article gave the example of environmental justice movements which are dealing with more specific environmental issues rather than tackling the whole sustainability subject (Blowers 2000).

Within this position, a diverse set of arguments have been made about the prospective components of the Ecosocialist view. The next section of the study attempts to focus on these components.

8.2 Components of Ecosocialism

The Ecosocialist view is opposed to partial reforms. According to this view, technological change must be restructured through considering ecological and social priorities. Löwy (2002) asserted that the Ecosocialist view has two fundamental arguments: the first one is that ecological crisis emanated from the current mode of production and consumption habits, waste of resources, and destruction of the environment. The second one is that ecological crisis is triggered by the neo-liberal globalization perspective imposed by the developed world on countries in Asia, Africa, and Latin America. Generally, making investments in these underdeveloped regions

through multinational corporations, labor has been exploited by extremely low salaries, and the quantity of pollution harmful to health has been increased for those who live in these regions. For an egalitarian form of living, Ecosocialists advocate that economics is to be re-embedded into ecology, society, and politics (Löwy 2002). In this respect Löwy (2002) describes several immediate actions that can be taken in the short run to deal with ecological and social problems. The first is to promote free or inexpensive public transportation, such as trains, subways, buses, and/or trams for reducing pollution instead of driving individual automobiles. The second is to protect public health from pollution and genetically modified organisms. Next is to reduce working hours to solve unemployment and create more free time for workers for their social improvement. Decent working conditions should be provided for every worker. Shifting from conventional sources of energy to renewable energy technology could be another solution for achieving a decent work place. For the purpose of technological change, the Ecosocialist view proposed that possible grounds can be reached via democratic choice of priorities and investments by the population itself not the "laws of the market" (Löwy 2002, p.131).

On the other hand, there is no time for waiting to reach an Ecosocialist society or react immediately for transformation. In the meantime, global warming and other ecological degradation continue to raise swiftly all around the world, affecting vulnerable groups in particular. In this sense, Ecosocialists propose a transition phase. Along with the transition process, Kovel (2002) defends that non-violent radical social change should be built. For example, the working class resistance[31] of refusing to be involved in projects that are ecologically harmful is one of the themes of a transition period.

[31] This kind of resistance is called "green ban". Green ban is a form of strike action which is conducted for ecological purposes.

Another suggestion is building a form of production based on used value, such as open-source databases, public libraries, and Independent Media Centers (or Indy media).

To sum up, the Ecosocialist view defended that the transformation of mode of production and consumption is indispensible in the combat against the triple crisis. In this sense, ecological priorities should be examined at the central point while economic and social policies are embedded in it. For achieving an ecological society, the Ecosocialist view presents its road map as transition phase and transformation phase. In the transition phase, some precautions should be taken within the capitalist system for deferring the destructive effects of a triple crisis. But in the last analysis, this perspective asserts that the current mode of production and consumption must be totally changed.

9. COMPARATIVE ANALYSIS

At the outset, the GND and the Ecosocialist views share similar concerns regarding the economic, social and ecological crises. Both approaches envisage a transitional period at which the short-run objectives coincide. Yet, there exist significant differences regarding the tools to be employed and the actors to be involved in tackling the triple crisis. The main dividing line is that the GND is based on Keynesian school of thought whereas Ecosocialism is founded on Marxist school of thought.

In this section, we provide a comparative analysis of policy recommendations of the GND and the Ecosocialism in overcoming triple crisis. In diagnosing the current situation it is fair to say that both approaches come up with similar conclusions which can be summarized as follows:

- Both approaches are in a consensus that the current crisis has economic,

social and ecological dimensions.

- Both recognize the threats posed to vulnerable groups by rapid environmental degradation and poorly regulated economic expansion.
- Both highlight the need for greater coordination on matters of safety and emergency for responding to the triple crisis.

In general, GND proposals are concentrated on issues like; regulation of national/ international financial systems; investment in energy conservation and renewable energy; creation of green and decent jobs. In this sense, GND asserts that at the initial step, they can stabilize the triple crisis and then create a sustainable economic environment in the long-run.

Through the objective of tackling the economic crisis, GND proposes low interest rates, capital controls, and restructuring financial institutions through re-regulation and restriction of the national and international finance sector. These strategies have several prospective outcomes. First of all low interest rates is expected to turn green investments more affordable. Thus green job alternatives may emerge subsequently. Secondly prospected outcome of capital controls is the preservation of domestic savings for domestic use via imposing tax and restrictions on capital flows. In order to exercise capital controls, GND proposes Bretton Woods- like system on the international level. Another assertion of GND is that through separation of retail banking from both corporate and investment banking, bankruptcy impacts of both institutions can be eliminated thus the impacts on the public can be diminished. Moreover, the GND poses that creating financing opportunities for domestic private and public investment and international borrowing is also crucial for long-term development. According to the GND public spending should be targeted to support domestic private sector so that the

wages generated and spending of consumers increased.

In the context of ecological crisis, the GND mainly focuses on policies and financing of carbon reduction solutions including rising carbon taxes, increasing prices on traded carbon for reducing carbon emissions, and increasing investments in energy infrastructure. For supporting the implications of these solutions, NEF (2008) suggests several funding opportunities to reduce carbon dependency at national and international level. Introducing a windfall tax on oil and gas companies is a suggestion for reducing carbon dependency. Another one is that encouraging the use of private savings, pension funds, banks and other savings instruments to invest in a government-backed GND. Besides the national actions, GND offers international actions. These are generally based on developing effective international agreements about limiting the average temperature rise to 2°C or below.

GND is also focusing on poverty, and unemployment issues with reference to the MDGs. Especially at international level, the GND defends that "the fundamental policy priorities should be improving the sustainability of primary production activities, with the aim of ensuring that they generate sufficient investible funds for diversifying the economy, building up human capital, and investing in social safety nets and other investments targeted at the poor." (UNEP 2009, p. 13).

As opposed to GND approach, the Ecosocialist view is against the market-based strategies for overcoming triple crisis. For Ecosocialists, it is the dominant global system which rests on the free-market ideology that is responsible from the crisis. Therefore they argue that market mechanism cannot produce a sustainable solution. Ecosocialist view rests on the assertion that it is impossible to meet ecological needs

through market relations dominated by capitalist interests (Sarkar 2008, p.26). This argument is based on capitalist "commodification" notion of Marxist perspective. Castree (2003) defined capitalist commodification as *"a process where qualitatively distinct things are rendered equivalent and saleable through the medium of money. Particular commodity-bodies (use values) are thus commensurate and take on the general quality of exchange value."* (p. 278). In this way, Ecosocialist view disapproves market-based mechanisms such as "Cap and Trade" system and/ or "Clean Development Mechanisms" (CDM). The Belem Ecosocialist Declaration (2009) explained that under the control of these mechanisms, capitalist interest groups can use carbon dioxide as a commodity. For that reason, Ecosocialist perspective rejects the multilateral agreements like Kyoto Protocol which also promotes these emissions trading mechanisms. As we mentioned in Section 6.2, Ecosocialist view emphasizes democratic decision making rather than "laws of the market" (Löwy 2002, p. 131).

The Ecosocialist aim is to reach ideal ecological society via revolutionary social transformation which advocates the limitation of growth and shifting to use-value instead of exchange-value (Angus et al. 2007). The Belem Ecosocialist Declaration (2009) explained that the radical transformation proposals of Ecosocialist alternative can be summarized as: community controlled clean sources of energy power, free public transportation, sustainable and green architecture, elimination of industrial agribusiness and replacing it to an agro ecosystem.

Ecosocialists aware that the transformation phase could not meet short term needs to overcome triple crisis (Kovel and Löwy 2001). Urgency of recovery is crucial for preventing effects of global warming especially its possible damages on ecology and vulnerable groups. In this direction, Ecosocialist alternative proposes several immediate

actions, which would likely be imposed by governments, corporations, and international institutions, are as follows: reducing GHGs emissions, developing clean energy sources, providing provisions for a free transportation system, and creating pollution clean-up programs. On the basis of this transition phase policies, I can say that GND and Ecosocialist view policy proposals converge at the short run.

Ecosocialist view seeks to reach an economy that will be controlled by community while providing full employment for all in the long run. On the contrary, GND seeks gradual transformation of the economy within the capitalist framework. This is in contrast with the road map put forward by Ecosocialists since what they want is to replace the capitalist system with the help of a revolution on the basis of Ecosocialist values. Ecosocialists argued that radical transformation cannot be made by governments, corporations, and international institutions simply because they are at the service of the capitalist system. This brings us to the question of actor. In other words, who are the actors of the radical transformation required by the Ecosocialist perspective, and gradual transformation sought by GND?[32]

Pepper (1993) analyzed several potential agents and actors which could transform the system. According to classical socialist view, proletariat should be the ideal actor for the transformation. But Pepper (1993) argues that proletarian class might have a false

[32] I asked this question to Prof. Löwy. His response is: The basic actors are the subaltern classes, the victims of capitalism and imperialism, and of ecological destruction, the exploited and dominated: workers, peasants, indigenous communities, women, youth - as well as their social movements: unions, peasant federations, students unions, ecological movements, women movements, etc. Of course, the actors are not the same in each country and each region. They can achieve immediate aims - such as preventing oil companies of destroying their forests, as the indigenous communities and the ecological movements succeeded in Equador – and, hopefully, an Ecosocialist transformation in the future. In other terms : the agents for change are those groups and classes which do not profit from the capitalist system, and have the potential to understand the need of overcoming it in order to save the environment, and, consequently, humanity. Critical intellectuals also have an important role as agents of change, by developing radical thinking and radical alternatives (See http://www.ecosocialistsunite.com/esu-blog.html).

consciousness or "cognitive dissonance" which is related with *"the cult of the individual began to displace that of the collective in politics, destroying the working class's sense of itself and its own interests"* (Sennett 1978, p.237). Therefore, the driving force of Ecosocialist revolution should be viewed as the human consciousness (Kearney 1986, p.169-83). In this sense, other than proletarian movement, there are also new movements including greens, feminists, civil rights and peace movements.[33] These new movements could raise a consciousness for not only focus on the control of the means of production but also deal with the consumption (Pepper 1993, p.136). On the contrary, GND suggests governments, corporations, national and international institutions as suitable actors for implementing its policy proposals. In the last section, the study will be concluded with the presentation of strong and weak parts of each perspective's main policy proposals.

10.CONCLUSION

The aim of this study is to analyze comparatively the policy prescriptions of GND and Ecosocialist perspectives. Previous sections presented the policy contents and action plans of each perspective. From now on, I will conclude this study with briefly specifying strong and weak parts of each perspective's proposals for key issues as represented in Table 10.1.

As this study addressed earlier, current financial crisis leads to rising unemployment

[33] In this sense, it is important to mention the recent movements called Arab Spring from Arab World, 15 October 2011 global protests, Greek Protests from Greece, Spanish "Indignants" from Spain, Occupy Wall Street from US. Arab Spring began in December 2010 and leads to revolutions in Tunisia, and Egypt, Libya (see www.aljazeera.com for more details). These protests organized in the form of civil resistance involving strikes, and demonstrations with the help of social media to raise awareness of social crisis in these countries. Also Occupy Wall Street movement is an ongoing movement which began in September 17, 2011 and is located in New York City's Wall Street district in Zuccotti Park. The protests are against the growing difference in wealth in the US between the wealthiest 1 per cent and the rest of the population. (see www.nycga.net for more information).

rates. GND has been offering Green Investment alternative that expected to create Green Jobs. Pollin et al. (2008) calculated that the short term $100 billion green recovery package of U.S. would create almost four times more total jobs than the oil industry can create with the same amount. Even though unemployment rates are on the increase in comparison to pre-crisis level, owing to the economic contraction, still I can say that GND is presenting a strong argument for competing with unemployment. Also Ecosocialist perspective finds this proposal reasonable for the short-run transition period. But in broad aspect, Ecosocialists seeks to achieve full employment. In the long run, full employment argument of Ecosocialist view is also a strong for overcoming triple crisis if a roadmap of this argument could be represented comprehensively.

Another crucial concern is the increasing levels of food and commodity prices. UNEP (2009) estimated the cost of increasing level of food grains prices in developing countries is equivalent to three years worth global aid. High volatility of food and commodity prices has crucial impacts on peoples' lives. GND responded to the food crisis through the policy recommendations of international initiatives such as the World Food Summit of 2008 and the Comprehensive Framework of the United Nations High-Level Task Force on the Global Food Security Crisis. GND offers agricultural strategies, trade opportunities, safety net programs for food aids (UNEP 2009, p. 26). On the other hand, Ecosocialist perspective is against the GND's view on this issue. Because food is considered as a commodity like cloth, book or any necessity/ luxury product as Magdoff (2008) argued. Adopting food as a basic human right could be a solution for the problem. For rapid response to the food crisis, Magdoff (2008) gives the example of feeding houses in all poor neighborhoods that have been set up in Venezuela. In the long run, he suggests urban gardens, support system for farmers and

sustainable agricultural techniques as a solution to the food crisis. As seen, the Ecosocialist alternative has more radical proposals than GND for the case of food crisis, but contrary to other areas, on the food issue Ecosocialist view has manage to realize at least some of its radical program.

Another core issue that the GND and the Ecosocialist view address is the adverse effects of climate change due to global warming. For reducing GHG emissions, GND relies on international agreements such as Kyoto Protocol as described in ecological crisis section. Even though Kyoto Protocol has difficulties to accomplish its target levels efficiently, it presents a roadmap for countries to tackle global warming. On the contrary, Ecosocialist view supported the idea of transforming mode of production and consumption for achieving a green society and recovering the problem of global warming. But because climate change is an urgent matter and we have no luxury for waiting the transformation, Ecosocialist perspective accepted the conditions that GND offered in transition phase -still disapproves the clean trading mechanisms and cap and trade systems which the Kyoto Protocol guides. Ecosocialist perspective viewed this approach as "fixing a market problem (pollution) with a market solution" (Bond 2008). In short, related with global warming, GND policy proposal is said to be strong because it draws a framework for reducing GHG emissions via targeted levels of the Kyoto Protocol but still not adequately binding to immediately respond adverse effects of climate change. Besides, also Ecosocialist view has a strong argument, when we accept that triple crisis is the consequence of current production and consumption habits.

We can conclude that although the Ecosocialist perspective is more ambitious in reaching a more egalitarian and ecologically sustainable future in the long run, it lacks a clearly defined set of actors and road map that can radically replace the global system

with one based on Ecosocialist principles. In that respect, it can be argued that GND policies can help to set the stage for the Ecosocialist agenda to achieve its long term objectives. Hence, from this point of view, both approaches can be seen as complementary rather than substitutes.

Table 9.1 Summary of Policy Proposals presented by GND and Ecosocialist Alternatives

Core Issues of Triple Crisis	Green New Deal Proposals	Ecosocialist Proposals
Unemployment	Green Job Alternatives	Full Employment within the Ecosocialist system
RELIABILITY	*STRONG*	*STRONG*
Food and Commodity Prices	International Initiatives/ Achievement of MDGs for sustainable food prices/ Green Energy Investments	Defending local food sovereignty / Creating sustainable agro-ecosystems/ Development of Clean Energy Sources
RELIABILITY	*WEAK*	*STRONG*
Climate Change	Relying on International Agreements for reducing GHG emissions (Kyoto Protocol, CDM, Cap and Trade etc.)	Drastic and enforceable reduction in the emission of GHG through replacing production and consumption patterns by sustainable goods and green architecture
RELIABILITY	*STRONG*	*STRONG*

BIBLIOGRAPHY

Adaman, F. and B. Özkaynak (2002), "The Economics-Environment Relationship: The Neoclassical, Institutional, and Marxist Approaches", *Studies in Political Economy.*

Aizenman, J., and G.K. Pasricha, On the Ease of Overstating the Fiscal in the US 2008-2009, National Bureau of Economic Research, Working Paper, No. 15784.

Angus, I., J. Kovel and M. Löwy (2009), "Belem Ecosocialist Declaration", *World Social Forum* (Belem, Ecosocialist International Network) Retrieved on January 2011 from http://www.ecosocialistnetwork.org/

Barbier, E.B. (2010a), "Global Governance: the G20 and a Global Green New Deal", *Economics: The Open-Access, Open-Assessment E-Journal*, 4(2010-2).

__(2010b), "Green Stimulus, Green Recovery and Global Imbalances", *World Economics*, 11(2), pp.1-27.

__ (2010c), "How is the Global Green New Deal Going?" *Nature,* 464: 832-833.

__(2009), "Rethinking the Economic Recovery: A Global Green New Deal", Report prepared for the Economics and Trade Branch, Division of Technology, Industry and Economics, United Nations Environment Programme, Geneva.

Barker T., I. Bashmakov, L. Bernstein, J. E. Bogner, P. R. Bosch, R. Dave, O. R. Davidson, B. S. Fisher, S. Gupta, K. Halsnæs,G.J. Heij, S. Kahn Ribeiro, S. Kobayashi, M. D. Levine, D. L. Martino, O. Masera, B. Metz, L. A. Meyer, G.-J. Nabuurs, A.Najam, N. Nakicenovic, H. -H. Rogner, J. Roy, J. Sathaye, R. Schock, P. Shukla, R. E. H.Sims, P. Smith, D. A. Tirpak, D. Urge-Vorsatz, and D. Zhou, (2007), *Technical Summary. In: Climate Change 2007: Mitigation. Contribution of Working Group III to theFourth Assessment Report of the Intergovernmental Panel on Climate Change [B. Metz, O. R. Davidson, P. R. Bosch, R. Dave,L. A. Meyer (eds)]*,Cambridge, UK: Cambridge University Press.

Baker J., R. Basu, M. Cropper, S. Lall, and A. Tkeuchi (2005), Urban Poverty and Transport: The Case of Mumbai, World Bank Policy Research Working Paper No. 3693, The World Bank, Washington DC.

Batten, B., B. Goldstein, and B. Hendricks (2008), Investing in a Green Economy: Using Cap-and-Trade Auction Revenue to Help American Families and Spur Clean Energy Innovation, Centre for American Progress, Washington, DC.

BAYKAN, Barış Gencer (2009), "Dünyada ve Türkiye'de Yeşil Yakalılar", Bahçeşehir Üniversitesi Araştırma Notu_37, Retrieved on June 2009, from http://betam.bahcesehir.edu.tr/ UserFiles /File/ArastirmaNotu037.doc

Biggart, J. (1991), "Reviewed work(s): Culture of the Future. The Proletkult Movement in Revolutionary Russia by Lynn Mally", *Soviet Studies*, 43(4): 777-779.

Blowers, A. (2000), "Ecological and Political Modernisation: The Challenge for Planning", *Town Planning Review*, 71(4): 371-393.

Bond, P., "From False to Real Solutions of Climate Change", Retrieved on May 2011 from http://www.tni.org

Boyce, K.J., and E.M. Riddle (2009), Cap and Dividend: A State by State Analysis, Political Economy Research Institute Working Paper, Political Economy Research Institute University of Massachusetts, Amherst, MA.

__(2007), Cap and Dividend: How to Curb Global Warming while Protecting the Incomes of American Families, Political Economy Research Institute Working Paper, No.150, University of Massachusetts, Amherst, MA,

Brulle, R. J. (2000), *Agency, Democracy & Nature: The U.S Environmental Movement from a Critical Theory Perspective*, Cambridge, MIT Press.

Castree, N. (2003), "Commodifying what nature?" *Progress in Human Geography*, 27: 273-297.

Climate Network (2011), Sharing Solutions: Transatlantic Cooperation for a Low-Carbon Economy, Retrieved on November 2011 from http://boell.org

Cohen, S. F. (1980), *Bukharin and the Bolshevik Revolution: A Political Biography, 1888-1938*, Oxford, UK: Oxford University Press.

Crotty, J. (2008), Structural Causes of the Global Financial Crisis: A Critical Assessment of the 'New Financial Architecture, University of Massachusetts Amherst Department of Economics Working Paper, No. 2008-14.

Custers, P. (2009), "Reflections on the concept of a 'Green New Deal", Retrieved on March 2011 from http://www.countercurrents.org

Cypher, J.M., and J.L. Dietz (2009), *The Process of Economic Development*, New York, NY, US: Routledge.

Çevre ve Orman Bakanlığı (2006), *AB Entegre Çevre Uyum Stratejisi 2007-2023 (UÇES)*, Çevre ve Orman Bakanlığı, Ankara, Turkey.

Dong, H., Z. Zhang, and W. Zhang (2009), "How Large will be the Effect of China's Fiscal Stimulus Package on Output and Employment?", *Pacific Economic Review*, 14 (5): 730-744.

Drewes, S. (2009), Urban Futures 2030 – the Sustainable City of Tomorrow, in Heinrich-Böll-Stiftung (eds.) *Urban Futures 2030 Urban Development and Urban Lifestyles of the Future*, Berlin, Germany: Heinrich Böll Stiftung, pp. 9-16.

Ernst, D. (2009), China's Stimulus Package: A Catalystfor Recovery? Asia-Pacific Bulletin, No.35.

European Environment Agency (2010), *Tracking Progress towards Kyoto and 2020 targets in Europe, EEA Report 7/2010*, Copenhagen, Denmark: European Environment Agency.

EUROSTAT (2011), Energy, Transport and Environment Indicators 2010 Edition. *European Union*, Retrieved on October 2011 from http://ec.europa.eu/eurostat

Flavin, G. (2008), Low Carbon Ebergy: A Roadmap, World Watch Institute Report, No. 178, Washington, DC.

Feinstein, S (2006), *The 1930s: From the Great Depression to the Wizard of Oz*, Berkeley, US: Enslow Publishers.

Foster, J.B. (2009), *The Ecological Revolution: Making Peace with the Planet*, New York, US: Monthly Review Press.

__ (1999), "Marx's Theory of Metabolic Rift: Classical Foundations for Environmental Sociology," *American Journal of Sociology,* 105: 366–405.

Foster, J.B. and F. Magdoff (2009), *The Great Financial Crisis: Causes and Consequences*, New York, US: Monthly Review Press.

Gare, A. (1996), "Soviet Environmentalism: The Path Not Taken." In: Ted Benton (ed.), Benton, Ted (eds.) *the Greening of Marxism*, New York, US: The Guilford Press, pp. 111-128.

Garrett-Peltier, H. (2011), Employment Estimates for Energy Efficiency Retrofits of Commercial Buildings, Political Economy Research Institute Research Brief June 2011, University of Massachusetts, Amherst.

German Federal Ministry of Environment (BMU) (2009), *Gross Employment from Renewable Energy in Germany in the Year 2008: A first estimate*, Retrieved on January 2011 from http://www.bmu.de/english

Green European Foundation (2010), *27 National Action Plans = 1 European Energy Policy?* Belgium: Green European Foundation.

Green New Deal Group (2008), *A Green New Deal: Joined-up Policies to Solve the Triple Crunch of the Credit Crisis, Climate Change and High Oil Prices*, London, UK: New Economics Foundation.

Gruenig, M., and M. Dominic (2009), *A Missing Link to Sustainable Mobility: Connecting Public Transportation to Car and Bike Sharing Programs; Best Practice Examples from Europe and the U.S.*, Heinrich Böll Stiftung, Washington, DC.

Hanngsten, G., and D.B. Papadimitriou (2009), Lessons from the New Deal: Did the New Deal Prolong or Worsen the Great Depression?, The Levy Economics Institute of Bard College, Working Paper, No. 581, Annandale-on-Hudson, NY.

Haynes, J. (2002), *Politics in the Developing World: A Concise Introduction, 2nd Edition*, UK: Wiley-Blackwell.

Houser, T., M. Shahshankand, and R. Heilmayr (2009), A Green Global Recovery? Assessing US Economic Stimulus and the Prospects for International Coordination, Peterson Institute for International Economics and World Resources Institute Policy Brief, No. PB09-3, Washington, DC.

IEA (2011), *Key World Energy Statistics 2011*, Paris, France: OECD/ IEA.

__(2010), *Energy Policies of IEA Countries: Turkey 2009 Overview,* Paris, France: OECD/ IEA.

__ (2008), *World Energy Outlook 2008,* Paris, France: OECD/ IEA.

ILO (2011), Global Employment Trends: The challenge of a Jobs Recovery, Geneva, Switzerland: ILO.

__ (2009), Tackling the Global Crisis: Recovery through Decent Work Policies. Geneva, Switzerland: ILO.

IMF (2009), *World Economic Outlook, October 2009,* Washington D.C., US: IMF.

Johnson, V., A. Simms, and C. Cochrane (2008), *Tackling Climate Change, Reducing Poverty: The First Report of the Roundtable on Climate Change and Poverty in the UK*, London, UK: New Economics Foundation.

Kapoor, S. (2011), Funding the Green New Deal: Building a Green Financial System, Policy Maker Report from Re-Define, Brussels, Belgium: The Green European Foundation.

Kazgan, G. (2002), *Tanzimattan 21.Yüzyıla Türkiye Ekonomisi: Birinci Küreselleşmeden İkinci Küreselleşmeye,* İstanbul, TR: İstanbul Bilgi Üniversitesi Yayınları.

Kazgan, G. (2008), *Türkiye Ekonomisinde Krizler (1929-2001),* İstanbul, TR: İstanbul Bilgi Üniversitesi Yayınları.

Kepenek, Y., and N. Yentürk (2007), *Türkiye Ekonomisi*, İstanbul, TR: Remzi Kitabevi.

Keynes, J. M. (2007) [1936], *The General Theory of Employment, Interest and Money*, Hampshire, Basingstoke: New York: Palgrave Macmillan.

Kovel, J. (2007), *The Enemy of Nature: The End of Capitalism or the End of the World?,* London, UK: Zed Books.

Lee, C. H. (2009), National Policy Responses to the Financial and Economic Crisis: The Case of China, *ILO* Retrieved on May 2011 from http://www.ilo.org/asia

Leightner, J.E. (2010), "China's Fiscal Stimulus Package for the Current International Crisis: What does 1996–2006 Tell Us?", *Front. Econ. China,* 5(1): 1–24.

Löwy, M. (2002), From Marx to Ecosocialism, *Capitalism Nature Socialism*, 13(1): 121-133

Magdoff, F. (2008), The World Food Crisis: Sources and Solutions, Retrieved on May 2011 from http://monthlyreview.org

Mally, L. (1980), *Culture of the Future. The Proletkult Movement in Revolutionary Russia* Berkeley, US: University of California Press.

Mark, P., and B. Ivry (2009), U.S. Taxpayers Risk $9.7 Trillion on Bailout Programs, Retrieved on April 2011 from http://www.bloomberg.com

Nathaniel B. (2007), "Did Highways Cause Suburbanization?", *Quarterly Journal of Economics* 122 (2): 775-805.

Nellemann, C., M. MacDevette, T. Manders, B. Eickhout, B. Svihus, A. G. Prins, and B. P. Kaltenborn (Eds) (2009), *The Environmental Food Crisis – The Environment's Role in Averting Future Food Crises: A UNEP rapid response assessment*. United Nations Environment Programme, Arendal, GRID.

Nisan, S., and S. Spratt (2009), The Ecology of Finance: An Alternative White Paper on Banking and Financial Sector Reform, *New Economics Foundation* Retrieved on March 2011 from http://neweconomics.org

OECD (2009). *Policy Responses to the Economic Crisis: Stimulus Packages, Innovation and Long-term Growth*, Paris, France: OECD.

Pepper, D. (1993), *Eco-socialism: From Deep Ecology to Social Justice*, London and New York: Routledge.

Peterson, W. C. (1977), "Institutionalism, Keynes, and the Real World", *Journal of Economic Issues*, 11: 204-205.

Podesta J. D., K. Gordon, B. Hendricks, and B.Goldstein (2009), The Clean-Energy Investment Agenda A Comprehensive Approach to Building the Low-Carbon Economy, Retrieved on March 2011 from http://www.americanprogress.org

Pollin R., H. Garrett-Peltier, J. Heintz, and H. Scharber (2008), Green *Recovery: A Program to Create Good Jobs and Start Building a Low-Carbon Economy*, Washington, D.C., US: Center for American Progress.

Pollin, R. (2009), Response to 'Seven Myths about Green Jobs' and 'Green Jobs Myths', Political Economy Research Institute, Working Paper, No. 198, Retrieved on March 2011 from http://www.peri.umass.edu

__ (2010), 18 million Jobs by 2012: How Obama can Save his Presidency, in: The Nation, March 8th, Retrieved on October 2010 from http://www.thenation.com/doc/20100308/pollin

Pollin, R., J. Heintz, and H. Garrett-Peltier (2009), The Economic Benefits of Investing in Clean Energy: How the Economic Stimulus Program and New Legislation can Boost U.S. Economic Growth and Employment, Center for American Progress and Political Economy Research Institute, Retrieved on June 2010 from http://www.peri.umass.edu

Pollin, R., J. Wicks-Lim, H. Garrett-Peltier (2009), Green prosperity: How clean energy policies can fight poverty and raise living standards in the United States, Natural Resources Defense Council, Green For All, and Political Economy Research Institute, Retrieved on June 2010 from http://www.peri.umass.edu

Renner, M., H. French, and G. Gardner (2009), "Toward a Transatlantic Green New Deal: Tackling the Climate and Economic Crises", *Publication Series on Ecology*, (Brussels, Heinrich Böll Stiftung, European Union Office), Retrieved January 2011 from www.boell.org.za

Robins, N., C. Robertand, and C. Singh (2009a), *Taking Stock of the Green Stimulus*, New York, US: HSBC Global Research.

__(2009b), *A Climate for Recovery: The Colour of Stimulus Goes Green*, New York, US: HSBC Global Research.

Sarkar, S. (1999), *Eco-Socialism or Eco-Capitalism?*, London and New York: Zed Books.

Sawin L.J., and W. R. Moomaw (2009), *Renewable Revolution: Low-Carbon Energy by 2030*, Worldwatch Report. Retrieved on June 2011 from http://www.worldwatch.org/

Schepelmann, P., M. Stock, T. Koska, R. Schüle, and O. Reutter (2009), *A Green New Deal for Europe: Towards Green Modernization in the Face of Crisis*, Brussels, Belgium: Green European Foundation.

Schick, G. (2011), Why the Green New Deal is a Response to the European Debt Crisis, Heinrich Böll Stiftung Policy Paper, Retrieved on November 2011 from http://www.boell.org/web/index-834.html

Sedlacko, M., and N. Gjoksi (2009), Sustainable Development and Economic Growth: Overview and Reflections on Initiatives in Europe and Beyond, ESDN Quarterly Report December 2009, Retrieved on March 2011 from http://www.sd-network.eu

Shasheen, F., and G. Haywood (2010), Filling the jobs gap: Why Enterprise-Based Regeneration is not Working, *New Economics Foundation*, Retrieved on June 2011 from http://neweconomics.org

Simms, A., V. Johnson, and S. Nissan (2009), *Green Stimulus or Simulus?What is the Government Doing that is New and Additional to Stimulate the Economy by Spending on the Environment?*, London, UK: New Economics Foundation.

Spratt, S., A. Simms, E. Neitzert, and J. Ryan-Collins (2010), *The Great Transition*, London, UK: New Economics Foundation.

State Planning Office (SPO) (2011), *Pre-Accession Economic Programme 2011-2013*, Ankara, TR.

__(2009a), *Pre-Accession Economic Programme 2009*, Ankara, TR.

__(2009b), *Medium Term Programme 2010-2012*, Ankara, TR.

Stern, N. (2008), "The Economics of Climate Change", *The American Economic Review*, 98 (2): 1-37.

__(2007), *The Economics of Climate Change: The Stern Review*, Cambridge, UK: Cambridge University Press.

Stiglitz, E.S. (2009), Developing Countries and the Global Crisis, Retrieved on June 2010 from http://www.project-syndicate.org/

Telli, Ç., E. Voyvoda, and E. Yeldan, (2008), "Economics of Environmental Policy in Turkey: A General Equilibrium Investigation of the Economic Evaluation of Sectoral Emission Reduction Policies for Climate Change", Journal of Policy Modeling, 30(2008): 321-340.

UNEP (2011), *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication*, UNEP.

__(2009), *Global Green New Deal Policy Brief*, UNEP.

__(2008), *Reforming Energy Subsidies: Opportunities to Contribute to the Climate Change Agenda*, UNEP.

Uygur, E. (2010), *The Global Crisis and the Turkish Economy*, Penang, Malaysia: Third World Network.

Vatter, G.H. (1985), *The US Economy in the World War II*, New York, US: Columbia University Press.

WB (2010), *World Bank Quarterly Update June 2010*, World Bank Office, Beijing, China.

WWI (2008), "Green Jobs: Towards Decent work in a Sustainable, Low-Carbon World", (Nairobi, UNEP/ILO/IOE/ITUC), Retrieved on January 2011 http://www.unep.org

WEF (2011). *Green Investing: Reducing the Cost of Financing*, Geneva, Switzerland: World Economic Forum.

__(2009). *Green Investing: Towards a Clean Energy Infrastructure* Geneva, Switzerland: World Economic Forum.

Yeldan, E. (2010), Turkey's Response to the Global Crisis: An Initial Assessment of the Effects of Fiscal Stimulus Measures on Employment and Labor Markets, Retrieved on March 2010 from http://www.bilkent.edu.tr/~yeldane

APPENDIX

A. TURKEY'S POSITION ON GREEN RECOVERY

The world economy entered into a slowdown with decreasing growth rate of the world output and increasing rates of unemployment due to global financial crisis from 2008 onwards. Governments started to implement several monetary and fiscal expansions via recovery packages. Depending on this ongoing global deceleration, also Turkey is experiencing crucial downturns.

In addition to recent economic turmoil; industrialization, unplanned urbanization, and an increasing population cause a big pressure on the relationship between economic development and ecosystem in Turkey. A higher level of warming causes major regional and local demolitions on eco-systems, human settlements, food production, and bio-diversity.

Environment is a rising issue on the national and international agendas. Governments are trying to implement local solutions for environmental problems. In doing so, they can use several global policy guidelines that are published by UN, IMF, WB and/ or EU. Turkey was preparing the EU Integrated Environmental Approximation Strategy (UCES 2007) in compliance with EU Environmental *Acquis Communautaire* and local legislations. In addition, Turkey officially declared to join the Kyoto Protocol[34] in February, 2009. The common purpose of laws oriented towards the prevention of the

[34] The Kyoto Protocol – which parties of the 1992 United Nations Framework Convention on Climate Change (UNFCCC) adopted- assumes that the avoidance of dangerous climate instability requires the warming be kept below 1.5 degrees centigrade.

environmental pollution, targeting the preservation of the natural resources, and a clean environment for the members of society.

According to Greenhouse Gas Emission Inventory released by TURKSTAT, the total GHG emission of Turkey reached 372 million tons in 2007 (Table A.1). The energy-based emissions have the largest share, 288 million ton in 2007 (as CO_2 equivalent), of all GHG emissions.

Table A.1 Total GHG Emissions of Turkey (million ton CO_2 equivalent), 1990-1995-2000-2005-2007

	1990	**1995**	**2000**	**2005**	**2007**
CO_2	139,59	171,85	223,81	256,43	304,5
CH_4	29,21	42,54	49,27	49,32	54,38
N_20	1,26	6,33	5,74	3,43	9,65
F Gases	0	0	1,14	3,24	4,13
Total	**170,06**	**220,72**	**279,96**	**312,42**	**372,6**

Source: TURKSTAT

Total GHG Emissions of Turkey by Sector (million ton CO_2 equivalent), Table A.1 Total GHG Emissions of Turkey (million ton CO_2 equivalent), 1990-1995-2000-2005-2007

	1990	**1995**	**2000**	**2005**	**2007**
Energy	132,13	160,79	212,55	241,45	288,3
Industrial Businesses	13,07	21,64	22,23	25,39	26,18
Agricultural Activities	18,47	17,97	16,13	15,82	26,28
Waste	6,39	20,31	29,04	29,75	31,85
Total	**170,06**	**220,72**	**279,96**	**312,42**	**372,6**
Growth Rate based on 1990 values	**-**	**29,8**	**64,6**	**83,7**	**119,1**

Source: TURKSTAT

This appendix will try to briefly represent the policy response of Turkey to the recent global economic crisis and against the backdrop of the ecological and social crisis -so

called triple crisis. First of all, the section will try to briefly depict the economic conditions that Turkey had to be confronted from 2007 onwards by examining pre-depression economic circumstances in light of the monetary, fiscal, and environmental policies. Then the study is trying to analyze the current green job and green investment opportunities in Turkey in the period of current economic and ecological crisis.

A.1 Turkish Economy in the Triple Crisis

Turkey's transformation into a market-based economy dates back to 1980. That year Turkey signed "stabilization and liberalization program" based on a stand-by agreement with the IMF in 1980 after struggling with foreign debt crisis in 1979. Following years, wide range of finance and trade liberalization policies was put into effect and in 1989; Turkey liberalized its capital account transactions. However series of financial crises continued to occur starting from 1994 onwards. Several IMF based formulations such as the nominal anchor of the disinflation program -was a pre-announced crawling peg exchange rate system- was adopted by Turkey. However hope for help from stand-by agreements and stabilization programs with the IMF, which are always on the agenda for the government of Turkey, are incapable or ephemeral for preventing crises (Kazgan 2008; Uygur 2009). On February 2001, Turkey moved from a crawling peg to a floating exchange rate system and this leads to immediate depreciation in lira and affected, inter alia, Turkey's debt susceptibility to external vulnerability. Afterwards 18th stand-by agreement was signed and ended in 2005 and 19th stand-by was imposed in May 2005 till May 2008.

Recent global crisis spread Turkey starting from last quarter of 2008 onwards. The global crisis has hit the Turkish economy through several economic and financial

channels. Activities such as performance of exports with EU region, financial market operations, and foreign financing for corporate sector decline explicitly (SPO 2009).

The growth of Turkish economy decelerated starting from mid- 2007, before it was hit by the recent crisis, basically due to falling growth in private investment and consumption. Also volatility in capital inflows affected growth performance negatively due to global economic and political uncertainties. Before recent financial crisis was hit the Turkish economy from mid-2008 onwards, current account (CA) deficits has deteriorated during the economic growth period of 2002-2007 and growing amount of CA deficits caused economy to become vulnerable just before the global economic crisis starting to hit.

Another indicator that shows the global crisis affected Turkish economy is the foreign trade flows and negative GDP growth rates. Columns 3 and 4 of Table A.1.1 shows that there was a decline in the value of Turkish exports and imports starting in last quarter of 2008 and this leads to smaller CA deficits from 2008Q4 onwards. As seen from the table, imports started to increase from March 2009 onwards while exports continued to stagnate so that CA deficits started rising from March 2009 to July 2009.

CA deficit fell from a $15.51 billion in 2Q08 to $1.71 in 1Q09 due to steep falls in import prices in general, petroleum and gas prices in particular because Turkey is a major energy importer (Table A.1.1). However CA deficits and imports started to increase because government reduced the VAT and special consumption tax (SCT) rates on motor vehicles and consumer durables to stimulate demand for year 2009; Central Bank of the Republic of Turkey (CBRT) reduced interest rates in December 2008 to boost demand; the TRY started to appreciate once in April 2009; energy prices started

to rise; net portfolio investments started to turn positive.

Table A.1.1 Current Account (CA), Net Capital Inflows, Errors & Omissions and Change in Reserves (Billion $) in Turkey, (2008-2009)

Period	Current Account, (1)	Current Account, (2)	Exports, Goods (3)	Imports, Goods (4)
	Bil $	CA/GDP	Bil $	Bil $
2008Q1	-12,29	-5,89	33,1	49,2
2008Q2	-15,5	-6,32	35,6	56,7
2008Q3	-7,95	-6,19	36,4	57,7
2008Q4	-5,75	-5,56	26,8	38,4
2009Q1	-1,71	-4,33	24,5	28,9
2009Q2	-5,13	-2,28	23,3	33,5
Period	**Current Account, (1)**	**Current Account, (2)**	**Exports, Goods (3)**	**Imports, Goods (4)**
	Bil $	**CA/GDP**	**Bil $**	**Bil $**
2009M1		-0,4	7,9	9,3
2009M2		-0,2	8,4	9,1
2009M3		-1,1	8,2	10,5
2009M4		-1,5	7,6	10,1
2009M5		-1,6	7,3	10,8
2009M6		-2	8,3	12,5
2009M7		0,3	9,1	12,5
2009M8			7,8	12,7

Notes: CA/GDP ratio is annualized; CA and GDP are expressed as four quarter sums.
Source: Column (1) and (2): CBRT. Columns (3) and (4): TURKSTAT.

In June 2009, the total number of banks was down to 45, with only one bank at SDIF. During the current crisis yet there was no fall in the profitability of banks. The reason behind the successful survival of the banking sector in recent economic crises is due to the fact that banks are not lending excessive amounts of mortgage loans and no exposure to instruments, which later turned out to be toxic, are not used by the Turkish

banking sector (Uygur 2009).

The Turkish economy entered a contractionary process following the financial crisis in early 2001. The floating exchange rate regime was declared on February 22, 2001 due to break down of the “disinflation program” and its nominal anchor, the crawling-peg system that were in effect since end-1999. In May 2001, new monetary policy framework, which contained "base money" as the nominal anchor, was adopted. This framework offers preconditions that would be formed of an “implicit inflation targeting” policy and short-term interest rates were to become critical policy variables (CBRT 2001) There were interventions in the FX markets and FX purchase auctions were carried out to increase the FX reserves “without affecting the long-term equilibrium value of the FX rate.” (CBRT 2002 and 2003).

The annual report of the CBRT declared that the overnight (O/N) interest rate was raised by 4 percentage points in the medium run. In these circumstances, inflation was starting to exceed the targeted rate from 2007 to July 2008, so the CBRT kept the O/N interest rates high. (CBRT 2007)

In order to resist to current global turmoil, Turkish government and the CBRT announced several economic recovery measures that contain monetary and fiscal precautions such as reducing borrowing rates and O/N rates, providing alternatives to meet the liquidity needs and strengthen capital structures of banking system, and helping to facilitate export financing.

Along with the measures taken by the CBRT, BRSA (Banking Regulation and Supervision Agency), CMB (Capital Markets Board), and State Planning Organization (SPO) prepares several reports and programs in order to evaluate and predict policies

and their prospective impacts. One of the important reports that SPO prepared is the Pre-Accession Economic Programs. 2009 Pre-Accession Economic Program states that the main goals of the fiscal policy implemented since early 2000s are to reduce the risks on the sustainability of public debt stock by yielding high rate of primary surplus directly, and to support the sustainability of macroeconomic stability and contribute to disinflation efforts, indirectly and the basic objective of the monetary policy is to ensure price stability. (SPO 2009)

After the expiration of 19th stand-by agreement signed with IMF, Turkish government published its Medium Term Fiscal Framework that is planning to implement for the period 2008-2012. Framework's purpose is to attain an average of 2.8 percent public sector primary surplus and to lower EU-defined general government debt stock down to 30 percent. However the growth projected at 5.5 percent in 2008, has been realized only as 0.9 percent due to the current global economic crisis particularly in the last quarter of 2008.

In 2008, there were several events which augmented central government revenues, like transfers from privatization revenues and Unemployment Insurance Fund, corporate tax collections due to the profitability in the banking sector. On the other hand, the fact that energy state economic enterprises (SEEs) failed to fulfill their tax obligations like in the previous years, adversely affected the tax performance. Moreover making extra payments for public workers who do not receive additional institutional payments generated burden to the central government budget. Thus, the budget deficit was recorded at 1.8 percent as to Gross Domestic Product (GDP) whereas the primary surplus was 3.5 percent as to GDP at the end of 2008 (Table A.1.2).

Table A.1.2 Budget Performance of the Central Government of Turkey, (2007-2010), as % of GDP

	2007	2008	2009	2010*
Total Expenditures	24,2	23,9	28,2	27,9
Non-interest Expenditures	18,4	18,6	22,3	22,4
Total Revenues	22,6	22,1	21,5	23
Primary Surplus	4,2	3,5	-0,8	0,6
IMF Defined Primary Surplus	2,5	1,8	-2,2	-0,8

* SPO Realization forecast

Source: SPO

In 2009, the tax revenues declined significantly because of the contraction in Turkish economy resulted from global economic turmoil. Also the premium collection of the social security system was not met the targets (SPO 2009). The ratio of the central government budget expenditures in 2009 to the GDP is expected to be at 28.2 percent and the ratio of the revenues to GDP is expected to be at 21.5 percent. Furthermore, the budget deficit and primary surplus is anticipated to be 6.6 percent and 0.8 percent respectively (Table A.1.2).

In accordance with the crisis, the government announced several measures. These measures are not only important for regulating economic activities, but also crucial for understanding Turkey's point of view to overcome the triple crisis world face today.

The reflections of the global crisis on the Turkish economy were increasingly perceived starting from the last quarter of 2008. The uncertainties in the global economic conditions triggered the slowdown in Turkey's economic activity. These circumstances adversely affected investment and consumption decisions and thus also led to a crucial decline in domestic demand. So that, GDP decreased to 0.9 percent throughout 2008.

Turkish economy contracted by 14.7 percent in the first quarter of 2009. Afterwards, economic contraction decelerated and the economy contracted by 7.9 percent in the second quarter and 3.3 percent in the third quarter.

The government resisted to the current slowdown with a series of stimulus packages. The first package was announced in October 2008, which is known as employment package (Law No. 5763). The second package was put into effect in February 2009 (Law No. 5838). In May 2009, a new package was enacted. This packages predominantly contained tax reductions and subsidies to promote investment and employment. It is estimated that as a ratio to the GDP, the fiscal costs of the overall stimulus package were on the order of 0.91 per cent in 2008, 3.15 per cent in 2009, and 1.56 per cent in 2010 (Yeldan 2010).[35] Another fiscal measure which SPO categorized is the expenditure measures. This measure consists of government consumption and investments; contributions for public pensions, unemployment, healthcare; transfers to households; transfers to business; transfers to other public. In addition, some other expenditure measures are taken into account. For instance, regulation was put into legislation regarding allocation of 1 billion TRY resources to credit guarantee institutions that supply credit to firms; and paid in capital of Eximbank have been increased from 1 billion TRY to 2 billion TRY. Also SPO report exhibited that stimulus packages contain several measures which has no direct effect on fiscal balances. These are guarantee and insurance schemes for financial Institutions; and loans to Small and

[35] Stimulus Packages contain some of the measures to promote consumption, capital inflows, and investment. These are categorized by SPO as revenue measures, expenditure measures and fiscal measures with no direct/ immediate impact on fiscal balances in general. An exemplary revenue measures are tax on individuals, and business taxes, consumption taxes on specific goods and services. Besides there are some other revenue measures taken into action such as removal of motor vehicles tax and fines for old vehicles to be scrapped, Resource Utilization Support Fund deduction, and reduction in real estate transaction fee. Fiscal costs of revenue expenditures are estimated to be 30 million TRY in 2008, 4.077 million TRY in 2009 and 1.748 million TRY in 2010. Heavy burden on Turkish economy according to revenue measures anticipated to be realized in 2009.

Medium Sized Enterprises (SMEs).

A.2 Environmental Policy in Turkey

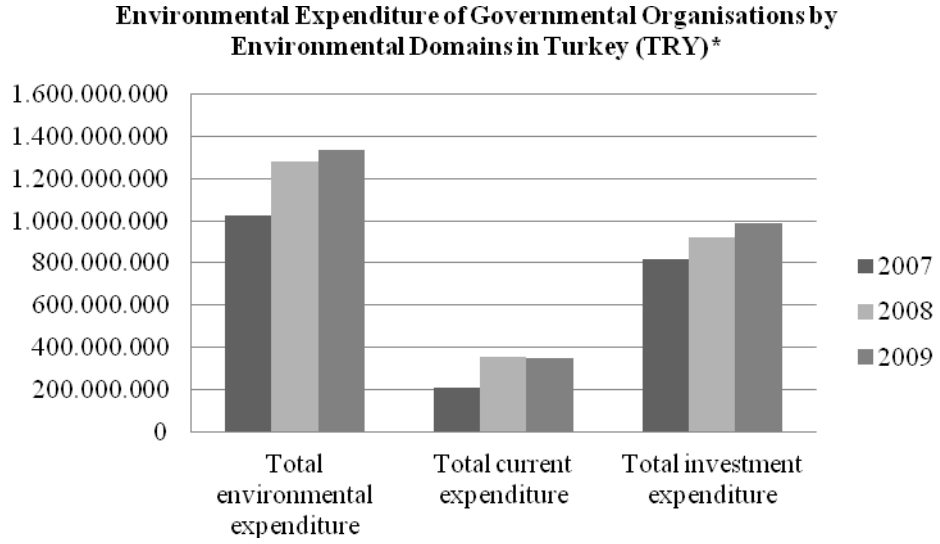
Turkey was initially listed in both Annexes-I and II of the UNFCCC, 1992. However, it declined to be a participant to the Convention. Turkey has signed the UNFCCC as the 189th participant on 24 May 2004. Turkey officially declared to join the Protocol in February, 2009. Yet, Turkey does not have any emission targets.

Turkey's national environmental strategy is enumerated by UÇES as follows;

- The right to live in a healthy and balanced environment,
- The integration between the sectors,
- The user-polluter shall pay
- Taking the measures to prevent the pollution, protection of the natural resources,
- Sustainable development, cooperation between the private-public sector, increasing the environmental consciousness in the public eye and the public participation.

The total environmental expenditure of governmental organizations in Turkey realized as about 1.335 trillion TRY in 2009. Within this expenditures, about 349 billion TRY constitutes current investments and about 986 billion TRY covers investment expenditures. Relative to former year, governmental organizations increased their total investment expenditures by 63.5 billion TRY.

Figure B.2 Environmental Expenditures of Governmental Organisations by Environmental Domains in Turkey (in TRY), (2007- 2009)



*Data includes environmental expenditure of private provincial administrations.
Source: TURKSTAT

A.2.1 Green Jobs in Turkey

In Turkey, there is still no data available for representing the exact amount of green collar workers that have been employed in green jobs. However there are estimations regarding the employment in organic agriculture, solar power (PV), investment sector, environmental engineering, governmental organizations and municipalities. Baykan (2009) prepared a research brief about green collars in Turkey that argues there has already been 50 thousand worker employed as a green collar in Turkey. As from 2007, close to 8500 green collars have been employed in governmental organizations (TURKSTAT 2010).

Presumably, 14.000 producers are working in organic agriculture. 6.000 environmental engineers have registered to Chamber of Environmental Engineers and estimated that same amount of engineers have not registered to the Chamber yet. In total, approximately 50.000 green collars were employed in Turkey (Baykan 2009).

A.2.2 Green Investments in Turkey

General Directorate of Environmental Management prepared the EU Integrated Environmental Approximation Strategy (UÇES) document which "contains the information pertaining to the technical and institutional infrastructure, and the environmental improvements that are required to be performed as well as the mandatory arrangements which are necessary to establish complete harmonization for compliance with EU Environmental *Acquis Communautaire* and the effective implementation of the legislation which are the two pre-conditions for Turkey to join European Community". Starting from 2007, new investments, costs for renewals, maintenance and repair work to be measured for determining total necessary environment investments in Turkey.

At the determination of investment costs, the document calculated the investment need due to nominal prices, and continuity are considered for the need of operation and maintenance, the EU law is considered as completely responded, at the water and waste sectors, the Turkish market prices for international investment models are integrated and for industrial and air sectors unit price approaches and survey results are used. For supporting the planning and management of planned investments of private sector, the role of the government is described as providing information about changed legal obligations, offering technical solutions, preparing permits, observations, auditing, and informing, directing, and recommending on the subjects of obligation. The Ministry of Environment and Urbanization[36] expected the share of the investments is 80 pre cent of the necessary investments about environment should be realized by the public sector and 20 per cent by the private sector.

[36] Formerly the Ministery of Environment and Foresty

As seen in Table 3.7, the financing of total investments needs are, for water sector total 63.124 million TRY, for industrial pollution sector 27.475 million TRY, for solid waste sector 17.465 million TRY, for air sector 795 million TRY, for nature protection sector 490 million TRY, the total of environmental investments are estimated as 109.650 million TRY. Due to the financing of investment, water sector and solid waste sector are the most costly sector within environmental financing.

Telli et al. (2008) utilized a computable general equilibrium model for Turkey to study the economic impacts of the intended policy scenarios of compliance with the Kyoto Protocol. According to this model, it is investigated that the burden of possible imposition of direct carbon emission quotas would be quite high. 37 Because of taxation policies will likely to lead adverse outcomes either on employment or on sectoral output levels directly, "a first-best environmental policy has to call for a further incentives towards reducing energy intensities in production through more efficient production methods… [also] the advantageous environment likely to be produced by foreign aid on abatement investments displays high economic growth attained together with reductions in CO_2 emissions." (Telli et al. 2008, p.338).[38]

[37] According to the results, imposition of CO_2 quota at 60 levels to the base-run calls for a carbon tax of 20–15 per cent over 2006–2020. The GDP loss incurred under this scenario is above 30 per cent as of 2020.

[38] With an annual flow of foreign aid/credit of 1.5 per cent as a ratio to the GDP, Telli et al. (2008) indicates that it becomes possible to cover the costs of abatement investments for adoption of the "best available technologies" help reduce Turkish CO_2 emissions by 4.9 per cent in 2020 and by a cumulative of 199.1 million tonnes over the whole analyzed period.