

Green New Deal, Green Economy and Green Jobs: Consequences for Environmental and Social Justice

1. The Multiple Crisis of Peak Capitalism

The financial and economic crisis that shock-froze the international economic system in fall 2008 and continues to harm large parts of the world population in 2013, was preceded by an energy, food and climate crisis (Altvater 2009; Müller 2009; Houtart 2010). Only a few months before the outbreak of the ‘great recession’ commentators discussed the extraordinary increase in prices for mineral resources and food, as well as the failure of the world community to stop climate change (as shown in the 2006 Stern Report and the 2007 Fourth IPCC Report on Climate Change). Of course part of the price hikes was due to growing demand during the boom years that led up to the downturn and to speculation on commodity markets – as part of what some have called a new form of financialised or finance-led capitalism (Stockhammer 2012; Demirovic and Sabloswki 2011; Altvater 2009).

However, a number of authors have pointed to a more profound process influencing commodity prices independently from economic cycles: The approaching limit of key natural resources, including, most notably, the decreasing world oil reserves. The problem as such is not new. Since the 1970s ecologists, have pointed to the existence of natural boundaries for the availability of natural resources and the capacity of eco-systems to cope with environmental pollution (including the 1972 Club of Rome Report on the Limits of Growth). The key difference to earlier analyses is that the accelerating scarcity of resources and the resulting oil price increases – according to the International Energy Agency a barrel of oil will cost as much as 200 US dollar by 2030 – threatens the foundations of “fossil capitalism” which for more than 150 years has generated unprecedented levels of economic growth, material wealth and non-degradable waste in the Western world (Altvater 2006a).

The concept of peak oil, the highpoint of world petroleum extraction after which output will irrevocably fall, is meant to illustrate the problem (Altvater 2006b: 151-55; Mahnkopf 2013: 32-33). With decreasing resources and/or increasing costs for extracting the remaining reserves, oil prices are expected to rise in the future. And in industrialized capitalism increasing oil prices pushes up costs for a large variety of products, including, not least, agricultural output. In the latter case the cost pressure comes from two sides: on the one hand, large-scale agro-businesses use fertilizers and machinery to increase agricultural productivity; on the other hand, increasing oil prices and the invention of new technology has made it profitable to use crops for agro-fuel rather than for food. Rising food prices drive up poverty rates in the developing world where families spend a much larger proportion of their income on food than in the developed economies of the global North. Given the increasing scarcity of oil and other resources the crisis-driven fall in prices are seen as a temporary relief from a long-term trend (Müller 2009: 24).

Peak oil, furthermore, is only one side of the coin. The world capacity to absorb pollution caused by fossil-based production and reproduction systems, including the availability of natural sinks,

is also approaching a limit with irrevocable losses in biodiversity and unstoppable global warming (according to the Intergovernmental Panel on Climate Change average temperature could rise for as much as 6.4 degree Celsius by the end of the 21st century). Among the consequences of global warming is the raise in sea levels, increasingly frequent weather disasters and droughts, shrinking arable lands, as well as growing difficulties to access clean water. According to the Stern Report, climate change can cost as much as 20 per cent of global GDP. Particularly affected are populations in the global south who live close to coastal lines and/or who already lack access to clean water (every fifth in the developing world suffers from a lack of clean water). Birgit Mahnkopf (2013: 34) has described this situation as “peak capitalism”. In short, the financial crisis is only one aspect of what a number of authors have called a “multiple crisis” (Barbier 2009; Brand 2009; Houtart 2010; Bader et al. 2011; Wichterich 2012).

From 2007 onwards ecological concerns gradually disappeared from the headlines to make way for a discussion of the economic problems that have caused the crisis and that continue to hamper growth in Europe and other parts of the world. Initially a financial crisis or more precisely a crisis of the American housing market, the financial turbulences were followed by the deepest economic recession in European and US postwar history. Contracting GDP growth rates were accompanied by record-high unemployment. In Greece and Spain every fourth worker was out of work in 2012 and among young workers every second was not able to find a job. In the EU-27 the unemployment rate reached eleven per cent in 2013. Worldwide unemployment has increased by 28 million people since the start of the crisis (ILO 2013: 9). Given the scale of the crisis and the dramatic social implications, commentators were quick to compare the current crisis with the Great Depression, shaking the world economy in the late 1920s and early 1930s. Some call the current crisis Great Recession in reminiscence of the Great Depression.

The naming of the crisis is not the only analogy. According to official accounts the Great Depression was finally overcome by the adoption of a New Deal program, developed by US president Franklin D. Roosevelt (in reality other factors such as war preparation also played a role in stimulating demand). Among other things, the New Deal included substantial investments and related public works program in which unemployed workers could earn some income. Between 1933 and 1943 the federal administration spent more than six billion US dollar on the creation of dams, highways, bridges, hospitals and schools in a unique effort to expand the country's public infrastructures. However, contrary to the notion of public works, most of the resources were actually spent on private contractors. Following Roosevelt's example, some academics and activists have proposed the adoption of a similar programme in response to the current crisis. However, given the ecological dimension of the crisis the response could not simply be a new wave of infrastructure investments. Rather 21st century's new deal should have a distinctively green impetus. Proponents therefore called for a Green New Deal to overcome the financial, climate and energy crisis.

This paper takes a critical look at the Green New Deal proposals that surfaced during the crisis. It, furthermore, presents the concept of a green economy which is closely related to the Green New Deal discourse and evaluates the impact of a green transition on sustainability and equality. Special attention is paid in the analysis to the promise of green employment and the quality of

green jobs. The paper ends with a discussion of the role of environmental justice and alternative approaches to a just transition to a more equally and sustainable economy and society.

2. Green New Deal

Among the first who publicly launched the idea was the British Green New Deal Group, a coalition of influential journalists, politicians and NGO representatives (Jackson 2009: 108). The group's proposal demands for a re-regulation of financial markets (analogous to Roosevelt's regulation of prices and wages) and massive investments in technology and infrastructures that help to reduce the use of fossil fuels and facilitates the transition to a low-carbon economy. Through these investments the proponents expect the creation of new employment opportunities that equal the job losses caused by the crisis (Green New Deal Group, 2008).

In the United States, the progressive Center for American Progress with support from members of the University of Massachusetts-Amherst's Department of Economics, has elaborated a Green Recovery Programme to "boost a struggling economy and jumpstart our long-term transformation to a low-carbon economy" (Pollin et al 2008: 1). Robert Pollin and colleagues (ibid) suggests that the US should invest 100 billion US dollar in six green infrastructure investment areas: Retrofitting buildings to improve energy efficiency; expanding mass transit and freight rail; constructing 'smart' electrical grid transmission systems; wind power; solar power; and next-generation bio fuels. According to the authors, the programme would create 935,200 direct jobs (mainly construction and manufacturing jobs), 586,000 indirect jobs (primarily manufacturing and service jobs) and 496,000 induced jobs (including retail and wholesale jobs created by consumption spending of workers with direct or indirect jobs). Overall, the employment effect could amount to almost two million jobs (ibid 8).

In Europe, the Green European Foundation, backed by European Parliament's Green Party and supported by the Wuppertal Institute for Climate, Environment and Energy, has been a major advocate for a "Green New Deal for Europe". The European programme focuses on three main areas (Green Foundation 2009: 11-14): First, a sustainable transport policy based on a reduction of the need for transport, a shift towards more sustainable modes of transport, as well as an increase of vehicle efficiency; second, a sustainable energy policy based on the improvement of the energy performance of buildings, the promotion of energy-efficient appliances, a reduction of emissions in industrial processes, as well as the promotion of smart-metering systems and a flexible European electricity grid; third, a sustainable resource policy based on a resource-efficient and recycling prone industrial sector, a solar economy, as well as a balanced bio-economy based on the sustainable use of biological resources (ibid).

The Green Foundation (2011: 7) estimates annual costs of close to two per cent of EU GDP or 300 billion euro. Funding would come from a mix of consumers purchasing green goods or making efficiency related investments, private financial investors and from public sources. However, by far the largest component of this will be funded by the private sector making commercially profitable investments (ibid). According to the Green European Foundation (ibid.), "there is an ample stock of financial wealth able to fund the Green New Deal." Especially

sovereign wealth funds would be very well placed to contribute to the financing of the Green New Deal in Europe (ibid). However, in order to get the green investment cycle going, the EU should use the European Investment Bank and other financial institutions to promote green investment instruments such as green bonds, green mortgages, green indices, green securitization and green savings (ibid 8). The Green European Foundation estimates that green investments will create as many as six million additional jobs (ibid 7).

Outside Europe and the US the idea of a Green New Deal also reached considerable popularity in South Korea. Confronted by a fall in the growth and increasing unemployment, the South Korean government announced the adoption of a comprehensive Green New Deal in 2009. The plan, amounts to 38 billion US dollar or four per cent of South Korean GDP. Most notable, it accounts for 79% of the stimulus expenditure – compared to only 13% in Germany and 12% in the US (UNEP 2009b: 7). Investments focus on energy efficient buildings, the production of low carbon vehicles, the improvement of mass transport, especially railways, and the upgrading of water and waste management. However, 17 of the 38 billion dollar are reversed for the controversial Four Rivers Project which involves the creation of 16 dams and has a rather dubious impact on the environment. The investments are expected to create 960,000 additional jobs (UNEP 2009b: 7).

Following a Green Economy Strategy Summit in May 2010, the South African government adopted a National Strategy for Sustainable Development and Action Plan. The strategy includes nine key investment areas: Resource conservation and management; sustainable waste management practices; water management; environmental sustainability; green buildings and the built environment; sustainable transport and infrastructure; clean energy and energy efficiency; agriculture, food production and forestry; sustainable consumption and production (Department Environmental Affairs 2011: 24). The National Strategy for Sustainable Development emphasizes the need for major investments in the South African green economy, but lacks concrete information about the source and extent of green investments. However, the government estimates that about 300,000 jobs could be created in South Africa's renewable energy sector over the next ten years.

In addition to national and regional initiatives, the idea of a Green New Deal was strongly promoted by the United Nations Environment Programme (UNEP). The overall objective of UNEP's Global Green New Deal is to “contribute to multilateral and national efforts to address the current financial crisis and its social, economic and environmental impacts, while simultaneously addressing the interconnected global climate, food, fuel and water challenges that threaten society over the medium term” (UNEP 2009a: 5). The Global Green New Deal pursues three major objectives: First, reviving the world economy, saving and creating jobs and protecting vulnerable groups; second, promoting sustainable and inclusive growth and the achievement of the Millennium Development Goals, especially ending extreme poverty by 2015; third, reducing carbon dependency and ecosystem degradation (ibid, 1).

Concrete measures include investments in energy-efficient buildings; investments in sustainable energy; investments in sustainable transport; investments in freshwater and ecological infrastructures, as well as investments in sustainable agriculture (ibid. 19-26). For the developing world particular important is the promotion of sustainable agriculture. The overall

size of a Global Green New Deal is envisaged to amount to one per cent of world GDP or approximately 750 billion US dollar (ibid 1; see also Barbier 2009: 66). This is not only a fraction of the three trillion US dollar stimulus packages that were adopted in response to the crisis, but also not much less than what is spend for fuel subsidies. According to the ILO (2012: viii) a Global Green New Deal could create between 15 and 60 million additional jobs.

Table 1: Green New Deals

Region/country	Organization	Seize	Measures	Job creation
World	United Nations Environment Programme	750 billion US dollar	Retrofitting buildings More energy efficient and less polluting modes of transport Smart grids and renewable infrastructures Sustainable agriculture and freshwater systems	ILO: 15-60 million jobs
European Union	Green European Foundation	300 billion euro	Sustainable transport policy Sustainable energy policy Sustainable resource policy	6 million
United States	Center for American Progress	100 billion US dollar	Retrofitting buildings Mass transit and freight transport Electrical grid transmission systems Wind power Solar power Next-generation bio fuels	2 million
South Korea	Government	38 billion US dollar	Low carbon vehicles Mass transport Water and waste management	960,000
South Africa	Government		waste management water management green buildings sustainable transport clean energy and energy efficiency agriculture and forestry	300,000 (in renewable energy)

Source: Various reports. Own compilation

Table 2: Green investments as share of national stimulus packages

Country	Percentage
South Korea	79
China	34
France	18
Germany	13
US	12
South Africa	11
Mexico	10

Source: HSBSC Global, quoted in UNEP 2009b

With the exception of UNEP's Global Green New Deal and partly South Africa's Sustainable Development Programme, social equity plays no or only a marginal role. The general assumption seems to be that through the creation of additional employment Green New Deal programmes already reduce social inequality. Robert Pollin (2009), for example, argues that "protecting the environment – in particular, defeating global warming – can also be an effective engine of economic growth, job creation and even poverty reduction." None of the New Deal programmes addresses the possible need to redistribute wealth to tackle the ecological problems of a finance-led capitalism. The British Green New Deal programme initially only mentions the need to create a dialogue between the global North and South (New Deal Group 2008: 49). However, in the following years the initiative repeatedly criticized the austerity programs introduced by the British government (Green New Deal Group 2009 and 2013). The Green Europe Foundation (2011: 13) only mentions in passing that costs for a European Green New Deal should primarily "fall on those who can afford it". However, at the same time the foundation also promises high rates of return for those who can afford to invest in the green economy (ibid. 7-8).

UNEP's program differs from the other proposals insofar as it explicitly includes poverty reduction as an objective of its Global Green New Deal. UNEP (2009a: 5) sees a directly link between ecological degradation and poverty because "the poorest populations ... depend disproportionately on the ecological commons ... The destruction of forests, pollution and depletion of freshwater sources and climate change can have a disproportionately large impact on the poor." However, as described below UNEP at the same time promotes the privatization of ecological commons and the financialization of nature which will further marginalize the poor both in the developed and the developing world. The South African Sustainable Development Program also fails to raise distributional issues but at least it addresses the problem of unsustainable consumption patterns and mentions the need to encourage "environmentally responsible behaviour" (Department of Environmental Affairs 2011: 13).

The idea of a Green New Deal and related programs has attracted profound criticism – not only from the usual suspects such as powerful business groups, representing the oil industry and major industrial polluters, but also from more radical supporters of an ecological transition. Except for criticism of mega-projects such as the Four Rivers Project in South Korea (Joung-Woo et al. 2012: 23)¹, ecologists have in general welcomed investments in environmentally friendly technology as well as in resource efficiency and renewable energy. The main controversy in the assessment of Green New Deal policies is centered on the question if it is possible to de-couple economic growth from energy consumption.

Supporters of Green New Deals assume that a massive expansion of renewable energy and the application of energy-saving technology make it possible that economic growth becomes largely independent from the consumption of non-renewable energy. Ralf Flüks (2013: 35-36), a leading proponent of this view in Germany, argues that "[a]n economy that is based on solar energy and

¹ According to the website Radio Mundo Real the government has jailed Yul Choi, the founder of Friends of Earth in South Korea, for his protests against the Four Rivers Project. <http://radiomundoreal.fm/6717-the-founder-of-foe-korea-in-jail?lang=es>

a biological cycle of materials does not create environmental problems”. Others are more sceptical about the prospect of a technological fix to the ecological crisis. Critics argue that savings in production inputs, i.e. through investments in energy-saving technology, are more than compensated by growing output due to increasing demand caused by decreasing prices – what is also known as “rebound effect” (Clark and Foster 2001). As Fridolin Krausmann and Maria Fischer-Kowalski (2010: 63) note, “the partly enormous efficiency gains ... in the past never let to a reduction of the material cycle. Rather they have promoted more growth.” While energy and carbon intensities are declining since 1970, carbon dioxide emissions from fossil fuels have actually increased by 80 per cent. Emissions today are almost 40 per cent higher than they were in 1990 and they have been growing at over three per cent per year since 2000 (Jackson 2009: 71).

Critics, furthermore, argue that the increase of emissions is not only a policy failure. It is also an inherent condition of capitalist accumulation (Wallis 2010; Mahnkopf 2012). Unless it wants to create financial bubbles, accumulation i.e. the expansion of profits must be based on real growth. And conventionally an economy grows when it creates more output which is then consumed by people. Bill Blackwater (2012: 60) therefore argues, “in order for massive green investment programs to be successful as investments, they require underlying growth in the consumer economy to at least continue at the global level, and within the West, to accelerate.” However, at the end of the day new growth means additional resources needs to be exploited, annulling the savings from the deployment of new technology. As Tim Jackson (2009: 118) notes, “[r]eturning the economy to a condition of consumption growth is a default assumption of Keynesianism.” But “[t]here is still no consistent vision of an economy founded on continual consumption that delivers absolute decoupling.” Blackwater (2012) and other more radical ecologists therefore advocate a transition to a no-growth economy as alternative to “environmental Keynesianism”.

3. Green Economy

The promotion of a Green New Deal is closely linked to the transition towards a green economy. The concept of a green economy goes back to the late 1980s when the Pearce Commission in Great Britain published a ‘Blueprint for a Green Economy’ (Pearce, Markandya and Barbier 1989). The concept attracted increasing popularity in the face of the economic downturn as a possible strategy to exit the (multiple) crisis (Wissen 2012). The green economy concept is a continuation of earlier ecological debates on the limits of growth (Club of Rome) and the prospects of sustainable development (Brundlandt Report). Yet while the authors of the Brundlandt Report still sensed a tension between growth and sustainability, the shift towards the green economy no longer means “making painful choices” (United Nations 1987: 15). Rather the green economy is presented as the new growth paradigm for the 21st century (Mahnkopf 2012: 400; Brandt 2012a). As UNEP (2011: 16) notes, “[t]he greening of economies need not be a drag on growth. On the contrary, the greening of economies has the potential to be a new engine of growth, a net generator of decent jobs and a vital strategy to eliminate persistent poverty.”

UNEP (ibid.) defines a green economy as a “low-carbon, resource efficient, and socially inclusive” economy. “In a green economy, growth in income and employment are driven by

public and private investments that reduce carbon emissions and pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services.” As a result, a Green Economy improves “human well-being and social equity, while significantly reducing environmental risks and ecological scarcities” (ibid). However, in UNEP’s vision of a green economy ecological sustainability does not conflict with market imperatives and with individual utility maximization (Wichterich 2012: 40). The problem is only that in current market economies environmental assets are not sufficiently valued and therefore are not visible in financial decision-making and in corporate balance sheets (UNEP 2013: 8). A green economy, in contrast, is one that “values environmental assets, employs pricing policies and regulatory changes to translate these values into market incentives” (ibid. 17).

Through environmental valuation, nature becomes natural capital and ecosystems capital assets and as such can properly be priced into production functions, while at the same time presenting new investment opportunities (ibid. 17 and 18). While UNEP is mainly concerned with providing an appropriate framework for green capitalism, the OECD (2012: 12-14) emphasizes the key role of innovation and entrepreneurship as the key sources of green growth. In order to promote green innovation, misguided government policies and market distortions must be avoided (ibid. 11). Unrestricted markets, in turn, encourage “greener behaviour by firms and consumers, facilitate smooth and just reallocation of jobs, capital and technology towards greener activities and provide adequate incentives and support to green innovation” (ibid).

In principle there is nothing wrong with valuing nature, i.e. acknowledging its crucial role for human wellbeing and development (Harvey 1996). However, if valuing means giving nature a price – as it does in UNEP’s perception of valuation – valuing is part of a commodification process (Smith 2006).² In such a process nature becomes a commodity that can be traded on markets. Carbon trading is a prime example for such an approach. Here emission rights become a commodity that is traded on specifically designed exchanges such as the European Union Emission Trading Scheme (Brunngräber 2006). Yet with commodification nature not only receives a price; it is also given exclusive property rights. As McAfee (2012: 25) notes “[m]arket-based strategies to mitigate climate change and biodiversity loss ... ascribe property rights to ecosystem functions such as storage of carbon or sheltering of species by forests, so that the right to use such services can be bought and sold, even internationally.” Hence as a commodity nature can no longer be a public good or a common used by local populations, while it can become a new investment opportunity for private capital.

However, financializing nature is not without risks – as holders of European emissions rights have painfully experienced. According to UNEP’s Finance Initiative the problem of green investment is that currently the risks are too high for the expected returns (UNEP 2009c: 5). UNEP’s solution to the problem is that public finance mechanisms should be used to either increase returns or cover the risks. By doing so, public money could be deployed to mobilize institutional investors such as pension or sovereign wealth funds to invest large amounts of money in the green economy (ibid). In a similar way, the World Economic Forum is also calling

² In Marxist terms nature has a use value but lacks and exchange value. However, with commodification nature not only receives an exchange value, the exchange value subsequently dominates over its use value.

for public guarantees to stimulate private investments in green infrastructures in the developing world (World Economic Forum 2013), while the Global Green Growth Forum (2012: 6) is strongly advocating public-private partnerships, which, as the past has shown, means that the public takes the risks, while the private part takes the profits.

While Green New Deal programmes focus on generating growth through investments and as an additional benefit improve environmental sustainability – what Christa Wichterich (2012: 42) has described as “thermal insulated capitalism” – the green economy programme goes much further and aims at a marketization and financialization of nature and the environment with important consequences for those who are dependent on nature and natural resources for their daily survival. As Kathleen McAfee (2012: 25) notes, “[i]n this world view private initiatives, monetary pricing and market exchange are inherently more efficient than collective action, public planning, and regulation, and all resources and services are potentially tradable commodities.”

According to UNEP (2011: 16) investments in the green economy is “likely to benefit the poor in terms of not only jobs, but also secure livelihoods that are predominantly based on ecosystem services”. The problem is that by promoting privatization and commodification, the green economy at the same time cuts off poor people from access to natural resources, while the financialization of nature increases inequality by generating profits for private asset holders, while making the public pay for possible losses. Still, for the OECD (2012) green growth has become the new development agenda and is such a promising strategy for eradicating global poverty. Developing countries can profit particularly strongly from green innovation through leapfrogging unsustainable and wasteful production and consumption patterns (ibid, 9). The ILO (2012: x) is more cautious when it notes, that “a greener economy is not inclusive and socially sustainable by default.” For a green economy to be inclusive it needs to be combined with appropriate social and labour market policies (ibid).

As the Green New Deal programs, the green economy concept has also attracted profound criticism from the left part of the ecological movement. In addition to doubts that economic growth can be decoupled from resource consumption, a major point of contestation is the assumption that markets are appropriate means to solve contradicting interests and to assure sustainable development. Critics argue that rather than creating ecological harmony, markets are inherently unstable and if anything exacerbates equality. “[T]here is significant scepticism that the same market-led processes that have increased regional and inter-group inequalities in recent decades ... can be harnessed for sustainable and equitable environmental goals” (Cook and Smith 2012: 9) Following the work of Karl Polanyi (1957), critics therefore argue that nature has to be sheltered from the destructive effects of markets (Wichterich 2012: 43). The harmful effects of self-regulated markets has spectacularly been shown by commodity market speculation which has driven up food prices in 2008 and which, subsequently, has pushed 120 million people into poverty (Wahl 2009).

However, marketisation not only entails a destabilization of traditional forms of existence. With commodification nature becomes a private good with exclusive rights for those who can claim ownership (i.e. pension funds and sovereign wealth funds). As Kathleen McAfee (2012: 31) notes, the marketisation and capitalization of nature means that “[t]he values of nature and thus

the fates of particular natures would be determined even more fully than they are today by those with the greatest discursive dominance and purchasing power.” History has shown time and again how the closure of commons or what David Harvey (2003) calls accumulation by dispossession has fuelled poverty and social exclusion. Hence while advocates of the green economy promise the elimination of poverty, the green economy agenda is a new version of what has been described as finance-led accumulation and as such a continuation of the neoliberal project that has fuelled inequality in the past three decades.

4. Green Jobs

The Green New Deal programs not only promised growth, but also the creation of millions of new jobs. As noted above, the ILO expects that a Global Green New Deal could create between 15 and 60 million additional employment opportunities. Parallel to the formation of the first Green New Deal programme, a number of international organizations, including the United Nations Environmental Program, the International Labour Organization, the International Organization of Employers and the International Trade Union Confederation formed the Green Jobs Initiative with the aim to promote green employment. The authors of the initiative’s Green Jobs Report define green jobs as ”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 generation of all forms of waste and pollution” (UNEP 2008: 3). In a similar way the ILO (2012: 6) notes, that “jobs are green when they help reduce negative environmental impact ultimately leading to environmentally, economically and socially sustainable enterprises and economies.”

It is important to note that green jobs are not necessary environmental friendly in the sense that they use few resources. As described below, many green jobs are in fact rather resource-intensive. Jobs are green when the outcome of the economic activity has a positive impact on the environment – i.e. when a waste dump is cleared or when additional insulation lowers energy consumption. The US Bureau of Labor Statistics (2013) defines green jobs as jobs in businesses that produce goods or provide services that benefit the environment or conserve natural resources, or jobs in which workers’ duties involve making their establishment’s production processes more environmentally friendly or use fewer natural resources. For Eurostat (2009), green jobs are located in the environmental goods and service sector whose output enhances either environmental protection or resource management.

Green jobs can mainly be found in the following areas: renewable energy (wind power, solar power and thermal power), green construction and retrofitting of existing buildings, public transport (including railways), recycling, sustainable agriculture (including organic and small-scale farming), sustainable forest management and bio fuel production (UNEP 2008: 295-300). Part of the employment growth is derived from the assumption that green activities tend to be more labour intensive than regular economic activities, i.e. workers are to a lesser degree substituted by energy-consuming machinery. Among those areas that are particular labour-intensive is small-scale sustainable farming. Here the ILO (2012: 12) expects the greatest job potential for the developing world.

However, the green transition will not only create new jobs, but also make existing ones dispensable. As the ILO (2012: xxi) notes, “[a]lthough new opportunities are arising from greener production are estimated to offset job losses, those who will get ‘green’ jobs are not necessarily those who have lost their job in so-called ‘brown’ industries”. Employment gains and losses are expected to occur within sectors as well as between sectors (ibid. 8). An increase in renewable energy, for example, may reduce demand for conventional fossil power and thus for fossil power plants and, consequently, for supply sectors such as coal mining (ibid. 9). The green transition also involves the creation of new professions and new skill mixes (CEDEFOP 2010: 27). Hence although “winners are likely to far outnumber losers, some workers may be hurt in the economic restructuring towards sustainability” (UNEP 2008: 4).

Green New Deal proponents not only promise more jobs, but also that the newly created and environmentally beneficial jobs would also be preferable to regular jobs, both in terms of skill requirements and working conditions. As the ILO (2012: xiv) notes, “[m]uch of the additional employment in a greener economy, will be created in the production of green goods and services. While evidence is limited, it suggests that these jobs tend to be more qualified, safer and better paid than comparable jobs in the same or similar sectors.” The OECD (2010: 26) assumes that green jobs tend to have a “higher component of knowledge intensity”, while UNEP (2008: 10-1) argues that “[e]nergy-efficient equipment often requires more skilled labour than their inefficient counterparts, thus leading to not only a larger number of jobs, but also higher-skilled, higher-paying employment”. Given the demand for new and higher skills, public administrations and private companies should develop the necessary skill base for a green economy. Some studies warn that a “skill shortages could hamper the greening of the economy” (Ecorys 2008: 41).

Insofar as green jobs involve higher skill levels, better working conditions and higher wages, they can be expected to improve social equity. However, statistical evidence suggests that many of the assumptions associated with green jobs are far too optimistic. In spite of different statistical definitions of green jobs – the EU excludes trade and the US agriculture – according to most statistics, green employment is still fairly marginal. The US Bureau of Labour Statistics (2013) estimates that green employment accounts for 3.4 million jobs or 2.6 per cent of total employment in the United States. Preliminary data from Eurostat suggests that environmental goods and service sector in the European Union accounts for three million green jobs or for 1.4 per cent of total EU employment (Steurer 2012). Some member states have significantly higher shares. In Austria, for example, the green sector accounted for 188,505 or for slightly more than five per cent of total employment in 2010 (Baud and Wegscheider-Pichler 2011: 7; Leitner et al 2012: 79-82). In Germany, 1.934 million employees or 4.8 per cent of total employment worked in environmental protection in 2008 (Bundesministerium für Umwelt 2012: 3).

Official statistics also show where the majority of green jobs are located: In the United States, the public sector (including federal, state and local government) accounted for 26 per cent of green employment. In the private sector, the largest contributor to green jobs is manufacturing with 15 per cent of green employment, followed by construction with 14 per cent, professional, scientific and technical services with eleven per cent and administration and waste services with ten per cent (US Bureau of Labor Statistics 2013). In the European Union most green jobs are in waste

management (20%), followed by wastewater management (18%), water management (16%), as well as renewable (13%) and recycling (11%) (Steurer 2012). In Austria, the largest contributors to green employment is agriculture (16.8%), followed by construction (16.0%), the public sector (9.7%), manufacturing of machinery and equipment (8.4%), manufacturing of food products (8.2%), energy supply (6.2%), architectural and engineering activities (5.8%) as well as waste management (5.4%) (Baud and Wegscheider-Pichler 2011: 30). In Germany green jobs are mainly located in waste and wastewater management (9.4%), wholesale and retail of environmentally friendly products (9.4%), architectural and engineering activities (7.2%), building maintenance and cleaning (2.3%), environmentally oriented services in construction (2.3%), ecological agriculture (2.3%), recycling (2.3%), landscaping (2.2%) (Bundesministerium für Umwelt 2011: 44-45). Research and development is rather insignificant accounting for only 1% in Austria and 1.4% in Germany (ibid and Baud and Wegscheider-Pichler 2011: 30).

The Austrian statistics also give some insights on what activities are counted as green jobs (Baud and Wegscheider-Pichler 2011: 29-32). These include, among others, organic farming and manufacturing of organic food; retrofitting of existing buildings and the installation of solar and photovoltaic systems; the planning of low-energy buildings as well as the development of green technologies and measurement techniques; the treatment of waste and wastewater, the production of biomass boilers and heat pumps; the generation and distribution of energy from renewable sources, the collection of fire wood as well as the production of bio fuel and recycling paper (ibid).

Table : Green Jobs

Country	Number of jobs	Percentage of total employment
United States	3,400,000	2.6
European Union	3,000,000	1.4
Germany	1,943,000	4.8
Austria	188,505	5.1

Source: Various reports. Own compilation.

Given that the bulk of green jobs are located in sectors such as agriculture, construction, waste and water management and manufacturing, there is little evidence that green jobs are better jobs than average jobs. To the contrary: Statistical evidence suggests that in terms of working conditions they are actually worse than average jobs. According to Austrian data, agricultural, construction, manufacturing and waste sector workers are all exposed to high physical work strains. Furthermore construction and waste management pay just below average salaries, while agricultural workers suffer from extremely low (hourly) wages. Architects have higher than average wages and lower than average work strains, but many of them are self-employed or in other rather unstable employment relations. Hence as Leitner et al. (2012: 82) conclude, “working conditions in the classical environmental sector are frequently characterized by heavy physical labour, considerable health risks and precarious employment relations.” The authors argue that if anyone workers in the energy sector come closest to the picture of highly skilled staff with additional ecological qualifications and attractive working conditions that most people associate with green employment (ibid).

International studies confirm this picture: The agriculture sector is characterized by high levels of self-employment, migrant labour and seasonal work. According to the European Working Conditions Survey report, almost 60 per cent of the workers in the agricultural sector are self-employed and almost 25 per cent lack a contract. Of those who have an employment contract, 44 per cent are employed on a temporary base. Workers suffer from long and irregular work hours (including night, evening and weekend work), and ergonomic risks (tiring or painful positions, carrying or moving heavy loads, standing or walking and repetitive hand or arm movements) (European Foundation for the Improvement of Living and Working Conditions 2008). In South Africa “slave-like conditions” led to a massive protest of farm workers in Western Cape in 2012 in which several protesters were killed. Mazibuko Jara (2013) describes their situation as follows: “Farm workers do backbreaking work under unsafe and unhealthy conditions to produce food, earning starvation wages while living with minimal provision of water, sanitation and electricity. They face constant threat of evictions, violent physical and verbal abuse and intimidation at the hands of their bosses.”

In the construction sector, employment conditions suffer from widespread subcontracting practices, undermining protective regulations and causing income losses due to frequent insolvencies. “Illegal practices such as paying social security for only part of the hours worked, bogus self-employment and violations of the rights of migrant workers are common features in the construction industry in Europe” (Holtgrewe and Sadvar 2012a). In the waste sector the situation is more diverse. However, for most non-administrative jobs in the waste sector the working environment and conditions are rather problematic. Waste collection and urban sanitation (street sweeping and washing) are mainly manual activities that often imply high physical strain with low mental challenges and limited career perspectives (Holtgrewe and Sadvar 2012b). In the developing world these sectors are not only characterized by poor working conditions but also by a high proportion of informal work. In the waste sector, for example, four million formal workers face between 15 and 20 million informal waste picketers (ILO 2012: 37).

Perhaps one could argue that green jobs provide significantly better working conditions than regular jobs in the same sector. This may be true in some instances. However, there is also evidence that green employers actually provide worse than average working conditions. A study on the photovoltaic industry in East Germany, for example, has found that workers suffer from extended periods with a precarious employment status, persistent pressure to meet expectations and a lack of collective regulations. Because of the lack of a sector-wide collective agreement and a lack of works councils, wages in the photovoltaic industry are near the minimum wage level and are about ten per cent lower than the average of collectively agreed wages in East Germany (Richter, Holst and Krippendorf 2008: 30). Workers in biogas and wind power industries in Germany also suffer from below-average wages and a lack of trade union representation (Brandt 2012b: 14). One of the major German wind power station manufacturers made into the news for its poor working conditions and trade union busting (Deckwirth 2010: 42). Organic food stores in Germany tend to pay less than regular supermarkets, while workers in organic farming in the South of Spain, many of them migrant labourers, fight for basic employment rights and for living wages (Islam 2011). According to US figures, “green jobs are

likely to pay about the same or a bit more than other jobs in the manufacturing sector and pay somewhat less than other jobs in the service sector” (US Department of Commerce 2010).

In addition to the questionable quality of green jobs, a number of authors have stressed the gender-bias of green employment (Smith 2011; Kuhl 2012). Green jobs are predominantly in sectors with low female participation. According to Sustained Labour (2009: 7), approximately a quarter of all workers in manufacturing are female, 20% in farming, fisheries and forestry, 12% in engineering services and 11% in construction. A German study on employment and qualification in the renewable energy sector has found that about 25% of employees in renewable energy are women (Bühler et al. 2007). This is considerably less than the 45% female employment-share in the private sector (Smith 2011: 8). A report on gender characteristics of green jobs in Spain notes that “[t]heir participation of women in the employment of some key sectors for the greening of the economy is very low: electricity (where renewable energy development mostly takes place); water; sewage water treatment; and waste treatment. Other important sectors in the Spanish economy in employment terms such as construction and farming, which are also undergoing a greening process, are traditionally composed mainly by men” (Elvira Gonzalez-Gago quoted in Smith 2011: 9-10).

An analysis of 26 occupations that are associated with green jobs in the EU has revealed that only three are female dominated (i.e. more than 60% of the workers are women) and three are mixed (40-60% are either male or female). The vast majority of the green occupations are male dominated (more than 60% of the workers are men) (Smith 2011: 10-11). In the developing world the situation is somewhat different: There are large numbers of women who work in the waste industry. However, those jobs which are held by women are mostly informal, whereas the formal jobs are reserved for male workers (Chikarmane and Narayanan 2013; Samson 2008).

The fact that women are excluded from green jobs is particularly bitter in the light that male dominated economic sectors tend to be more environmentally destructive than female-dominated sectors. This is because resource-intensive sectors are traditionally male dominated (not least because they pay comparable high wages). According to Austrian data, energy consumption per worker in the energy sector is about 30 times as high as the average for the whole economy, in waste and water management it is five times and in agriculture still 30% higher. Energy consumption per employee in food production is slightly lower than the average, but three times higher than in female dominated health care. In the construction and manufacturing sectors, energy consumption is 20 and 30% higher than in health care. Among the larger green job categories, only architectural and engineering activities have a more favourable ecological footprint than health care. In sum, female workers are clearly disadvantaged when it comes to the distribution of the benefits from green growth. However, very few studies on the Green Economy and green jobs have noticed this fact. As Mark Smith (2011: 11-12) points out, “[o]ne element that is clear from the studies, documents and policies on green jobs and green sectors is the lack of a gender perspective... It would not be too extreme to say that none of the key policy documents or analyses is gender mainstreamed and few even mention women’s employment or gender equality”.

5. Alternatives

While there is nothing wrong with investing in green technology, energy efficiency and renewable energy, along with the improvement of transport and energy infrastructures, there is little reason to believe that these investments will solve the ecological crisis, let alone the multiple crisis of today's capitalism (Wichterich 2012: 42; Haberl et al. 2011: 8). The basic problem is that while economic growth is boundless, the biosphere is limited. Hence even a successful decoupling of economic growth from resource consumption – which, as described above, is rather unlikely – still leaves the problem of how to distribute existing environmental assets (Mahnkopf 2012: 403). In other words, while social conflicts can temporarily be pacified by distributing economic gains from additional growth, environmental conflicts cannot be solved without balancing existing claims on natural resources.

As Juan Martínez-Alier (1997: 91) notes, “‘ecological distribution’ refers to the social, spatial and temporal asymmetries or inequalities in the human use of traded or non-traded environmental resources and services with respect to the depletion of natural resources (including the loss of biodiversity) and burdens of pollution.” The unequal use of environmental resources results in different levels of ecological debt. By measuring a country's use of its bio-capacity, the ecological footprint can be read as a measure of ecological debt (Rees 1992 and 2000). It shows that countries in the Global North tend to live beyond their natural means and because the biosphere is limited they can only do so at the cost of countries in the Global South. Europeans, in other words, “act as if we owned a sizeable chunk of the planet outside Europe” (Martinez-Alier 1997: 92)

The Kyoto Protocol and the country-specific limitations for greenhouse gas (GHG) emissions was an (largely unsuccessful) attempt to balance some of the ecological burden of Europe in relation to the developing world. However, the inability to find a new GHG compromise is precisely the result of contradicting views about ecological debt and fair treatment of the developed world, developing countries and the newly industrializing economies (Roberts and Parks 2007). Furthermore, the possibility to purchase emission rights through investments in Clean Development Mechanisms left a loophole for rich countries in the Global North to continue to live beyond their natural means. Achim Brunnengräber (2006) has called the compensation payments to the Global South “climate indulgences”. Commodification of nature, hence, not only opens new space for investments; it also allows the rich countries of the North to prolong their ecologically unsustainable life styles without feeling bad about it.

In addition Clean Development Mechanisms may even create new inequalities as local populations may be banned from using areas designated for reforestation or for bio fuel production. In Honduras, for example, subsistence farmers claim that thousands of hectares of land have been seized from them by large-scale agro businesses to use the land for palm oil production. In the ensuing conflict more than a hundred people have lost their lives. The expansion of palm oil production, which has increased dramatically in the last three years thanks to the bio fuel boom, not only forces subsistence farmers from the land but also results in the establishment of a new monoculture (Lakhani 2014). In other countries, the growing use of

agrarian land and crops for bio fuel production has pushed up food prices and consequently hurt those most who have the lowest per capita GHG emissions (HLFPE 2013: 13).

For Brand and Wissen (2012: 550) a more equitable distribution of natural resources is not possible without a radical transformation of what they call the “imperial mode of living”. The highly energy- and resource-intensive lifestyles of the rich in the global North is not only dependent on the exploitation of South, but also necessarily exclusive as an extension of the related consumption patterns would clearly result in an ecological disaster. As Helmut Haberl and colleagues (2011) note, “[i]f the current use of the resources – which largely benefits only one-third of the world’s population – is already enough to destabilize the global climate, and if current land use practices in many regions already creating irreversible soil erosion, loss of biodiversity and degradation of ecosystems, how could such a scenario become reality without catastrophic consequences?”

However, ecological conflicts and inequalities are not limited to the global North-South divide. Even within developing countries the exploitation of natural resources has different ecological consequences for different segments of the populations. In many cases it is the indigenous populations who live on or close to the land where resources are extracted that are particularly severely affected by the intrusions into natural environments (Martínez-Alier 2012). In the context of economic development, countries may even promote social equality, e.g. by distributing the gains from resource extraction, while at the same time fuelling ecological inequality, e.g. by forcing indigenous populations from the land needed for resource extraction or for gigantic dam projects. Hence, as Frank Beckenbach (1987) has pointed out, economic distribution often conflicts with ecological distribution. Distributional conflicts also exist in the Global North where governments rarely dump waste in or close to well-off (white) neighbourhoods (Bullard 1990; Mohai, Roberts and Roberts 2009).

A second major point of contestation is the question of gender equality. In the Green New Deal as well as in the green economy there is not much to win for women (Wichterich 2012). As described in the previous pages, Green New Deal investment programs mainly profit male-dominated sectors and professions, meaning that most of the newly created jobs will be held by men. Men profit even though women frequently work in less resource-intensive and hence less environmentally damaging sectors such as, for example, health care and education. A gender sensitive definition of green jobs would have to take this injustice into account and define green jobs not only as activities that reduce negative environmental impact, but also those which contribute to the creation or maintenance of ecologically, economically and socially sustainable societies. In other words, the current definition of green jobs focus on activities that contribute to the transition towards a sustainable economy rather than those activities which will have to make up for a large part of an economy that is sustainable. Social services, for example, are one of the few areas where the economy can really grow without consuming substantially more resources.

A gender sensitive Green New Deal should therefore not only invest in the retrofitting of building, but also in health care and the expansion of other social infrastructures. As low-income earners benefit more from the use of public services than high-income earners – the money equivalent of the value of the services make up for a larger part of low-income budgets – the

expansion of public health care and other social infrastructures would not only contribute to a more sustainable economy, but also improve income equality (Hermann forthcoming). Unfortunately it is precisely these jobs that there were slashed in thousands during the crisis in Europe and elsewhere as part of austerity programmes (Hermann 2013).

However, feminists have not only criticised the male bias of the Green New Deal programmes, but also the continuous invisibility of unpaid domestic work in green economies. Many of the unpaid services women provide in households are hugely important for human wellbeing, social resilience and in the case of subsistence farming even for ecological sustainability (Folbre 2006; Himmelweit 2005; Razavi 2007). It is striking that green economy proponents have pointed to the undervaluation of nature, while at the same time ignoring the undervaluation of unpaid work and household production. However, only a few if any feminists see the commodification of household production as a solution to the problem. In the developing world, they discuss alternatives such as the concept of sustainable livelihoods which is supposed to guarantee women and their families a minimum level of existence independent from market exchange (Wichterich 2004: 32). Important elements in this conception are the protection of small-scale subsistence farming, access to commons and sharing of communal resources, as well as participation and self-determination (ibid).

In sum, an alternative approach to a green transition towards a more sustainable economy and society must go beyond the goal of a thermal insulated capitalism and promote ecological, gender and social justice. One measure that simultaneously affects ecological, social and gender issues is, for example, the reduction of working time. In the past three decades working hours have increased in some countries, but more importantly the distribution of (formal) paid work has become increasingly uneven. In most developed countries the share of those who work particular long hours and those who work only a few hours per week has both increased. As such the unequal distribution of working time has become a major factor behind the growing income inequalities in the OECD world (OECD 2011b). As it is mostly men who put in overtime and women who work part-time, work-time related inequalities have fuelled gender-inequality. However, part of the growing gender divide is not only that women earn less than men; the fact that men work late and on the weekends also means that women are left alone with housework and other reproductive activities. Hence the introduction of a 30-hour week (as demanded by Swedish feminists in the 1970s) would not only entail a more equal distribution of working time and income, but would also lift a major barrier for a more equal distribution of unpaid work. A shorter working week would have the additional advantage that workers who work shorter hours tend to live a more sustainable lifestyle.

A number of studies (Schor 2005; Rosnick and Weisbrot 2006; Hayden and Shandra 2009; Knight, Rosa and Schor 2012) have found a significant relationship between working hours and ecological damage. The US, for example, has not only one of the longest working hours among developed countries, but also one of the highest levels of energy consumption. Comparing the US and the EU 15, David Rosnick and Mark Weisbrot (2006: 5) note that if Europeans would have “worked as many hours in 2003 as had workers in the United States, the EU-15 would have consumed 18 per cent more energy”. According to Rosnick’s and Weisbrot’s (ibid) calculations “every one per cent increase in works hour per worker results in a 0.32 per cent increase in

energy consumed per work hour.” Based on a comparison of 29 high-income OECD countries, Kyle Knight, Eugene Rosa and Juliet Schor (2012: 11) have found that “countries with shorter working hours tend to have lower ecological footprints and carbon footprints and carbon dioxide emissions.” The authors conclude that “reduced working hours could contribute to sustainability by decreasing the scale of both production and consumption” (ibid). Anders Hayden and John Shandra (2009: 591) assume that long working hours lead to “time scarcity” and, consequently, to “a more environmentally damaging mix of consumption and lifestyle practices.”

For socialist ecologists like André Gorz (1994), shorter working hours was a first step to leave the escalating production-consumption cycle and spend time for more enjoyable and sustainable activities, and, consequently, a more sustainable mode of living. An interesting detail which has largely be overseen by Green New Deal proponents is that Roosevelt’s New Deal also included the introduction of the 40-hour week, after a more courageous plan to establish a 30-hour week has narrowly missed the parliamentary majority. 75 years later it seems to be high time to put the 30-hour week into practice (Hermann 2012).

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