

The EU ETS's impact on renewable energy  
growth and a sustainable economy  
– a critique –

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## **Abstract**

The EU ETS emission-trade system must both enable a decrease in GHG-emissions and be a driver for growth in the renewable energy-sectors. Implemented in 2005, it has been given fifteen years until 2020 to show some acutely needed results. The EU ETS was set out to meet both ecological and economical challenges at once and it is the worlds largest, most encompassing and most expensive climate-program to date. However, despite this it will be shown in this study that the EU ETS just barely has managed to do the former. Today, midway, the results from the EU ETS are both disappointing and worrying, and a call to seriously question its construction is in place. The EU ETS has primarily caused short-term, and inconsistent, reductions in GHG-emissions but it has failed at driving long-term investments and innovation in renewable energy technologies. In short, the EU ETS cannot cause a shift toward a sustainable economic and environmental growth.

Recurring price-crashes, apparent in-effectivity in pushing re-investments in renewable sectors and counter-productive energy-price competitiveness, and not least that it in January 2013 enters into its final phase, are just a few of the many reasons to further study this subject. Especially, research on why, and in what context, the decision of opting for an emission-trade system, as opposed to other alternatives such as carbon taxation, is needed to make suggestions of both where the EU ETS is headed, and also what the alternative routes could look like. This study shows that the EU ETS was implemented on disputable grounds and that it was never meant to meet its current objectives. It is also suggested that the continued revisions of the EU ETS are unlikely to change this and that the system will only prolong the shift to a better suited type of climate-approach.

**Keywords:** EU ETS, EU Climate-Policy, Renewable Energy, Carbon Tax, Sustainability

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*“For a successful technology, reality must take precedence over public relations, for Nature cannot be fooled.”*

Richard P. Feynman

## **Introduction**

Climate-change is by far the most serious challenge experienced by mankind to date. The effects encompass all levels and parts of society, from the ecological to the economic and societal systems. Consequently climate-change is a political, economical and even an ethical dilemma.<sup>1</sup> However, there is still a gap between scientific evidence and political response<sup>2</sup> and this is evident on all levels of decision-making, from the local to the supranational-level. As will be argued, part of that gap originates in that political response to nearly any matter is highly prone to external pressure and this is one of the main contributing factors to the EU opting for a cap and trade type scheme like the EU ETS.

While climate-change has tangible, observable effects such as global warming, extreme weather flooding and droughts in some parts of the world, other parts remain rather unaffected.<sup>3</sup> Whereas some parts of the world, such as Central and South Asia and Latin America, could come to experience extremely serious consequences, others might experience far less dramatic effects. However, regardless of the degree of ecologically observable damage, all societies will be affected by climate-change in some areas of life.

Today, the scientific consensus states that global warming, possibly the most urgent of all climate-change effects, can cause a 2°C or more rise in the planet’s temperatures compared to pre-industrial levels,<sup>4</sup> which will cause rising sea-levels due to deglaciation as well as irreversible decline in the variety of animal and plant-life.<sup>5</sup> In order to prevent this from happening most major international organizations have therefore laid forward strategies and policies to reduce the effects of humanity’s impact on the climate. As the emissions of CO<sub>2</sub> from the use of fossil fuels after the

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<sup>1</sup> Stephen Gardiner, “A Perfect Moral Storm: Climate Change, Intergenerational Ethics, and the Problem of Corruption” in *Political Theory and Global Climate Change*, ed. Steve Vanderheiden, (Cambridge, Mass.: MIT Press, 2008), 25.

<sup>2</sup> United Nations Development Programme, “Human Development Report 2007/2008: Fighting Climate Change: Human Solidarity in a Divided World,” (New York: United Nations Development Programme, 2007), 4.

<sup>3</sup> United Nations, “Ten Stories The World Should Hear More About,” <http://www.un.org/en/events/tenstories/08/climatechange.shtml> (accessed August 19th, 2012).

<sup>4</sup> United Nations Environment Programme, “The Emissions Gap Report: Are The Copenhagen Accord Pledges Sufficient To Limit Global Warming to 2° C or 1.5° C?: A Preliminary Assessment,” (Nairobi, Kenya: United Nations Environment Programme, 2010).

<sup>5</sup> World Wildlife Foundation, “WWF - The impacts of climate change on nature,” [http://wwf.panda.org/about\\_our\\_earth/aboutcc/problems/impacts/](http://wwf.panda.org/about_our_earth/aboutcc/problems/impacts/) (accessed August 19th, 2012).

industrial revolution have proved to have profoundly negative effects on the climate, reducing emissions from CO<sub>2</sub> is an important measure.

### **Definitions of the research and scope**

As this thesis deals with the political and economical impacts of, and on, climate-change this term needs to be addressed and clarified. Throughout this thesis the term climate-change should be understood as it has been defined by United Nations Framework Convention on Climate Change (UNFCCC): “*a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods*”.<sup>6</sup>

The also frequently used term *global warming* often refers to the increased average temperature of the Earth, due to a accumulation of greenhouse gases (henceforth: GHG) in the atmosphere, whereas climate-change is a more encompassing and thus for the purpose of this thesis better suited term. Due to the limitations of this format, neither the debates regarding to what degree climate-change is due to human activities nor the issue of climate-skepticism will be addressed unless it is significant for the purpose of analysis. It is the author’s underlying assumption that human activities, especially after the industrial revolution, have had a significant negative impact on the climate. And regardless of to what degree, today one could suggest that a change in human activities and modes of production could largely contribute to a stabilization of climate-change. Especially when these changes occur in the energy-sectors, the largest industry in the world.

Furthermore, the terms “political” and “politician” will be used broadly and illustrative and without connotations of any specific ideological or party-bound domicile. The *politician* in this context should therefore be understood as a weberian decision- (and policy-) maker representing the political realm. This in contrast to the equally non-specific *financial* or *industrial* stakeholder. These terms are used to drive the analysis forward and are not to be perceived as representatives for anything other, i.e companies or organizations, than their realm of agency and interest, save for those instances where such are specifically specified. This is since the interface between political science and economic theory makes out the thesis’s methodological angle of approach, and as such the terminology benefits from being held general in these instances in order to keep the perspective agency- rather than agent-focused. Moreover this eases keeping the analysis on a macro-level for the purpose of driving it further.

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<sup>6</sup> United Nations, *United Nations Framework Convention on Climate Change*, 1992, <http://unfccc.int/resource/docs/convkp/conveng.pdf> (Accessed August 19th, 2012).

Finally, the thesis will throughout return to the importance of research and development (henceforth: R&D) for growth in the renewable sector.

The term renewable is a highly encompassing concept as it includes energy from solar, wind, hydro, biomass and marine-energy. The common denominator for a renewable energy-type is that the energy-source, i.e. the sun in relation to solar-power, is a natural energy of an inexhaustible supply and that this source can be-reused.<sup>7</sup> Nuclear energy is neither a renewable nor a fossilized energy-source and nuclear energy will also due to the purpose and scope of the analysis not be discussed.

### **Statement of purpose and research questions**

The main purpose of this thesis is twofold. First I will attempt to illustrate and analyze the economical and political circumstances leading up to the EU settling on a cap and trade system such as the EU Emission Trading System (henceforth: EU ETS) – putting a price on CO<sub>2</sub> and releasing it on the open market in limited availability, to cut GHG-emissions as well as to stimulate initiatives for a renewable energy growth. Secondly, this thesis will make suggestions whether these two objectives have been met and moreover if the EU ETS is sufficiently well constructed and targeted to meet the overall goal – a new paradigm of sustainable development, i.e. addressing environmental and economical challenges together as well as stimulating financial and technological growth. As the EU ETS from January 2013 enters into its final phase, a better understanding of the chain of events and decisions leading to its current status is needed.

An equally important argument for the relevance of this subject of analysis, is that the EU climate-targeting efforts, due to their magnitude and scope, have a major impact on how other global actors will meet climate-change. The EU must continuously undergo evaluation and quality-control so there can be made prognosis of what can be expected in terms of a shift to a decarbonized energy-sector, which in turn is the very prerequisite for the EU meeting its 20/20/20-targets.

The assumption is that the EU ETS has been valuable to induce a reduction of GHG-emissions but that it in actuality is unable to create such dramatic, yet necessary, shifts in economic or industrial conduct that are its purpose. Moreover, entering into this analysis it was the underlying assumption that the failure, at least in part, of the ETS firstly has caused potential damage to the future perception of a European sustainable development and growth underpinned by a new breed of capitalist economy and secondly that it has pushed the issue of change ahead, enabled by

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<sup>7</sup> *Encyclopedia Britannica Online*, s.v. “Renewable Energy”, <http://www.britannica.com/EBchecked/topic/17668/renewable-energy> (Accessed August 19th, 2012).

revisions and tweaks. When arriving there, I will argue a flawed construction and type of climate-scheme already from the start.

It will be argued that it is possible that the private sector and national renewable energy policies and regulation has become equally or more important to motor an incipient second industrial revolution, i.e. a sustainable development of the industries and economy in tandem. Especially since market-forces were believed by the Commission in 2010 to be the drivers for renewables if a continued financial support-system would remain in function.<sup>8</sup> I will also claim that the EU ETS in a sense is not merely relying on, but even generated by, fossil-fuel as the CO<sub>2</sub> has become yet a new commodity on the international market. The economic management measures the EU ETS has applied on the capitalist market economy is at present too marginal and too loose for this to phase over into a de-carbonized and innovation-generating behavior.

In sum: the EU with its construction and implementation of the emission trading system EU ETS, has failed to take the sufficient actions needed to combat climate-change in a stable and long-term manner, despite long-term incentives for renewable investments in order to “deliver gradual and predictable reductions of emissions over time” being one core objective stated in the directive.<sup>9</sup> This is since it has not managed to apply knowledge of the predictable conduct of the traditional capitalistic economy to the economics of environmental challenge.

The traditional capitalist economic system has not been presented with neither necessary incentives nor strong enough sanctions for it to be pressed into pushing for and investing in the very renewable energy generation a sustainable development of the EU amounts to. This despite that a development of the renewable sector has been presented as absolutely crucial for the effectiveness of the fight against climate-change.<sup>10</sup>

Instead it will be argued that the current design of the EU ETS has prolonged a continued fossil-dependency, indirectly widened the breach between the developed and the developing world regarding carbon-dependency, and delayed the next generation of de-carbonized innovation and R&D.

The central questions that will be analyzed and answered are: Why was the EU ETS launched and what impact does it have on sustainable development?

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<sup>8</sup> European Union, “EU Energy Trends to 2030: Update 2009,” (Luxembourg: Publications Office of the European Union, 2010), 22.

<sup>9</sup> Directive 2009/29/EC of the European Parliament and of the Council, amending Directive 2003/87/EC. Official Journal of the European Union of June 5th, 2009, L 140/63.

<sup>10</sup> International Panel on Climate Change, “IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation,” (Cambridge, UK: Cambridge University Press, 2011).

These questions were chosen for two purposes. Firstly, the EU ETS still remains to be sufficiently explored, and a deeper comprehension of the context surrounding such a massively encompassing climate-system as the EU ETS is of value. Secondly, as the system in the beginning of 2013 enters into its final phase, that terminates 2020, it is plausible that these upcoming years will be highly indicative regarding how the EU ETS has managed to create sustainability through driving investments in renewable energy, technology and R&D. The EU ETS as a system is the main focus of the analysis. But as this is the back-bone and not the whole body of the study, hopefully this analysis can inspire further studies not connected directly to the EU ETS such as climate-policy mechanisms, the impact of lobbying and the interdependence of the political, financial and industrial spheres.

## **Methodology**

However, in order to reach any conclusions, the thesis is constructed in a manner which can outline the events that have shaped the current state of the EU ETS but moreover discuss this from a multi-faceted perspective. As the EU ETS is constructed to tackle one of the most problematic and urgent challenges of our time, a comprehensive understanding of the past and present political and economical considerations were absolutely key. An anticipated challenge in writing the thesis was that the available literature, including journals and reports, would not be sufficient, and moreover that research on the topic quickly becomes obsolete, since policy-assessing studies often are statistically dense. This will be returned to in the following segment but the diversity of perspectives suggested that a very broad reading, not only on the EU ETS but also on climate-change, the mechanisms of policy-making and economic theory in regard to climate-change was necessary before the writing-process could start. In short, a basic understanding of all issues that could be raised in regard to the EU ETS was important. This also came to influence the structure and angle of approach – hence it does not delve to deep into the intricate construction and operations of the EU ETS but it has a wider scope than the majority of the research stemming from the same segment. Also, to answer my specific research questions it was very important to refrain from creating a descriptive study. Viewing the subject from both political, industrial and financial perspectives was assumed to create a more complex understanding of how, and why, the EU ETS exists today.

## **Research-climate and discussions**

Both climate-change and climate-policies are relatively new areas of research. Despite this, research concerning the politics and economics of climate-change in an EU-context is both plentiful and

frequent. The same can be said for literature on the EU ETS. Since the body of research is thematically diverse – encompassing the equally diverse functions and effects of the EU ETS, this research-overview will describe the central approaches followed by a brief outline of other non-EU/ETS focused research that could give rewarding insight for the purpose of this thesis.

Three main perspectives on the EU ETS are detectable in the research: economic theoretical, social science and environmental science. These of course have sub-categories, e.g. eco-Marxist theory. In regard to the EU ETS, all of these approaches can be highly useful for understanding the measurable and tangible effects of the EU ETS such as levels of GHG-emissions and costs of implementations.

As will be returned to, climate-change as a concept is more or less observable, and hence it also has a more or less tangible effect on one's day-to-day activities. For this reason a sociological and behavioral approach raises the overall quality of research. I would suggest, however, that neither a social-scientist, environmental, economical nor a sociological approach in itself is sufficient to mediate any real useful knowledge on climate-change or with what tools it best can be dealt with. But together, they fill in the gaps of the others.

On the other hand, and challenging for the purpose of this thesis, long-term studies on emission trade systems such as the EU ETS and their impact on sustainability and green growth are still rather scarce. There are several reasons for this. It is in part due to the fact that the EU ETS has been operational only since 2005 and only in the latter years has it been taken up in wider debate, most notably in regard to how the EU ETS will perform on the above mentioned non-measurable and longterm targets. However, to draw decisive conclusions regarding the more intangible objectives of the EU ETS, such as driving a low-carbon intense economy, there is a gap in present body of research.

Due to the angle of approach in this thesis it early on became clear that to extend one's appreciation of the EU ETS, and more specifically of how it has been met, questioned, criticized and supported, updated articles of both academic and news-orientation, transcripts from climate-conferences and summits and reports presented by think-tanks such as FORES and Bruegel proved rewarding.

No doubt have the European Commission and especially Commission staff made large contributions to the mass of literature.<sup>11</sup> For an inside-perspective of the road up to the launch of the EU ETS, Jos Delbeke – for political and legal perspectives – and Peter Zapfel and Matti Vainio –

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<sup>11</sup> Frank J. Convery, "Reflections: the Emerging Literature on Emissions Trading in Europe," *Review of Environmental Economics and Policy* 6:1 (2012), 121-137.

for economic dittos – could be considered conventional, yet not for the scope of this thesis primary, sources as they were among the architects of the ETS, directly controlling its construction and implementation.<sup>12</sup> Moreover have Denny Ellerman, Dieter Helm and Karsten Neuhoff, on their own or together with others, produced comprehensive research on the origins and effects of the EU ETS – research that will be returned to and referenced throughout the thesis.

The possibly most well-known piece of research linking climate-change with economic theory is “The Economics of Climate Change: The Stern Review”, presented in 2006, commonly referred to as “The Stern Review”, authored by British economist Sir Nicholas Stern and released for the British government. In brief the central messages in The Stern Review is that climate-change is an extremely costly event (extreme weather only is stated to cause a reduction of global GDP by as much as 1%) and as such it presents equally extreme challenges for economists. Also, and specifically interesting for the purpose of this thesis, Stern takes the rather uncommon stance of not favoring an emission trade-scheme over other types of climate-regulative measures such as carbon-taxation. The Stern Review should however be read with some care, especially as it in likeness with many statistics-dense pieces on climate-change dates fairly rapidly regarding scientific findings, assessments and prognosis. Moreover, one can make the suggestion that the status given to The Stern Review in part could be due to that it was rather a pioneer piece for applying a strong economic perspective on climate-change. However, and I would argue for the above stated reasons, it has also been criticized for both under- and overestimating the costs of and emergency of climate-change.<sup>13</sup>

Not seldom, critique of wide-scoped international publications regarding climate-change takes a political stance. This, I would suggest, is a direct consequence of that climate-change, at least on the surface, generally is regarded to be a political, rather than an economic issue. An important observation which will be dealt with in the following sections of this thesis. When one today needs to analyze the relationship between economical development and climate-change as correlating events one should return to marxist economic theory. This since it will be there, I claim, that one finds, in likeness with traditional environmentalist research, the reason why the above mentioned non-ideological interlinkage of disciplines until today has remained limited.

Quite possibly the most influential writer on the negative environmental consequences of capitalist economy was Karl Marx, well-known for his writing on the subject in the *Das Kapital*. I

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<sup>12</sup> Ibid, 123-124.

<sup>13</sup> Martin L. Weitzman, “A Review of the Stern Review on the Economics of Climate Change,” *Journal of Economic Literature* XLV (2007), 703-724.

would argue that mentioning Marx in this context is vital since, as will be discussed, capitalism is not merely an economic system. It is also a code of conduct and an idea. And for these reasons Marx is one of the most important thinkers, not least since a substantial part of current research on economy elaborates on Marx. One could also claim that it was, albeit not solely, Marx that originally formulated the notion of a capitalist prerequisite of environmental harm.<sup>14</sup> This remains a central criticism as well as a starting-point for the present day eco-Marxist school of thought, in which sociologists John Bellamy-Foster and economist Paul Burkett are among the most prominent names. The Schumpeter protégé and economist Georgescu Roegen criticized many of Marx more deterministic notions, but, in likeness with him, treated economical and ecological developments in context of each-other. This of course has also been the way in which this thesis has approached these subjects. A non-ideologically skewed insight into economic theory and into the state of the economy of both today and tomorrow, provides a highly important apprehension of how climate-change emerged as well as with what tools it can best be dealt with.

In research targeted at analyzing financial or market-oriented approaches to climate-change these more often than not, take a denouncing starting-point – evident in e.g. W. Scott Prudham’s 2005 *Knock on Wood: Nature as Commodity in Douglas-Fir Country*<sup>15</sup> – or elaborate on the perceived inherent tension between the logic of the economical, and the needs of the ecological, in traditional capitalistic economic systems (Paul Burkett’s 1999 *Marx and Nature: A Red and Green Perspective* and Elmar Altvater’s 1994 *Ecological and Economic Modalities of Time and Space* elaborate on this). In 2005, Elmar Altvater described the industrial revolution as a “trinity of fossil-fuel” in which European rationality and technology met the metamorphosis of money into capital.<sup>16</sup> In other words, capital and fossil-fuel are bound together. When reviewing the research and literature on the diverse subject of climate-change, one can observe that these to a considerable degree either have a political, ethical, scientific and/or technological perspective rather than an, even if subordinate, *integrated* economical perspective. I claim that it is the interface of different yet intimately intertwined scientific domains, such as the environmental, economical, and, as will be returned to, sociologist perspectives where one today can derive the most valuable

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<sup>14</sup> Emery Kay Hunt, *De Ekonomiska Ideologiernas Utveckling* (Original title: *Property and prophets: The Evolution of Economic Institutions and Ideologies*), 4th edition (Stockholm: Storcken, 1992), 251.

<sup>15</sup> W. Scott Prudham, *Knock on Wood: Nature as Commodity in Douglas-Fir Country* (New York: Routledge, 2005).

<sup>16</sup> Elmar Altvater, “Globalization and the In-formalization of The Urban Space”, Working Paper No. 131 (Research Center on Development and International Relations, 2005), [http://vbn.aau.dk/files/33967408/workingspaper\\_131.pdf](http://vbn.aau.dk/files/33967408/workingspaper_131.pdf) (Accessed August 19th 2012), 2.

comprehension on climate-change and not least how it is impacting and will impact most areas of society.

Also this thesis is built on the assumption that this is the best manner in which one can conduct a valuable study on climate-change if one also has an ambition of making any plausible prognostications of the future ahead. In regard to research that makes suggestions of the potential de-carbonization of traditional capitalist economy, i.e an emerging “green” economy or capitalist economy, sociologist Max Koch has created the necessary, at least less ideologically tainted, research-merger, mentioned above, in where the environmental, economical and sociological meet to stimulate a new breed of research.<sup>17</sup> Moreover for a further debate regarding the possibility of green capitalism from a governance-perspective Matthew Paterson and Peter Newell have especially posed central questions whether it is an actual possibility.<sup>18</sup>

Both in Europe and worldwide, the concept of a “green economy” has slowly become more accepted. Even among those skeptical of using free-market financial instruments to deal with climate-change, one finds an increasing acceptance of, or even support for, discussing climate-change and capitalist development interlinked. Not least since a dual approach also can be adapted to encompass issues of social inequality.<sup>19</sup> Therefore, this take on climate-change would, I argue, not merely constitute an all-embracing and responsible approach firmly based on the societal and economical settings of today, but moreover it is quite possibly the most effective way to pave the way for the transition to a functional green economy which at the same is a prerequisite for and a result of de-carbonized and sustainable growth.

When discussing green economy, or in this case green capitalist economy, it is important to realize the perceived strain that is inherent in a concept such as green economy. The concept is not seldom viewed an oxymoron, an impossible merger between the noble climate-cause and the system which to an extent actually caused the climate-problems in the first place.

The mere linguistic coupling of two such conflicting notions alone can quite understandably evoke a sense of inconsistency. Green, as it is generally used in this context, denotes taking responsibility for the environment and for the ecosystems. It is often applied to actions, actors or strategies that are environmentally focused and sustainable and whose behavior is adapted and adjustable to a societal context in which climate-change is seen as both real and relevant.

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<sup>17</sup> Max Koch, *Capitalism and Climate Change: Theoretical Discussion, Historical Development and Policy Responses* (Houndmills, Basingstoke, Hampshire, UK: Palgrave Macmillan, 2012), 2.

<sup>18</sup> Peter Newell and Matthew Paterson, *Climate Capitalism: Global Warming and the Transformation of the Global Economy* (Cambridge: Cambridge University Press, 2010).

<sup>19</sup> Koch, *Capitalism and Climate Change*, 186.

Capitalistic economy on the other hand is traditionally less intangible. A capitalistic type of economy infers various subtypes of an economic system in which the means of production, distribution and exchange are privately owned and operated for profit. In short: the core of capitalist economies is production for profit and for that reason it requires growth and accumulation. However the idea of economy is of course not so static that it does not transcend into other areas and vice versa. When economy describes a societal system, such as a state, it extends to infer an economically and politically integrated system in which the state's trade and industry are controlled by private owners. And when the concept of capitalist economy is discussed in an even more politicized manner it could be defined as a political and social system which is founded, and upheld, on the principle of individual rights and private ownership, which are a fundamental issue in this context. Capitalism can in different contexts and from different perspectives, be both (a variation of) an economic, a societal, or a political system and manner of conduct. Moreover it is an ideology, and as such capitalism can also become a moral issue. This is not least notable in this context, as traditional capitalist economy has at least in part indeed paved the way to climate-change as was discussed above but also to global social inadequacy, where the developing and developed world now must share a climate-responsibility mainly stemming from the latter's frankly irresponsible exploit of the worlds human and natural resources for its own economic gain. Thus, the perception of capitalism as something immoral in contrast to the environmentalist moral-denotation creates an unfavorable starting-point of discussion for any proponent of green capitalism.

One could make the suggestion that since climate-change is an issue that impacts all these areas, any research streamlining the scholarly writings of these fields is highly important to better shape our comprehension of climate-change as something other than a merely environmental challenge.

## Analysis

### The unstable road to a sustainable development

In the 1987 Brundtland Report, Sustainable Development was defined as (a) "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*".<sup>20</sup> A definition that remains applicable, not least for this thesis. The key-message in the report was that a second economic growth firmly underpinned by sustainability was needed for the EU.

As climate change does not show any signs of declining and the measures undertaken by the EU to control it have, as will be discussed, become questioned in light of their overall underachievement, the notion of an encompassing approach to deal with *both* economic and ecological challenges with just one instrument indeed seem appealing. Sustainable development as a concept and a political target is, I argue, precisely that kind of "guiding light" needed. Not least as the EU and the world as a whole still very much struggles to come out of the economic crisis.

The first time sustainable development was presented as a task-oriented measure to combat climate-change was in 2001 when the "EU Sustainable Development Strategy" (SDS) was adopted based on a proposal from the Commission.<sup>21</sup> In 2005, coinciding with the launch of the EU Emission Trading System, EU ETS, the European Commission presented their guideline principles for sustainable development. One of the key-messages was a pledge to pursue breaking the correlation between economic growth and environmental harm.<sup>22</sup>

In 2006 the SDS was revised to include targets as well as planned strategies in the fields of climate change and the associated quest for the development of a clean and renewable energy-sector. The purpose was to stake out "a single, coherent strategy on how the EU will more effectively live up to its long-standing commitment to meet the challenges of sustainable development".<sup>23</sup> Also, it entailed the explicit ambition to involve both business-actors and citizens

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<sup>20</sup> United Nations, Report of the World Commission on Environment and Development: Our Common Future, 1987, <http://www.un-documents.net/ocf-02.htm> (Accessed August 19th, 2012).

<sup>21</sup> European Union, Communication from the Commission A Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development (Commission's proposal to the Gothenburg European Council), 2001, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52001DC0264:EN:NOT> (Accessed August 19th, 2012).

<sup>22</sup> European Union, Communication from the Commission to the Council and the European Parliament - Draft Declaration on Guiding Principles for Sustainable Development, 2005, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52005DC0218:EN:NOT> (Accessed August 19th, 2012).

<sup>23</sup> European Union, Commission staff working document - Accompanying document to the Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions on the Mid-term review of the Sixth Community Environment Action Programme - Impact assessment, 2007, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52007SC0546:EN:NOT> (Accessed August 19th, 2012).

to a higher extent, thus creating useful interfaces between the public- and private sectors. Beside its, for this thesis, main fields of interests – climate change and clean energy, sustainable transport, consumption and production and conservation and management of natural resources – the EU SDS also targeted social challenges such as public health-issues and was built upon these seven areas. However, it was not until 2007 when the Eurostat monitoring report on the EU’s sustainable development was presented that more precise assessments regarding the status, and future, of the EU’s sustainable development strategies could be made.<sup>24</sup> The report read as a mixed bag of positive and negative feedback.<sup>25</sup> Most problematic from the environmental perspective was that the report pointed to a notable and highly unfavorable tendency in the field of climate-change as neither the target regarding an increased share of renewables nor the expected decreases in GHG-emissions had been met. Adding to the overall negativity of these results, was that the reached numbers fell disappointingly far below the set Kyoto-15 target.<sup>26</sup> Moreover the strategy’s call for a multi-level consolidation of institutional and political will and efforts had gone unanswered. Not surprisingly, one of the conclusions of the report read that the EU was still not on the path toward a sustainable development.

Three years later, during the fourth year of the EU ETS being in operation, the 2011-edition of the Eurostat-report “*Is the EU on a sustainable development path?*” was presented.<sup>27</sup> This time the message was slightly more positive, as results indicated a notable decrease in air pollutions, especially after 2004.<sup>28</sup> A result that in large part should be attributed to the EU ETS, which will be discussed in more depth in the following segment. However, this report also suggested that the levels of GHG-emissions had started to rise again in 2010, adding that if the pace of cutting GHG-emissions did not promptly increase, at least the roadmap 2050-target of a 80-95% reduction of GHG-emissions compared to the 1990-level would not be met.<sup>29</sup> It is also notable that the report

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<sup>24</sup> Eurostat, “Measuring Progress Towards a More Sustainable Europe: 2007 Monitoring Report of the EU Sustainable Development Strategy (Luxembourg: Office for Official Publications of the European Communities, 2007).

<sup>25</sup> Ibid, 299.

<sup>26</sup> Ibid, 287.

<sup>27</sup> Viktoria Bolla, Graham Lock and Mariana Popova, “Is the EU on a Sustainable Development Path? Highlights of the 2011 Monitoring Report of the EU Sustainable Development Strategy”, Eurostat Statistics in Focus 58:2011, [http://epp.eurostat.ec.europa.eu/cache/ITY\\_OFFPUB/KS-SF-11-058/EN/KS-SF-11-058-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-SF-11-058/EN/KS-SF-11-058-EN.PDF) (Accessed August 19th, 2012). 8.

<sup>28</sup> Ibid, 3.

<sup>29</sup> Ibid, 8.

emphasized that the primary reduction efforts must be targeted at the (transformation of) the energy-sector.<sup>30</sup>

Both the 2007 and the 2011 Eurostat-reports stressed the need for the EU to pay attention to the renewable sectors and investments in a knowledge-based economy in order to secure a general sustainable development. So, even though the EU ETS had been operational for four years this remained a message in need of being expressed. And what could be viewed as adding to the noteworthiness of this was that it was the EU ETS that was meant to motor the phasing-in of a renewable energy-sector, central for a sustainable development and the associated developments of green research, development and innovation. Four years into operation, the call for attention sounded highly similar.

The EU SDS was for these, among other reasons, criticized for letting interests of sectorial competitiveness bypass the interests of sustainability. And it was to become one of several examples where EU climate-strategic policymaking has overly relied on voluntarism and concurrently failed in offering strong enough frames and binding obligations for the participants.<sup>31</sup>

In short: the EU Sustainable Development Strategy – thus far – proved to be far from sustainable. The acute need for a renewable energy sector in the EU however remained.

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<sup>30</sup> Ibid, 9.

<sup>31</sup> Marc Pallemmaerts, Martina Herodes and Camilla Adelle, “Does the EU Sustainable Development Strategy contribute to Environmental Policy Integration?”, Ecologic – Institute for International and European Environmental Policy, 2007, [http://ecologic.eu/projekte/epigov/documents/EPIGOV\\_paper\\_9\\_pallemaerts\\_herodes\\_adelle.pdf](http://ecologic.eu/projekte/epigov/documents/EPIGOV_paper_9_pallemaerts_herodes_adelle.pdf) (Accessed August 19th, 2012). 35.

## **Climate-change takes center stage**

Since the 1990s, the field of climate-change has been a heavily prioritized area for the EU. The union has implemented several, often highly aspirational and comprehensive, policy-packages in order to both adjust to, and to stabilize the effects of, climate change.<sup>32</sup> In 2000 the Commission launched the first European Climate Change program (ECCP) to meet these challenges with a variety of measures and policies. The EU ETS is since its launch the cornerstone of the ECCP as well as a prerequisite for the 20/20/20-targets presented in 2010.

The key policies of the EU's climate-initiatives at a glance:

### **2000**

June: Commission launches first European Climate Change Program (ECCP I).

### **2005**

February: The Kyoto Protocol enters into force.

January: Start of the EU's greenhouse gas Emissions Trading System (EU ETS).

October: Launch of second European Climate Change Program (ECCP II).

### **2007**

March: EU summit endorses proposal to cut greenhouse gas emissions by 20% by 2020.

December: UNFCCC conference in Bali (COP-13) launches negotiations on post-Kyoto framework.

### **2008**

December: EU agrees on a climate and energy package, endorsing targets for a 2020 greenhouse gas reduction by 2020.

### **2009**

December: UNFCCC conference in Copenhagen (COP-15) produces Copenhagen Accord.

### **2010**

November-December: UNFCCC conference in Cancún (COP-16).

### **2011**

November-December: UN climate conference in South Africa (COP-17). Possible date for agreeing new international climate treaty.

### **2012**

The Kyoto Protocol's first commitment-period expires.

### **2020**

Target date to reach the EU's objective to cut greenhouse gas emissions by 20%.

### **2050**

Target date to reach the targets of the EU ROADMAP.

As mentioned, both the cause of, as well as the cure for, climate-change has generally been regarded primarily a political and scientific concern, rather than an economical. This despite that no major strategy to combat climate-change has yet been launched that does not on some level involve

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<sup>32</sup> Sebastian Oberthür and Marc Pallemarts, eds., *The New Climate Policies of the European Union: Internal Legislation and Climate Diplomacy* (Brussels: VUBPRESS, 2010), 13.

economic management measures or that does not take economical considerations into account. Moreover, as was noted by Lorenzoni and Pidgeon in 2006, the research on public opinion illustrates a tendency of placing the responsibility for taking action on climate-change in the hands of the politician or the government despite that these are viewed not likely to communicate a true picture of climate-change. Not least when compared to the, in the eyes of the public, very high trustworthiness of environmental groups scientists.<sup>33</sup>

Consequently, both on the global, EU and nation-levels of governance it is the politician and the policymaker that are regarded key players. Especially as they engage in large scale climate-negotiations such as the UN Framework Convention on Climate Change (UNFCCC) in 1992 and the Kyoto conference in 1997, resulting in the Kyoto Protocol.

Perhaps slightly generalizing, yet plausible, is the view expressed by among others Bert Bolin in 2007, which assumes that the public understanding of climate-change today is highly impacted by a long-standing gap of communication between science, politics, the media and the citizen.<sup>34</sup> Elaborating on this, one could suggest that also the political, economical and societal developments related to, and affected by, climate-change could potentially remain inadequately put in a common context. Reinforcing the view that climate-change very much is viewed a political matter is an observation made by, among others, Oriol Costa who suggests that combating climate-change in actuality presents the EU with a much welcome opportunity of strengthening its own authority on the global scene.<sup>35</sup> Meanwhile, some traditionally less GHG-concerned member-states have become more vocal concerning their own national climate-efforts.<sup>36</sup> In short: combatting climate-change has also become a political stance, and an instrument for positioning oneself contextually. And this, I suggest, has been valuable to the EU's mission of European integration, one of the other top-priorities for the union. Thus, one could rather crassly suggest that the problem of climate-change has at least so far been at least politically rather favorable to the EU.

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<sup>33</sup> Irene Lorenzoni and Nick F. Pidgeon, "Public views on climate change: European and USA perspectives," *Climatic Change* 77 (2006), 86.

<sup>34</sup> Bert Bolin, *A History of the Science and Politics of Climate Change: the Role of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2007), 198.

<sup>35</sup> Oriol Costa, "Is Climate Change Changing the EU? The Second Image Reversed in Climate Politics," *Cambridge Review of International Affairs* 21.4 (2008): 527-544 also in Harris p 140

<sup>36</sup> Oriol Costa, "Who Decides EU Foreign Policy on Climate Change? Actors, Alliances and Institutions," in *Climate Change and Foreign Policy: Case Studies From East to West*, ed. Paul G. Harris (London: Routledge, 2009), 140.

## **EU ETS: Construction, implementation and bids for results**

The EU ETS has indeed, as was mentioned, performed as expected in creating a reduction of GHG-emissions within the EU.<sup>37</sup> However, as the system is also meant to bring forward the sustainable growth in renewable energy sectors that was described in the citation from the Bruntland report, it is important to assess whether the EU ETS has succeeded also at this. And unfortunately, as will be shown, the EU ETS has rather become the embodiment of a misconstrued effort of dealing with climate change on an ecological as well as an economical level – despite that it was for the purpose of doing precisely that the scheme was constructed, implemented and promoted. One could claim that the EU ETS might be a political construction in purpose but it was supported by the interests of market and industrial-stakeholders.

As will be returned to, perhaps especially EU climate-policies are highly impressionable to the various interests of the member-states as well as of the market and of the larger industrial sectors. And since especially the latter traditionally have been strong proponents for a trade-based climate-approach, and equally strong strong opponents to other regulations such as a carbon-tax, it is, at the very least, plausible that it was reflected in the settling on the former system-type.

Koch points out three central methods of approaching climate change and environmental issues from a political and economical stance: environmental legislation, taxation and commodification.<sup>38</sup> This was also the set-up for the EU in the ex-ante discussions for the EU ETS.

The EU ETS as a commodity-emphasizing “cap and trade”-style scheme was a clear step away from the taxation-route. A route which, I will argue, could have been more beneficial to the cause of creating a paradigm-shift into a green economy and an advance in the development of sustainable energy and technology. In other words, a situation where the EU indeed would be the climate-leader it has every potential of being.

Instead, pushed forward by the ECCP, and in turn underpinning the 20/20/20-targets (the EU ETS is meant to both introduce a reduction of GHG-emissions as well as be the driver behind the second and third target stated below),<sup>39</sup> it was the EU ETS that became the absolute key climate-apparatus not least after the presentation of the 20/20/20-targets, which would have a central communicative and normative value for the EU’s image as a major climate-actor.

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<sup>37</sup> Eurostat, “Climate Change Statistics – Statistics Explained,” [http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/Climate\\_change\\_statistics](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Climate_change_statistics) (Accessed August 19th, 2012).

<sup>38</sup> Koch, *Capitalism and Climate Change*, 174.

<sup>39</sup> Dieter Helm, “EU Climate-Change Policy – a Critique” in *The Economics and Politics of Climate Change*, eds. Dieter Helm and Cameron Hepburn (Oxford: Oxford University Press, 2009), 222.

The 20/20/20-targets were agreed on in the European Council and Parliament in 2008 and were approved by the Heads of States and Governments of EU countries in June the following year. It was as a continuance of the Lisbon Strategy that ran between 2006-2010. The targets will ensure the EU's Europe 2020 strategy for “smart, sustainable and inclusive growth” throughout the whole union, but its scope also reaches out into the global scene. The 20/20/20-program is implemented by binding legislations, and the targets are:

- 20% minimum reduction in EU greenhouse gas emissions compared to 1990 levels.
- 20% of EU energy consumption to come from renewable resources.
- 20% reduction in primary energy use compared with projected levels, to be achieved by improving energy efficiency.

When the targets were presented, the EU also expressed a readiness to increase the emissions reduction-target to a level of 30% on the condition that other key-actors, namely the U.S.A, would follow suit. Such an agreement is said to come into effect in 2013 at the terminus of the first commitment-period of the Kyoto-agreement.<sup>40</sup>

One of the initial concerns one should have with the 20/20/20-program in relation to the EU ETS, is the probably overly optimistic end date of 2020.<sup>41</sup> Not least as it relies on the ability of the EU ETS and its participants to show such high levels of progress in pushing for renewables. This potential flaw also poses a potential credibility-deficit to the 20/20/20-program and the EU as a whole, since, I argue, it is the EU itself through its EU ETS that is failing in creating incentives for sustainable growth, which makes the terminus 2020 an unlikely date.

I would also, in likeness with Max Koch, claim that the 20/20/20-program, by name as well as by content, for the most parts is merely a product of political rhetoric, and moreover that it poorly reflects the actual climate-status, inherent capitalist economic behavior, the prerequisites of the industrial sectors and those of the EU and its member-states. As will be continuously shown, it is today rather unlikely that the renewable technology development, crucial to meet set targets by 2020, will be in an adequate state and shape for operation and deliverance by that time.<sup>42</sup> So, why is the EU ETS inept at meeting its own targets? Returning to the research-problems I suggest that it will both be in the context in which it emerged, as well as in its very construction one can derive such an answer.

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<sup>40</sup> European Commission, “What is the EU Doing on Climate Change?,” [http://ec.europa.eu/clima/policies/brief/eu/index\\_en.htm](http://ec.europa.eu/clima/policies/brief/eu/index_en.htm) (Accessed August 19th, 2012).

<sup>41</sup> Dieter Helm, *EU Climate-Change Policy*, 228pp.

<sup>42</sup> Ibid.

The European Union Emissions Trading System, the EU ETS, is the by far largest international emission allocation and trade system worldwide to date.<sup>43</sup> It encompasses 30 countries as it beyond the 27 EU member-states also includes Liechtenstein, Iceland and Norway. The EU ETS covers some 11 000 installations (depending on source the number varies between 10 000-11 500) dispensed over five sectors of heavy industries (such as iron and steel, glass, cement and pottery) and power-sectors. The European Commission oversees the EU ETS on behalf of the participating states.

Most significantly, the EU ETS includes power plants and oil refineries. Installations covered by the EU ETS represent nearly half of the EU's total emissions of CO<sub>2</sub> and approximately 40% of the total GHG-emissions. From January 2012 it also encompasses aviation<sup>44</sup> and there are at present discussions in the European Parliament on whether to extend the scheme to also include shipping. Also, as it more or less directly, includes non-member-states in Europe as well as non-European and developing countries the EU ETS is unique in both size and scope. Judging merely from the powers invested, the scheme undoubtedly had the potential of marking a remarkable turn-around in global climate-change strategies. And one must indeed make it very clear, that the EU ETS up to now has been beneficial for the purpose of cutting CO<sub>2</sub>-emissions. In 2011 GHG-emissions decreased 2%, as mentioned, which without hesitation should be regarded as positive. So, if cutting GHG-emissions were the sole objective, the EU ETS would for these reasons deserve to remain the *piece de resistance* of the EUs toolbox for combatting climate-change. But there are, as will be shown, a significant difference between meeting short-term measurable targets and creating long-term and sustainable change.

Being an instrument for stimulating bottom-up and self-generating progress in the sector of renewables, as well as for the cause of creating a decrease in GHG-emission, the EU ETS was founded on a "cap and trade"-principle. In such a system the cap infers the limit. It is the individual member-state that sets the cap based on the total amount of free European Union Allowances, EUAs, in turn based on the total amount of internal installations that are covered by the scheme. These must be submitted to, and approved by, the European Commission on set intervals.

The EUAs are then applied to the total amount of GHGs that are emitted by the polluters. One allowance equals one tonne of carbon dioxide. In short, the cap grants a company emission allowances which then can be used and if the emissions are reduced the allowances can be traded

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<sup>43</sup> European Commission, "Emissions Trading System (EU ETS)," [http://ec.europa.eu/clima/policies/ets/index\\_en.htm](http://ec.europa.eu/clima/policies/ets/index_en.htm) (Accessed August 19th, 2012).

<sup>44</sup> Ibid.

with other companies of kept for future needs. This is meant to induce that emissions are cut where it is most cost-effective and also, that the responsibility of keeping under the limit is shifted to lie on the company rather than state. The purpose of course was to convey that pollution comes with a price-tag as well as, and perhaps more so, that keeping under the limit can indeed be profitable.

However for the task of stimulating a second industrial revolution – a renewable one – it is highly notable that EU law does not require that any revenue from the EU ETS must be reinvested in environmental ventures and moreover that the member states are merely encouraged to make such investments. Germany is at present the only country under the EU ETS to have implemented such a legislation,<sup>45</sup> although also the UK introduced an allocation model meant to increase capital-dense investments into less profitable and less mature modes of power production.<sup>46</sup>

The system's basic structure was designed on a few considerations. First it should be applicable to the prerequisites of the individual member-state, in reference to both national GDP as well as the current status of its established renewable energy-sector.

This assessment was then succeeded by an ex-ante decision on the cap-level of allocations to installations by the individual member states through their own National Allocation Plans (NAP). Setting the cap ex-ante has come to present some problems. Especially from a political perspective, as the target needs to be reachable and at the same time challenging enough to get results in emission-cuts. Also, the effectiveness of a cap is, especially during phase I, highly depending on projections, which in turn are based on installation-level data. And as these were erroneous in the implementation-phase, much effort had to be poured into the retrieving this directly from the industries which made the system both heavy and depending on a certain amount of voluntarism.<sup>47</sup> The importance of good data and information has been a continuous problem with the EU ETS. This will be returned to in the following segments.

The overall mass of allowances are to be continuously reduced throughout the scheme's duration-period. In 2020 emissions are targeted to be 21% less than in 2005.<sup>48</sup> Through an EU

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<sup>45</sup> Barbara Lewis, "Q&A: An EU carbon tax, more effective than the ETS?", *Climate Spectator*, April 4, 2012, <http://www.climatespectator.com.au/commentary/qa-eu-carbon-tax-more-effective-ets> (Accessed August 20th, 2012).

<sup>46</sup> Cécile Bordier, Development of Renewable Energies: What Contribution From the Carbon Market?, *Climate Report* Issue 16, December 2008, [http://www.cdclimat.com/IMG/pdf/16\\_Etude\\_Climat\\_EN\\_Renewable\\_energy.pdf](http://www.cdclimat.com/IMG/pdf/16_Etude_Climat_EN_Renewable_energy.pdf) (Accessed August 20th, 2012), 21.

<sup>47</sup> A. Denny Ellerman and Barbara K. Buchner, "The European Union Emissions Trading Scheme: Origins, Allocation, and Early Results", *Review of Environmental Economics and Policy* 01:2007, 69-70, 72.

<sup>48</sup> European Commission, "Emissions Trading System (EU ETS)".

linking directive the EU ETS also has connections to other emissions trading systems.<sup>49</sup> The EU ETS was divided into three trading-periods or phases, of which phase I-II are in the current research referred to the “old ETS”<sup>50</sup> and were characterized by trial, error and a multitude of revisions.

**Phase I (January 2005-December 2007)** was rather openly expressed as a period of “learning by doing”.<sup>51</sup> Unfortunately it became evident already early on in this period, that an over-allocation of emission-allowances had swiftly led to a flooded allowance-market.<sup>52</sup> This in turn inevitably resulted in one of the, still present, most problematic trademarks of the EU ETS – unstable and/or plummeting price-levels. This has been due to, among other things, an inherent over-sensitivity to surrounding market-events such as the sharp price-curves for oil in 2008 and 2009.<sup>53</sup>

From the start, the allowance prices stayed stable in the realm of €10-€20/tonne. However, from 2006 this promising price-stability started to break down. The prices plummeted towards an all-time low from January 2007. Certainly, this caused significant harm to the objective of the participating companies decreasing CO<sub>2</sub> dependence and the objective of creating incentives for a shift to renewable energies, as allowances were both abundant and low-priced.<sup>54</sup> These continuous and recession-induced price-drops have paved way for the perception of the in-stability of the EU ETS.

When this first and unstable phase came to an end, the ETS expanded its scope to include three non EU-states, namely Liechtenstein, Norway and Iceland.

**Phase II (January 2008-December 2012)** coincided with the commitment-period of the Kyoto-protocol. Unfortunately, it also coincided with the first figurative tsunami-wave to hit Europe's financial markets in the economic crisis – this will be discussed further below as it seriously damaged the EU ETS. If the initial phase had been about learning as the scheme ran, the focus of the second phase shifted to counteracting the errors of the preceding phase. As it was

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<sup>49</sup> European Commission, “Linking the EU ETS to Other Emissions Trading Systems and Use of International Credits,” [http://ec.europa.eu/clima/policies/ets/linking/index\\_en.htm](http://ec.europa.eu/clima/policies/ets/linking/index_en.htm) (Accessed August 20th, 2012).

<sup>50</sup> Jon Birger Skjærseth and Jørgen Wetterstad, “The EU Emission Trading System Revised: (Directive 2009/29/EC),” in *The New Climate Policies of the European Union: International Legislation and Climate Diplomacy*, 65pp.

<sup>51</sup> Larry Parker, “Climate Change and the EU Emission Trading Scheme (ETS): Looking to 2020”, Congressional Research Service, January 26 2010, <http://fpc.state.gov/documents/organization/137269.pdf> (Accessed August 20th, 2012), 5.

<sup>52</sup> Max Koch, *Capitalism and Climate Change*, 167pp.

<sup>53</sup> Dieter Helm “Nuclear Power, Climate Change, and Energy Prices,” in *The Economics and Politics of Climate Change*, 257-258.

<sup>54</sup> Max Koch, *Capitalism and Climate Change*, 166, 169.

revised in 2008 and thereafter linked to the 20/20/20-program, the need for safeguarding against price-crashes, like those experienced during phase I, became acute. However, this clear objective was not reflected in the actual revisions made. Indeed, both the monitoring, verification and reporting-mechanisms were modified, but despite these and other quality-warranting measures the prices after late 2011 never rose over €10 – having been at a high of almost €30 in 2006.<sup>55</sup> Also, during phase II the scheme, as mentioned, extended its scope to include additional sectors of which aviation was the most notable and not least the most debated inclusion.<sup>56</sup>

**Phase III (January 1 2013-December 31 2020)** will be pre-revised by some rather significant changes in the framing.<sup>57</sup> The most notable overall change is possibly that it will be more centralized,<sup>58</sup> signaling the EU’s emerging need to take a tighter grip over especially the price-volatility, especially since it can – as will be shown – have a hampering impact on the incentives required for investments in renewables, most notably in the trading sectors.<sup>59</sup> The continuing price-drops (in April 2012 the price of carbon fell to a very worrying sub-€6/tonne)<sup>60</sup> has therefore caused an intense debate on whether the revisions of the EU ETS now merely are “quick fixes” and not the thorough reconstruction that is needed to take the system to the next level.<sup>61</sup> Policies need to be far better framed and task-oriented. The price-instability is in all essentiality a result from this not being the case up until today. Thus the market fragility is an inevitable result stemming from insufficient measures to enforce the foundation of the EU ETS with policy-stability. As market-analysts Point Carbon puts it: *“In fact, it is not really the market as such that has failed, but rather the policy setting the framework for the market.”*<sup>62</sup>

As late as June 2012 the Commission gave a statement which stressed the urgency in finding a suitable framework to support and to push for the development, or rather avoid growth-stagnation,

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<sup>55</sup> Bloomberg, “Spot Carbon Dioxide (CO<sub>2</sub>) Emissions EUA Price/Europe”, <http://www.bloomberg.com/quote/EUETSS1:IND/chart> (Accessed August 20th, 2012).

<sup>56</sup> BBC News, “Aviation plea to leaders over EU price on carbon,” March 12, 2012, <http://www.bbc.co.uk/news/business-17335616> (Accessed August 20th, 2012).

<sup>57</sup> European Commission, “Emissions Trading System (EU ETS)”.

<sup>58</sup> Jon Birger Skjærseth and Jørgen Wetterstad, “The EU Emission Trading System Revised: (Directive 2009/29/EC),” 70-71.

<sup>59</sup> Committee on Climate Change, “Impact of the recession on the carbon price and investments in the traded sector”, <http://www.theccc.org.uk/carbon-budgets/economics-a-impacts/recession> webpage (Accessed August 20th, 2012).

<sup>60</sup> Bloomberg, “Spot Carbon Dioxide (CO<sub>2</sub>) Emissions EUA Price/Europe”.

<sup>61</sup> Barbara Lewis, Reuters, July 25 2012, “Update 2-EU Commission Presents Plan to Boost Carbon Market,” <http://in.reuters.com/article/2012/07/25/eu-ets-idINL6E8IPCLZ20120725> (Accessed August 20th, 2012).

<sup>62</sup> Carina Heimdal et al, Point Carbon, “Carbon 2012: A Market Waiting For Godot”, [http://www.pointcarbon.com/polopoly\\_fs/1.1814671!Carbon%202012\\_FINAL.pdf](http://www.pointcarbon.com/polopoly_fs/1.1814671!Carbon%202012_FINAL.pdf) (Accessed August 20th, 2012), 2.

in renewable energy. Presumed to be a reflection of flaws in the previous problematic phases, the EU will now make some significant changes, of which introducing full auctioning for the power sector as well as free allocation (based on benchmarks) for industrial installations are among the most important. No less than 50% of the 2013 allowances will be auctioned. Although thought of as having a possible emission-reducing effect, auctioning has, by among others the think-tank Bruegel, been suggested to induce an economical challenge for the participating companies. This auctioning add-on could therefore be yet an illustration of the problem with the EU ETS in that its basic logic does not positively affect the performance of the participators.<sup>63</sup> Also the National Allocation Plans will be phased out, and instead a centralized EU-wide cap on emissions, which will be reduced annually by 1.74% of the average annual level of the Phase II cap, will be implemented.

There will also be palpable increase in pace, as the deliverance-target for this phase amounts to 2/3 of the EU's unilateral emissions reduction target (20% compared to 1990) by 2020. Harmonizing agreements will steer the rules for allocations of allowances. As late as July 25th 2012 The European Commission released their plans to strengthen the EU ETS by withholding carbon-allowances as a measure to counteract the problematic allowance-surplus. The Commission also called on the participating member states to fast-track the process of passing their allowances through before the end of the year.

It is not completely clean-cut why the EU ETS has yet neither met the full expectations of paving the way to the 20/20/20-targets, i.e. created incentives for the sectors of renewable energy, nor been the central tool for a transformation to a sustainable development and a shift to a green economic market. However one part of the explanation could be that the EU at the time the EU ETS was launched had a different objective compared to today. Whereas the focus today lies more firmly on a sustainable development, the EU ETS was originally designed for the, more or less sole, purpose of ensuring a reduction (of the production) of carbon emissions. Hence it is plausible that the ETS notwithstanding the revisions it become subjected to, cannot meet both such vastly different objectives with the efficiency needed.

The EU ETS is at a glance impressive and so are its merits for decreasing emissions of GHG as well as the expressed ambitions and scope for the planned 15-year duration. Undisputedly the EU ETS has also, to an unprecedented degree, managed to merge participants from such traditionally diverse fields as finance, industry and environmental NGOs as well as investors and lobby-organizations.

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<sup>63</sup> Jan Abrell, Anta Ndoye Faye, Georg Zachmann, "Assessing the Impact of the EU ETS Using Firm Level Data," July Bruegel Working Paper 2011:08, <http://www.bruegel.org/publications/publication-detail/publication/579-assessing-the-impact-of-the-eu-ets-using-firm-level-data/> (Accessed August 25th, 2012), 14.

As such the scheme has been an important policy-instrument, inferring that a new, broader and potentially more financially beneficiary approach to meeting climate-change indeed is possible. For that reason it has not been a complete fiasco. However, the challenge today for the architects of the EU ETS's backbone, i.e. the emission-trade, is to better target the core-tasks and to steer the scheme away of being merely a financial venture. However, as a financial venture the, in the EU ETS, inherent strained relationship between economic strength and environmental need becomes highly obvious. As I will continuously argue, the latter needs the former and vice versa. But for as long as the EU ETS is inadequately framed to ensure that it will not only generate economic but also innovative efficiency, this coveted and both-ways rewarding relationship is in jeopardy of failing its task. I have previously suggested that by opting for the cap and trade, instead of the carbon taxation-model which would have been more suitable to green growth than trade is,<sup>64</sup> neither market nor industrial-stakeholders have been pushed hard enough to move over to sustainable and decarbonized alternatives. This is problematic since private sector investments become even more crucial during times of economic downturns which limits public funding from the EU.<sup>65</sup> Combined, this has created a lag-effect in European technology-development which unfortunately could result in a situation where the 20/20/20-targets will not be reached in time. Moreover, this has created a hinder for the necessary transformation of the traditional European economy into an actual green economy which in turn would underpin a sustainable development across the continent. In short, environmental organizations argue that the EU must step up its pace to strengthen the renewable generation energy-sectors.<sup>66</sup>

### **Climate Policy: Putting the story in context**

With the implementation of the EU ETS the issue of climate-change spilled over to the realms of the financial free-market. However, the design of the scheme is very much a political product and has all the characteristics of the multi-level governance political compromise. This has repeatedly been made visible when climate-policies can, or are even intended to, be read and interpreted in more than one way to suit the multitude of vested stakeholders and interests, thus sometimes

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<sup>64</sup> David Ellison, "Should the EU Climate Policy Framework Be Reformed?," *Eastern Journal of European Studies* Volume 2, Issue 2, December 2011, 135.

<sup>65</sup> Reinhilde Veugelers, "Europe's Clean Technology Investment Challenge 2011," Bruegel Policy Contribution Issue 2011/06, <http://www.bruegel.org/publications/publication-detail/publication/561-europes-clean-technology-investment-challenge/> (Accessed August 20th, 2012), 2.

<sup>66</sup> Friends of the Earth Europe, "The EU Emissions Trading System: Failing to Deliver", [http://ec.europa.eu/clima/consultations/0005/registered/9825553393-31\\_friends\\_of\\_the\\_earth\\_europe\\_en.pdf](http://ec.europa.eu/clima/consultations/0005/registered/9825553393-31_friends_of_the_earth_europe_en.pdf) (Accessed August 25th, 2012), 12.

leaving the core-mission – combating climate-change – sidetracked.<sup>67</sup> However one can question the EU ETS also from a mere market-perspective. This is since it, despite being modeled on traditional markets, from 2006/2007 has been weak and unstable due to a lack of regulations.<sup>68</sup> In 2009 Metin Celebi and Frank Graves of the Brattle Group claimed that volatile CO<sub>2</sub>-prices would be inevitable in a cap-and-trade system, that the uncertainty in CO<sub>2</sub> policy and price levels would come to undermine companies' will to make long-term re-investments, and moreover that it will add to the cost of the policy itself.<sup>69</sup> The possible stability that a price-mechanism such as a carbon-tax could induce into the market is far better than that of a system such as the EU ETS. Moreover a carbon tax can, as suggested by think-tank Istituto Bruno Leoni, “help fostering the adoption of low carbon technologies”.<sup>70</sup>

The EU ETS has by its harshest critics in the environmentalist-community been denounced as yet another way to subsidize polluters.<sup>71</sup> Which slightly crudely could be compared with a carbon tax which in theory achieves the opposite. However even though this claim of subsidization is a slightly exaggerated remark, EU ETS price-levels have indeed on several occasions fallen far below the mark.

As stated by energy commissioner Günther Oettinger when attending the European Energy Forum in the beginning of 2012, the then current EU carbon price of just €6 a tonne is far too low to have any impact on the European energy-system, and this is an issue that needs to be addressed. One instrument for ensuring stability is information, and in this context information depends on robust built-in structures of monitoring, reporting and verification (MRV).<sup>72</sup> This requisite has not been met in full by the revisions, and this together with other problems such as the choice not to use auctions until now has led to the current low price-levels of carbon allowances.

As mentioned above, in the final stages of the first phase (2005-2007), the CO<sub>2</sub> price in the ETS fell drastically due to among other things overallocation. One of the most recent collapses of

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<sup>68</sup> Zhen-Hua Feng, Le-Le Zou, Yi-Ming Wei, “Carbon Price Volatility: Evidence From EU ETS,” *Applied Energy* 2011:88, 598.

<sup>69</sup> Metin Celebi and Frank Graves, The Brattle Group, “Volatile CO<sub>2</sub> Prices Discourage CCS Investment,” [http://www.hks.harvard.edu/hepg/Papers/2009/Celebi-Graves\\_CO2%20Long%20Volatility%20Paper\\_Final.pdf](http://www.hks.harvard.edu/hepg/Papers/2009/Celebi-Graves_CO2%20Long%20Volatility%20Paper_Final.pdf) (Accessed August 20th, 2012), 28.

<sup>70</sup> Stefano Clò and Emanuele Vendramin, “Is the ETS Still the Best Option – Why Opting for a Carbon Tax?” Istituto Bruno Leoni Special Report May 2012, [http://www.brunoleonimedia.it/public/Papers/IBL-Special\\_Report-ETS.pdf](http://www.brunoleonimedia.it/public/Papers/IBL-Special_Report-ETS.pdf) (Accessed August 25th, 2012), 2.

<sup>71</sup> Carbon Trade Watch, “Green is The Colour of Money: The EU ETS Failure As a Model For the ‘Green Economy’”, [http://www.carbontradewatch.org/downloads/publications/EU-ETS\\_Report-web.pdf](http://www.carbontradewatch.org/downloads/publications/EU-ETS_Report-web.pdf) (Accessed August 20th, 2012), 6.

<sup>72</sup> Nicholas Stern, *The Stern Review*, 382.

prices took place in april of 2012 as the prices again tumbled to a low level of €5.99/tonne.<sup>73</sup> Moreover, just before the time this thesis is presented, an analysis made by Deutsche Bank warns that the allowance (EUA) prices could be expected to drop below €5/tonne unless the EU comes to a harmonization over a set-aside proposal.<sup>74</sup> This alone should undoubtedly at least lead to question whether such a complicated system, with many compromises, as the EU ETS, really is suitably designed. On April 3 of 2012 the World Wildlife Foundation (WWF) stated that the EU must lower the ETS emission-ceiling if the targets of roadmap 2050 would continue to be reachable. Especially since over-allocation have shown to have a stagnant effect on initiatives for investments in renewable sectors, as many companies did not (have to) make any significant changes in their modes of production.<sup>75</sup> The WWF's statement was a response to the release of the CO<sub>2</sub> emissions data for 2011 by the European Commission, indicating a clear continuing emission allowances surplus.<sup>76</sup>

One, with the pricing interlinked, problem with the EU ETS is the 20% cap of overall GHG-emissions. In order to counteract the emission allowances surplus, agreeing on a 30% reduction-target (until 2020) would arguably be more effective than set-asides, as was argued by Swedish think-tank FORES in 2012.<sup>77</sup> An increase of the target to 30% could raise carbon-price levels up to, as estimated by not-for-profit organisation Climate Strategies, €55/ton.<sup>78</sup> Which, in turn, could boost the EU ETS's resilience to negative impact from any future economic crises and create a larger readiness for investments into renewable energy. Important, as the present Euro-zone crisis together with the low carbon-price has had a severe effect on the general investment-pace into renewable technologies.<sup>79</sup>

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<sup>73</sup> Barbara Lewis, Reuters Online, July 25 2012, "EU Commission to Announce Carbon Market Rescue Plan," <http://uk.reuters.com/article/2012/07/25/uk-eu-ets-idUKBRE8600BZ20120725> (Accessed August 20th, 2012).

<sup>74</sup> Sonja van Renssen, European Energy Review, April 12 2012, "The Fate of the EU Carbon Market Hangs in the Balance," <http://www.europeanenergyreview.eu/site/pagina.php?id=3642> (Accessed August 20th, 2012).

<sup>75</sup> María Isabel Blanco, Glória Rodrigues, "Can the Future EU ETS Support Wind Energy Investments?," *Energy Policy* 36 (2008), 1510.

<sup>76</sup> Anne Eckstein, Europolitics, April 3 2012, "WWF Warns Against Malfunctioning of ETS", <http://www.europolitics.info/sectorial-policies/wwf-warns-against-malfunctioning-of-ets-artb330728-15.html> (Accessed August 20th, 2012).

<sup>77</sup> Daniel Engström Stenson and Christofer Sköld, "Set Aside Allowances: An ETS Intervention Worth the Risk?," FORES Policy Paper 2012:1, [http://fores.se/assets/704/FORES\\_Set\\_Aside\\_policy\\_paper.pdf](http://fores.se/assets/704/FORES_Set_Aside_policy_paper.pdf) (Accessed August 20th, 2012), 10.

<sup>78</sup> Simone Cooper, Michael Grubb, Climate Strategies, "Revenue Dimensions of the EU ETS Phase III", <http://www.climatestrategies.org/research/our-reports/category/61/313.html> (Accessed August 20th, 2012), 16.

<sup>79</sup> Ernst & Young, "Renewable Energy Country Attractiveness Indices," May 2012, [http://www.ey.com/Publication/vwLUAssets/Renewable\\_energy\\_country\\_attractiveness\\_indices\\_-\\_Issue\\_33/\\$FILE/EY\\_RECAI\\_issue\\_33.pdf](http://www.ey.com/Publication/vwLUAssets/Renewable_energy_country_attractiveness_indices_-_Issue_33/$FILE/EY_RECAI_issue_33.pdf) (Accessed August 20th, 2012), 17.

Especially during the initial phases, the strong interlinkage between CO<sub>2</sub>- and electricity-prices<sup>80</sup> became unsettlingly evident as it had a clear effect on energy-competitiveness as a consequence of the national caps. This correlation soon resulted in increased energy-prices, especially for electricity, throughout the EU.<sup>81</sup> Such an event had been viewed as a potential concern within the European Commission, as carbon-leakage, i.e. if one country's emissions-policy leads to elevated costs, a second country with a less demanding emissions-policy could have a significant trading-advantage.

However this price-rise led not only to carbon-leakage, but moreover to that some power-generators shifted *back* to emissions-heavy coal-plants, both in and outside Europe to meet the demand.<sup>82</sup> Moreover, the possible reduction in production process-related energy-consumptions didn't occur, and a reduction was primarily noted in consumption-pattern of the end-consumer. Since the price of energy is arguably the most important variable for any industrial sector's production-process this instead led to a situation where states having enforced the tightest caps, i.e. the countries that had the most ambitious national emission-targets, became hit the hardest as these became competitively weaker compared to countries with lower set caps.<sup>83</sup> These developments have become a complex issue, endangering the whole purpose of the EU ETS. This since the Commission (as well as member-states such as the UK) readily presented proposals by which companies from sectors that became the most struck by the elevated electricity-prices received compensational subsidies, at the same time as they could receive an significant worth of free emissions-permits from the EU ETS – thus creating windfall profits.<sup>84</sup> Moreover, that these free permits were not strictly a temporary measure also contributed to a skewed competition and moreover to that reductions of emissions could fall below efficiency-levels.<sup>85</sup> That the ETS is

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<sup>80</sup> Yuan Tian et al, "The Impact of the Carbon Market on the Stock Price of Electricity Companies: Further Evidence from the European Context," [http://eneken.ieej.or.jp/3rd\\_IAEE\\_Asia/pdf/paper/013p.pdf](http://eneken.ieej.or.jp/3rd_IAEE_Asia/pdf/paper/013p.pdf) (Accessed August 20th, 2012), 1.

<sup>81</sup> International Energy Agency, "CO<sub>2</sub> Allowance and Electricity Price Interaction: Impact on Industry's Electricity Purchasing Strategies in Europe," IEA Information Paper, [http://www.iea.org/papers/2007/jr\\_price\\_interaction.pdf](http://www.iea.org/papers/2007/jr_price_interaction.pdf) (Accessed August 20th, 2012), 24.

<sup>82</sup> Theo Fens, Berend Olde Rikkert, "EU ETS: the First Steps: Pricing Uncertainty and Security of Supply Concerns," *Refocus* Volume 6, Issue 3, May–June 2005, 60.

<sup>83</sup> International Energy Agency, "Industrial Competitiveness Under the European Union Emissions Trading Scheme," IEA Information Paper, [http://194.245.121.74/fileadmin/gruppen/bdz/Themen/Umwelt/IEA-Studie\\_11-2004.pdf](http://194.245.121.74/fileadmin/gruppen/bdz/Themen/Umwelt/IEA-Studie_11-2004.pdf) (Accessed August 20th, 2012), 9.

<sup>84</sup> Jos Sijm, Karsten Neuhoff and Yihsu Chen, "CO<sub>2</sub> Cost Pass Through and Windfall Profits in the Power Sector," Working Paper May 2006, <http://www.eprg.group.cam.ac.uk/wp-content/uploads/2008/11/eprg0617.pdf> (Accessed August 20th, 2012).

<sup>85</sup> Nicholas Stern, *The Stern Review*, 382.

constructed in manner which is supposed to limit negative impacts from competitiveness makes these events all the more noteworthy.<sup>86</sup>

From 2013 the revisions of the EU ETS will, according to the European Commission, prevent the “perverse” effects, i.e. the passing out of free allocations to the most emitting installations, creating wind-fall profits, from reoccurring.<sup>87</sup>

Without doubt, and as will be further dealt with in the following segments, the traditional capitalistic economy thrives on profit and accumulation. As such, I suggest, it could theoretically only change behavior if all other options were depleted or viewed less profitable. But the rise in energy-prices did not deplete the options, it merely steered the financial and industrial stakeholders on a quest to search for them outside their traditional sphere. In short, EU ETS-companies risked import competition from non-EU ETS companies.<sup>88</sup>

Hence, the market did not become de-carbonized by an event such as this, it rather became “de-Europeanized”. From the start of phase II, states incorporated under the EU ETS were granted to import so called Kyoto credits, i.e. allowances from mainly the developing world in order to meet their own reduction-targets. This present three main problems. Firstly it, as stated, does not reward ambition for a country with high caps. This causes at the very least a trust-deficit between the countries as well as between the EU and the member-states. Secondly it continuously enables a carbonized international market, albeit one primarily situated outside of the EU, as noted by British think-tank Open Europe.<sup>89</sup> This also keeps parts of the developing world economically bound to fossil-fueled processes of production, hindering them from getting on par with the most developed countries. This since non-renewable energy systems still are far more affordable investments,<sup>90</sup> and in economic reality this will inevitably reflect especially in the priorities of developing countries priorities.

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<sup>86</sup> Marc Pallemarts, Martina Herodes and Camilla Adelle, “Does the EU Sustainable Development Strategy Contribute to Environmental Policy Integration?,” EPIGOV Paper No. 9, February 2007, [http://ecologic.eu/projekte/epigov/documents/EPIGOV\\_paper\\_9\\_pallemaerts\\_herodes\\_adelle.pdf](http://ecologic.eu/projekte/epigov/documents/EPIGOV_paper_9_pallemaerts_herodes_adelle.pdf) (Accessed August 20th, 2012), 13.

<sup>87</sup> European Commission, “Benchmarks for Free Allocation”, [http://ec.europa.eu/clima/policies/ets/benchmarking/index\\_en.htm](http://ec.europa.eu/clima/policies/ets/benchmarking/index_en.htm), updated August 9 2012 (Accessed August 20th, 2012).

<sup>88</sup> Everett B. Peterson and Joachim Schleich, “Economic and Environmental Effects of Border Tax Adjustments,” Working Paper October 2007, [http://www.isi.fraunhofer.de/isi-media/docs/e-x/working-papers-sustainability-and-innovation/BTA\\_Peterson\\_Schleich\\_final.pdf](http://www.isi.fraunhofer.de/isi-media/docs/e-x/working-papers-sustainability-and-innovation/BTA_Peterson_Schleich_final.pdf) (Accessed August 20th, 2012), 1.

<sup>89</sup> Open Europe, “Europe's Dirty Secret: Why the EU Emission Trading Scheme Isn't Working,” 2007, <http://www.openeurope.org.uk/Content/Documents/PDFs/etsp2.pdf> (Accessed August 20th, 2012), 4.

<sup>90</sup> William Moomaw, Francis Yamba et al, “Renewable Energy and Climate Change,” IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation, [http://srren.ipcc-wg3.de/report/IPCC\\_SRREN\\_Ch01.pdf](http://srren.ipcc-wg3.de/report/IPCC_SRREN_Ch01.pdf) (Accessed August 20th, 2012), 194.

And finally, and perhaps most worryingly for the present objective of the EU ETS, high energy prices don't necessarily stimulate renewable energy-sectors, neither within the EU nor in developing countries. Hence the problem with competitiveness related to the rise of energy-prices in its current context is to be viewed as financially, environmentally and socially unsound.

### **Climate-change, policies and the politics that surround them**

As mentioned, the EU and the ETS have created interfaces between different stakeholders such as policymakers and the representatives for the private sector. And this is to be expected since I would claim that the EU ETS in itself is the result of wide-scale compromise. In this context, understanding that no premier political decision regarding climate-change emerges or develops without considerations of the surrounding context, be that of political, financial or social nature is key. And this I claim is on most, yet not all, accounts the necessary way of forming policies. Most eco-politically invested institutions, be it on an EU or national-level, or in the shape of an organisation or network, form an interdependent and worldwide web. Anne Therese Gullberg in her work on lobbying places the climate-policy stakeholders in two categories, financial and industrial actors on one side and environmental organizations on the other.<sup>91</sup>

And since these *institutions* can hold contradicting preferences in regard to what policy-approach should be targeted at climate-change, these interdependencies do not seldom cause blocking-effects in reaching agreement and not least such aimed at targeting climate-change. This is perhaps most observable in situations where a multitude of stakeholders defend their interests and national stances in large-scale agreement-situations such as in the Kyoto-meeting of 1997 and the infamous COP-15 meeting. One could actually suggest that the most predictable effect from these types of platforms is that these almost inevitably spark a debate whether it is at all possible, or even worthwhile, to co-operate transnationally with the traditional types of agreements or if there instead is a need for new approaches.

These continued shortcomings in meeting any premier international climate-commitment is, I suggest, at least partially due to that the *effects* of climate-change could in actuality, and without being a climate-sceptic, be perceived as purely theoretical – or even alarmist abstractions. Not least, as mentioned above, since effects from climate-change indeed are more or less apparent depending on where in the world one is situated. Also, climate-change is not the effect of one single event, but

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<sup>91</sup> Anne Therese Gullberg, "Rational Lobbying and EU Climate Policy," *International Environmental Agreements* (2008) 8, 164.

from a complex structure of events, as noted by Gardiner in 2008,<sup>92</sup> which adds to the challenge of the response.

Hence, for one decision-maker the effects of climate-change is a minor, short term and primarily economic concern, whereas for another it is a long-term and deeply serious matter. For the latter, making ambitious efforts to meet these is a priority.<sup>93</sup> However, as will be, and has been, shown, this ambition is not necessarily rewarded in the context of the EU ETS, but rather the contrary.

To comprehend the emergence of the EU ETS one can take cue from Max Koch, who argued that in order to fully understand why a distinctly free-market-orientated path was chosen to shape the single most important climate-scheme, despite that the notion of trading-schemes had not so far made neither economical nor ecological theoretical sense one has to consider in what societal circumstances it emerged.<sup>94</sup> Moreover, a still relevant observation made by Anthony M. H. Clayton and Nicholas J. Radcliffe in 1996 is that it should be the societal status of policies, as well as the position (or context) it is situated in, that should determine which level of force any measure aiming at ensuring sustainability should be placed at.<sup>95</sup>

And the political setting at the time of the EU ETS creation was very much characterized by a wide-spread reluctance to demand that polluters pay, teamed with a parallel strong interest in creating a new market, based on a new commodity i.e. the CO<sub>2</sub>.<sup>96</sup> This was also illustrated by the strong EU-level reliance on voluntarism and a belief that a green metamorphosis of the capitalist market, and the industrial-sector it impels, both could and would emerge on its own accord. As Ellerman et al. put it in 2010, lead ETS-architect economist Jos Delbeke and his colleagues at the Commission, displayed “fierce determination that this time they would not fail” [to implement the EU ETS]. Previously Delbeke had led a similar group from the Commission proposing but failing to press through an implementation of a carbon energy tax.<sup>97</sup>

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<sup>92</sup> Stephen Gardiner, *A Perfect Moral Storm*, 27.

<sup>93</sup> Paul G Harris, “Climate Change in Environmental Foreign Policy: Science, Diplomacy, and Politics” in *Climate Change and Foreign Policy: Case Studies From East to West*, ed. Paul G. Harris (London: Routledge, 2009), 10.

<sup>94</sup> Max Koch, *Capitalism and Climate Change*, 174-175.

<sup>95</sup> Anthony M. H. Clayton and Nicholas J. Radcliffe, *Sustainability: A Systems Approach* (Boulder, Colorado, US: Westview Press, 1996), 135.

<sup>96</sup> Max Koch, *Capitalism and Climate Change*, 175.

<sup>97</sup> A. Denny Ellerman, Frank J. Convery and Christian de Perthuis, *Pricing Carbon: The European Union Emissions Trading Scheme* (Cambridge: Cambridge University Press, 2010), 26.

The 1997 Kyoto conference introduced free-market-oriented economical managing measures to meet climate-targets, especially as the U.S.A. had been generally favorable towards flexible systems and the concept of emission trading became the preferred, and especially most cost-effective, instrument to combat climate-change.<sup>98</sup> This despite that the EU at the time tried to prevent this.<sup>99</sup> However, at Kyoto, the EU had come to accept the relatively highest emission-reducing targets (8%),<sup>100</sup> and the 2000 Green Paper estimated the compliance-cost without a trading-system at approximately €9 billion,<sup>101</sup> compared to €6 billion with a trading-scheme covering all sectors.<sup>102</sup> These were two among other events which made the EU more inclined to create a carbon-market, as opposed to keeping with the then prevalent “tax-centric” approach.

The EU ETS was not the first attempt in history to employ a cap and trade-style scheme in order to reduce emissions. In the early 1990s the U.S.A. implemented a cap on SO<sub>2</sub> (sulfur dioxide) emissions which had a notable positive effect.<sup>103</sup> In this case however allocations were a strictly federal issue, which should be put in contrast to the de-centralized construction of the EU ETS.<sup>104</sup>

When the EU then came to show its ability to create this grand climate-operation with equally grand ambitions it also originated in the intense support-campaign for an emission-trade system that flourished parallel with the ex-ante-discussions.<sup>105</sup> The most vocal proponents mainly stemmed from the market and corporate-world but moreover, a significant number of the member-states were also favorable to this approach. Not least since taxation, traditionally, is viewed as a national, and national only, concern.

Also, in regard to its member-states, the EU also had to consider that by not rapidly implementing an EU-wide system, it faced a potential risk of a near-future situation in which every member-state were implementing individually different, and also possibly conflicting, climate-

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<sup>98</sup> Bert Bolin, *A History of The Science and Politics of Climate Change*, 152-153.

<sup>99</sup> A. Denny Ellerman et al., *Pricing Carbon*, 29.

<sup>100</sup> Sebastian Oberthür and Marc Pallemarts, eds., *The New Climate Policies of the European Union*, 13.

<sup>101</sup> European Commission, *Green Paper – Towards a European Strategy for the Security of Energy Supply (2000)*, [http://ec.europa.eu/energy/green-paper-energy-supply/doc/green\\_paper\\_energy\\_supply\\_en.pdf](http://ec.europa.eu/energy/green-paper-energy-supply/doc/green_paper_energy_supply_en.pdf) (Accessed August 20th, 2012).

<sup>102</sup> Nicholas Stern, *The Stern Review*, 371-372.

<sup>103</sup> William Chameides, Michael Oppenheimer, *Carbon Trading Over Taxes*, <http://www.princeton.edu/step/people/faculty/michael-oppenheimer/research/Chameides-and-Oppenheimer-2007.pdf> (Accessed August 20th, 2012).

<sup>104</sup> A Denny Ellerman et al., *Pricing Carbon*, 35.

<sup>105</sup> Dieter Helm, *EU Climate-Change Policy*, 224.

schemes.<sup>106</sup> The resourcefulness in finding new, and often nationally beneficial, instruments to combat climate-change is most likely unparalleled in any other political field. A fragmented European policy layout would have counteracted not just the fight against climate-change but also the, as mentioned above, top-prioritized development of the European integration.

That a cap-and trade-system is comparably fast to implement also weighed in on the decision. However, also other considerations paved the way for a trade-based approach and these are related to the relationship between the political realm and those who would be both directly affected by, as well as have a direct effect on, such a system, i.e industrial and financial market-stakeholders. These are of course very central actors in the above mentioned interdependent web.

As climate-change is popularly understood as mainly a political concern, one also needs to understand two of the central characteristics of the political being, which are the political needs to compromise and stabilize. I would suggest that this eagerness to not disrupt the placidity of the interdependent web was one reason why the EU committed to the idea of a free trade-based scheme such as the EU ETS rather than to the far more task-oriented, equally economically sound, but far less flexible carbon taxation-based system – also a system far less popular throughout the EU. One could say that not opting for the carbon-taxation model of climate-scheme is possibly one of the few things the EU's member-states have formed a consensus over. The market was the answer to the question of fighting climate change, which I suggest was, and is, very much in tune with the neo-liberal stance on this and most political and financial matters of the same scale. What could be argued as being one of this tradition's most prominent features and which is equally prominent in the design of the EU ETS is the underling reliance on voluntarism and what could be described as a mismatched optimistic attitude to such a severe problem as climate-change. As will be returned to, there is very much a need for a transformation of both economy and the industry in tandem, but I claim that this can not happen merely on the basis of good intention. Rather it could only happen if absolutely pushed to it by the type of regulatory policy-framework that the EU ETS lacks at present, since it was not viewed favorable by those mostly affected by it.

An EU-wide taxation would require an, for the reasons mentioned above, almost impossible unanimity among the member-states in order for it to function. Moreover what is mostly viewed as favorable to the scope of the EU ETS, namely that it involves a preeminent amount of actors and stakeholders on an equally preeminent multitude of levels and arenas could also become back-binding. The launch of the EU ETS scheme did not only mark a significant point in the brief history

of climate-programs, but it could also be suggested as representing a point of no return in how EU climate-policies was modeled. From having favored policy-based approaches with harmonized measures and policies as the quintessence, the EU had now taken a sharp turn to support and adopt the, in this setting unproven, concept of emission trade. A remarkable change in view, by many believed to be a direct political reflection of the strong market-focus already held by the U.S.A.<sup>107</sup>

This choice of path did not only further close the gap between the politics of climate-change and the free market, but one should also view it as signaling a clear step away from the route of taxation. This has left the issue of carbon taxation merely to be considered to be used for those sectors not included in the EU ETS, which are none of the key-sectors – defeating the whole point.

It is at this point also important to make it explicitly clear that an introduction of a carbon taxation-based climate-approach would not necessarily be any more beneficial and effective for the EU's climate-purposes than the EU ETS. It is possible that also a system based on carbon-tax would need to be subjected to continuous revisions in order for it to fully function.

However, on the other hand I would suggest that it is highly plausible that a cap-and trade-system such as the EU ETS is *not* the most auspicious to the present purposes of the EU climate-policy. As argued by most notably Lord Nicholas Stern, it is indeed possible that a carbon tax would have been far more suitable for bringing forth a green growth agenda than a cap and trade-scheme would be.

As carbon taxation in likeness with a cap and trade-scheme generates revenue it would be no less beneficial to the emergence of a de-carbonized economy than emission-trade – rather the contrary. This since it is a Pigovian tax, i.e. a tax that targets those sections of the market bearing negative externalities, or damaging effects to a third party, thus making it far less possible or profitable to rely on fossil fuel compared to today. As will be returned to, it is this inherent “fencing-off” effect that is central to the arguments for why carbon tax would force a traditional carbonized market and process of production to find other de-carbonized options in order to survive.

Moreover I would suggest that an introduction of a carbon tax would at the same time be both longterm environmentally beneficiary, generate a strong normative effect, as well as at the same time making combating climate-change economically profitable, especially for early adapters of de-carbonized ventures. That it also is within the 2nd generation industrial and technology-

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<sup>107</sup> Sonja Butzengeiger and Axel Michaelowa, “Greenhouse Gas Emissions Trading in the European Union – Background and Implementation of a ‘New’ Climate Policy Instrument,” *Intereconomics* May/June 2004, 116.

sectors one can notice a readiness for carbon taxation<sup>108</sup> or at the very least some kind of intervention<sup>109</sup> today, does at least suggest that the EU ETS has not been the thrust for sustainable developments it was supposed to have been. One possible reason for representatives from the renewable energy sectors to call for a introduction of taxation is since it, as will be discussed later, provides far more robust legislations than a cap and trade-system.

Needless to say, any major scheme the purpose of which is to combat and stabilize the vastly encompassing effects of climate-change, must, being economically sound aside, also be longterm, task-oriented and not least logical. Moreover it must warrant a sustainable development by firmly underpinning technological and innovative growth.

And this, I argue, must also continue to be the case even if the surrounding conditions change as dramatically as they did with the ongoing economic crisis. A crisis that not only still has severe consequences on the economical but also on the global political landscape. So, when the primary segments of the primary EU target, the 20/20/20-program, postulate a cost-efficient economic and sustainable growth, enabling an emergence of the cost-effective technologies which need to be able to give returns already in the year 2020, the basal prerequisites could therefore be expected to be in place. Also, as argued by among others Anna Sues the projections underpinning the 20/20/20-targets are overly optimistic – most likely unreachable. She lifts the biofuel target for the transport-section (The EU's target is a 10% share of road transport fuel should be of biofuel-type by the year 2020) as one example of such a flawed calculation as not even if all existing biofuel was used, which in itself is an impossibility at present, and incorporated in the most efficient manner into the transport system would the 10% target be met unless a new tax-system was enforced.<sup>110</sup>

So, building a climate-system on solid scientific as well as on economical considerations is not least crucial since implementing both economic and innovative efficiency into one structure has often been deemed challenging. Any suitable scheme must therefore be fitted with a rather non-bendable design. In short, just one possible and fenced off route should be possible for the parties

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<sup>108</sup> Alex Morales, Gelu Sulugiuc, Bloomberg, "Vestas Chief Calls For European Carbon Tax To Spur Renewables," April 18, 2012, <http://www.bloomberg.com/news/2012-04-18/vestas-chief-calls-for-european-carbon-tax-to-spur-renewables.html> (Accessed August 20th, 2012).

<sup>109</sup> CDC Climate Research, "The EU ETS Carbon Price: To Intervene Or Not To Intervene?", February 2012, [http://www.cdclimat.com/IMG/pdf/12-02\\_climate\\_brief\\_12\\_-\\_the\\_eu\\_ets\\_carbon\\_price\\_-\\_to\\_intervene\\_or\\_not\\_to\\_intervene.pdf](http://www.cdclimat.com/IMG/pdf/12-02_climate_brief_12_-_the_eu_ets_carbon_price_-_to_intervene_or_not_to_intervene.pdf) (Accessed August 20th, 2012), 3.

<sup>110</sup> Anna Sues Caula, Are European Bioenergy Targets Achievable? An Evaluation Based on Thermo-economic and Environmental Indicators, <http://alexandria.tue.nl/extra2/695295.pdf> (Accessed August 20th, 2012).

involved to follow. Any other construction will risk resulting in behavioral “leakage” by these and the whole foundation could become reliant on voluntarism and its frames a matter of interpretation.

Therefore I argue that to enable for any scheme regarding the environment to come in to effect tomorrow, it must be a realistic interpretation of the present state of things that guide the way. Not least when that way is intended to lead the EU to reaching such ambitious targets as those stated in the 20/20/20-program. Unfortunately, as I and others suggest, this is not yet the case today and the creation and insistence of making the EU ETS the fundament in European climate-politics is the embodiment of this. Instead the ECCP and the 20/20/20-program now rest on the flawed design of a scheme which in turn rests on the equally flawed use of economic and regulatory management measures.

### **Driving sustainable change – Why R&D-investments in renewables are key**

The emphasis on research and development in current debates, is, I would argue, not overstated. Already in 1993 David T. Coe and Elhanan Helpman wrote the, for the subject, seminal work *International R&D Spillovers* in which the key-message was that national investments in R&D not merely have a significant effect on the internal total productivity, but moreover do they have a spillover effect on other countries or partners with which the country has a relationship. In short investments, or rather the results of investments, are infectious and, though seemingly self-evident, this idea is highly central for any debate on the relationship between economic growth and renewable technologies and the national efforts that underpin these. Not least as these spillover-effects, especially when originating in countries such as the EU member-states, have a significant potential to positively impact the developing world’s growth.<sup>111</sup>

Going back, the EU was, not least compared to the USA, rather slow off the mark to fully grasp the significance of giving innovation-stimuli and ensuring the research and development of climate-adapted technologies.<sup>112</sup> Today and most notably in countries such as Germany, USA, Norway, Finland, Denmark and Sweden the total sector for renewables has become an, if not central, at least significant contributor to the countries’ GDP:s.<sup>113</sup> Also, Germany today has one of Europe's most prosperous clean technology sectors, much due to national market measures.

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<sup>111</sup> David T. Coe and Elhanan Helpman, *International R&D Spillovers*, NBER Working Paper No. w4444, November 1995, <http://ssrn.com/abstract=227321> (Accessed August 25th, 2012).

<sup>112</sup> Dieter Helm, *EU Climate Change Policy*, 225.

<sup>113</sup> Bellona Environmental CCS Team, *Our Future is Carbon Negative: a CCR Roadmap for Romania*, [http://bellona.no/filearchive/fil\\_Romania\\_final2.pdf](http://bellona.no/filearchive/fil_Romania_final2.pdf) (Accessed August 25th, 2012).

Both before and in the midst of the financial crisis Germany (paradoxically both EU's largest emitter and the world's seventh largest investor in national renewables), strengthened its role as the innovational leader of the EU by reinforcing the pace of investments in national R&D-projects. This became significantly rewarding to the country's 2010 growth of 3.6% – a figure that should be compared to the 1.87% growth rate for the EU in general at the same period.<sup>114</sup> Also in Germany's National Reform Programme of 2011 the country re-affirms its target of reaching as high as a 40% cut in GHG-emissions by the year 2020 – twice the target set forth by the EU.<sup>115</sup> An ambition made plausible because of the strong national efforts to create the necessary prerequisites mentioned.

Today R&D expenditures in Germany represent 2.82% of GDP (for the EU the number is 2%) and that is only outperformed by the nordic countries Finland (3.87%), Sweden (3.42%) and Denmark (3.06%).<sup>116</sup> Also the, relative to national economic restraints, ambitious efforts made by new EU-members in central and east Europe have been nothing short of praise-worthy. Especially Romania has, through its Carbon Capture and Storage (CCS) roadmap, dramatically cut emissions, especially by shaping electricity prices as a function of the costs of CCS. Thus, in reference to green innovation, it is likely the individual member-states together with industrial private market-actors that have had, and will have, a greater impact on a shift to a non-fossil-based industry and economy than the EU.

Previously in this thesis the 1987 Brundtland rapport has been mentioned. Marking the 20-years-anniversary several researchers followed up on what had happened during these two decades regarding worldwide sustainable development. And one general conclusion made was that for sustainability to emerge, strong leadership and strong governance mechanisms were still needed.<sup>117</sup>

And one should indeed consider that strong sustainable development in tandem with a transformation of the current economical system into a green economical system will be a cornerstone for a prosperous and stable adjustment and adaptation to climate-change. Or if viewed from another perspective, any actions on climate change neither could, nor should, limit the

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<sup>114</sup> European Commission, Germany National Reform Programme 2011, [http://ec.europa.eu/europe2020/pdf/nrp/nrp\\_germany\\_en.pdf](http://ec.europa.eu/europe2020/pdf/nrp/nrp_germany_en.pdf) (Accessed August 20th, 2012), 3.

<sup>115</sup> Ibid, 6.

<sup>116</sup> Robert Koch, Germany: R&D Expenditures Reached Nearly €70 Billion in 2010, December 6 2011, <http://www.proinno-europe.eu/inno-grips-ii/newsroom/germany-rd-expenditures-reached-nearly-70-billion-2010> (Accessed August 20th, 2012).

<sup>117</sup> Reinhard Steurer and Andre Martinuzzi eds., "Sustainable Development Strategies in Europe: Taking Stock 20 Years After the Brundtland Report," in *European Environment: The Journal of European Environmental Policy* Volume 17, 2007: Issue 3 May/June, <http://www.sd-network.eu/pdf/Teaser%20EET%20Spec%20Issue%20SDS.pdf> (Accessed August 20th, 2012).

endeavor of economical growth in any part of the world.<sup>118</sup> As Louise van Schaik points out: one key-factor for the future successes of any of the EU's climate-strategies will be the ability "to offer resources for adaption and technology".<sup>119</sup> Thus, combating climate-change does, more often than not, require economic managing measures and longterm plans of investments and sharing of risks. Therefore it is also likely that in order for an actual sustainable development to emerge, economic and environmental challenges must be viewed and handled together.<sup>120</sup> And not as in the case of the EU ETS, which relies on the markets own will to take the step and become de-carbonized.

As has been discussed, some European countries (including non-member-states) have on their own initiative created precisely the robust frameworks that are crucial to develop an industry of renewable technology. These national investments in R&D were also, like in the case of Germany, very much taking place previous to the implementation of the EU ETS.<sup>121</sup> Hence, even though EU-policy has been, and still remains, important, national governments' own efforts to stimulate domestic entryways into sustainability are becoming more observable. Therefore it is arguable that the EU ETS member-states have been far less (positively) affected by the EU ETS regarding domestic levels of R&D than what was expected. Paraphrasing Richard Youngman, managing director of the European branch of the Cleantech Group who commentated the Copenhagen Summit, it might just be stimuli-packages, rather than (traditional) large-scale policies, that have the largest effect on the future development of green renewable technology in Europe and worldwide.<sup>122</sup>

Sustainable development, or even just sustainability in it self, is an intangible target. But one that can cause highly tangible effects for most parts of society. However, as mentioned above, this noble goal needs frameworks and fencing off. And I argue that neither of these criteria are sufficiently built into the EU ETS. This is a source of frustration as trade-permits on a global scale indeed has the theoretical potential of placing not least developing economies such as China and

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<sup>118</sup> Nicholas Stern, *The Stern Review*, XVII.

<sup>119</sup> Louise Van Schaik, "The Sustainability of the EU's Model for Climate Diplomacy," in *The New Climate Policies of the European Union*, 251.

<sup>120</sup> Anthony M. H. Clayton and Nicholas J. Radcliffe, *Sustainability: A Systems Approach*, 106.

<sup>121</sup> Volker H. Hoffmann, "EU ETS and Investment Decisions: The Case of the German Electricity Industry", in *European Management Journal* Vol. 25, No. 6, 464-474.

<sup>122</sup> Taylor Wessing, *The Future Of Cleantech in Europe*, Special Report 2009, [http://www.taylorwessing.com/fileadmin/files/docs/CLEANTECH\\_FINAL.pdf](http://www.taylorwessing.com/fileadmin/files/docs/CLEANTECH_FINAL.pdf) (Accessed August 20th, 2012), 5.

India firmly on the route to a sustainable development.<sup>123</sup><sup>124</sup> But this can not be safely said to be the case for Europe itself, where there is a real danger of an emerging culture of result-deficit within the EU's climate-strategies. Moreover, it has become highly plausible that in the future it will be the private sector that should supersede the policy-maker as a key player in combating climate-change as it is there-in the seed for both the development and deployment of new technologies can grow.<sup>125</sup>

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<sup>123</sup> Max Koch, *Capitalism and Climate Change*, 49.

<sup>124</sup> Dieter Helm, *EU Climate-change Policy*, 229.

<sup>125</sup> Nicholas Stern, *The Stern Review*, 409.

## **Concluding arguments and end-discussion**

This study has problematized in what context, and for what reason, the EU ETS was implemented. Moreover the impact this has had, and could have, for the possibility of a new economic and technological paradigm has been suggested. It is the conclusion of this study that with the present construction of the EU ETS, a shift to a paradigm in which de-carbonized industrial and economic growth can coexist, is unlikely to take place. This primarily since the volatile allowance-process hasn't made it financially necessary for the market-stakeholders to direct their attention to investments in renewable energy sectors. Also, as been argued, the difference between targeting short-term changes, i.e. cuts of emissions, and long-term changes, i.e. a paradigm-shift, is significant and for the former objective the EU ETS has been functional, but not equally as much for the latter – since it was not meant to be when it was designed.

On account of the issues addressed in this thesis, I have suggested that by favoring a cap and trade rather than a tax-based approach to combatting climate-change the EU has seriously hampered, or even ruled out, a near future transformation of the economy to becoming de-carbonized and consequently failed in creating a stable growth for the renewable energy-sectors.

Therefore this thesis comes to the conclusion that the EU in order to get on the path of sustainability should revisit alternative climate-systems to find a possible replacement for the EU ETS and phase out the latter – preferable before 2020. Though unlikely to occur so soon, I suggest it would be preferable since the emission-trade as concept and system could be argued to be unable to create the necessary long-term shifts in financial and industrial behavior; a change to the very core in the mechanisms driving society forward.

By implementing the EU ETS the problem of finding a path to sustainability has merely been pushed forward. Even though, as mentioned in the first chapter, policy-instruments play a key role in the combat against climate-change – especially when these target support for innovations via long-term investments and streamline technical regulation-frameworks – these policy-instruments have not yet to a sufficient degree been implemented in the EU ETS. Instead the private sectors in some key-countries have, as a result of national initiatives, driven an internal renewable growth. Thus I claim that the scenario feared by the EU before 2005 where national climate-strategies would form outside the EU's grasp could indeed happen. However slightly ironically this would then happen due to the existence of the EU ETS, rather than the absence.

I have also argued that being market-friendly as the EU ETS could be said to be is by far not the same thing as stimulating the emergence of a growth in the renewable sector which in turn is a requirement for an emergence of a sustainable development. And as have been shown the system

has also proven to be a rather flawed market-place, leading to wind-fall profits also for the less deserving, price-crashes, a lack of reinvestments into new energy sources and simultaneously to keeping traditional carbonized modes of production processes an option.

The future of the EU ETS is likely to be characterized by more revisions also during the final phase. Today it is unlikely that a phasing out would occur before 2020 but it is possible that the EU ETS, beyond the revisions, will undergo also other enforcing add-ons. The suggestion that an earlier termination is extremely unlikely, is based on three assumptions: firstly the multitude of stakeholders, mentioned earlier, that are already invested in, or supported by the scheme and secondly that replacing the EU ETS before 2020 could cause damage to the perception of the EU as the natural leader in the fight against climate-change. Thirdly, it is unlikely also since the positive results of cutting GHG-emissions in the eyes of the public still overshadow the systems inability to push for thorough change of the renewable energy-sector.

I will however claim that the risk inherent in continuous tweaking for another eight years is in short that the EU, and not least the climate, would have lost precious time that could, if spent properly, have ensured a consistent transition towards a sustainable development. Again, the implementation of the EU ETS has pushed this acute issue ahead, but it has not addressed it.

Classic economic theory states that the prerequisite for improvements is comprehending the “why” in why an economic goal is not accomplished. But, I would argue that understanding is meaningless if not converted into hands-on amendments. A system, any system, should only be subjected to so many revisions before the alternatives must be considered. And the foundations of the EU ETS have never in actuality been questioned to that extent from within the EU itself – which indeed is rather striking. However it is in the view of this study unlikely that these would have sufficient changing-power for the system to meet its purpose of creating a shift in the economic and industrial modes of conduct of today. Arguably it will rather be national and sector-led policies, regulations and efforts that will be most interesting in the near future. No matter what, one could undoubtedly say that the days for business as usual are soon over.

## Looking back in order to look ahead: An epilogue

This study has looked at the EU ETS by analyzing the surrounding situation in which it emerged, and its evolution up until present. However as this realm of research on the EU ETS is not, as been mentioned, fully explored a final discussion-section looking back at alternative routes and forward at possible scenarios could be of value.

It has been concluded that in regard to the renewable developments around Europe, the private sector has been at least equally important. The case of Germany backs the suggestion that it is the stable national-level investments and attentiveness, rather than EU-level policy, which create precisely those long-term sustainable developments needed in sectors of de-carbonized industry and technology. From a global perspective, particularly solar- and wind energy industries are already intertwined with traditional patterns of economic accumulation. Hence, as noted by Newell and Paterson, “Whether we like it or not (...) responses to climate change will be developed in a context of global capitalism”.<sup>126</sup>

The negative effects of present day capitalism, and mode of production processes, have indeed had a negative impact on the climate. However, the parallel emergence of capitalism and industrial growth also expanded the limits of our technological development, at the same time giving us the tools to face such challenges. A second industrial revolution would continue to widen our technological limits but would be far less damaging to the environment.

Unhesitatingly, a future functional green economy would neither necessarily infer a better climate, a second de-carbonized industrial revolution nor a sustainable development within the EU. However the *absence* of a green economy will, I argue, most definitely make all of these scenarios unlikely to occur.

The in some senses toothless and misguided framing of the EU ETS has caused additional damage to the already unfavorable perception of a green capitalist economy despite that it was precisely as an instrument that could met both economical and ecological challenges it was constructed. This could cause unjust, though understandable, skepticism toward the notion of a real green economy. The EU ETS is a short-deal financial market while green economy is a completely transformed financial conduct.

For any climate-policy or system to be effective, it must be both societally, environmentally and economically sound. In today’s globalized capitalist economy this means that also the fight against climate-change must be applicable on, albeit not orchestrated by, the free-market. The leadership must be derived from outside the market, be task-oriented and the carbonized modes of

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<sup>126</sup> Peter Newell and Matthew Paterson, *Climate Capitalism*.

industrial and market-conduct must be fenced off and made non-profitable, by lifting the renewable sector. And this differs vastly from how the EU ETS operates at present. Today it is still very much more cost-effective to rely on traditional energy-sources.

One can, and should, intelligently question whether green capitalism is in the business of combating climate change and ensuring a sustainable development or if it is simply profit-driven. Or even, if capitalism as we know it at all can become fossil-free. Indeed, as discussed earlier, the capitalistic economy-system has been a major contributor to the emergence of climate-change. Not least since it has not merely created modes of production that are mostly fossil-driven but also since it has dramatically changed modes of consumption to mass-level after World War II. But the argument I make here is that Einstein's claim – that a problem can not be resolved by the mind-set that created it – is not necessarily true in this case.

If the capitalist economy was an animal it would be predatory both in behavior and in mind. Thus, also a green mode of capitalism, and the green entrepreneurs that would lead it, would very much be in the need for profit. However, I suggest that this profit could be derived also from non-fossil sources. Hence green capitalism could, if orchestrated properly, be highly beneficial to the task of combating climate-change. A suggestion in stark contrast to the above mentioned deeply rooted perception of the impossible relation between capitalism and environmental resources. However, I suggest that this limited, and limiting, understanding of capitalism's scope of use originates from the past to present capitalistic behavior and since green economy, as well as climate-change, are relatively new concepts and yet to be fully realized, it should be viewed in the current and future context.

The skepticism against capitalism as a driving-force in the combat against climate-change mostly stems from what I would argue is a fundamental misconception. It states that capitalism, as understood in the prevailing meaning of the concept, always has been fossil-fueled. And as such capitalism will either continue to feed on fossil fuels, or it will itself deplete as the fossil resources deplete. However, this is only half true. By all means one could agree that the capitalistic economy traditionally and consistently indeed has been fossil-fueled. However this is since the whole western *society* from where it sprung, has been fossil-fueled after the first industrial revolution. Today however, there is a prevalent consensus that our future development neither will, nor could, be dependent on fossil-fuel.

In its most *laissez-faire* form capitalism could be Darwinistic in behavior, as it could be said to be predatory in regard to its characteristics of beating down competition i.e. other weaker market-actors and exploiting resources for its own survival. Indeed, capitalist economy has a need to *feed*,

and the Darwinian parable is not without truth. However, accepting that this is the case, one could also view the Darwinian mode of conduct as, but again only if framed properly, a potentially highly beneficial trait for the fight against climate-change. Staying within the realms of biology, using a parable of a predator such as a hyena on the savannah could help in illustrating this.

This particular hyena has throughout its life mostly fed on grazing zebras, since these have been plentiful in the hyena's ambient environment. Our hyena is therefore a carnivore in *behavior* as well as a predator in *mind*. Though in case the zebra-stock is dramatically reduced the hyena will, for the sheer darwinian reasons of survival, start to feed on grass. The hyena then becomes a herbivore in behavior but it remains a predator in mind.

It will continuously need to feed on *something*, and it will still exploit resources. But it will not feed on zebras, since they are no longer an option. Likewise, the capitalistic mind will remain the one of the predator. However I would, with a few important saving clauses, suggest that in the same way the hyena changed its conduct, so could capitalist economy become green in the sense that it will feed on other non-fossil-based sources.

Although not on a comparable scale to the situation at hand, capitalism has indeed undergone transformations before, but it can't do so again on its own. Hence, I argue, the capitalist economy *can* become a green driving-force behind the sustainability-agenda but only, also in likenesses with our hyena, if it becomes steered or even pressed into it or if the alternative becomes more rewarding. In short there must be no escape-routes.

Going back to the hyena-parable, the hyena never changed its predatory mind, and it would only change its behavior when absolutely *forced* to do so for reasons of survival. In the current design of the EU-climate schemes, traditional capitalism does not *have* to change. At least not as rapidly as is necessary since there are still many many "zebras" grazing the global savannah. A carbon tax-based scheme could, at least theoretically, have a "self-reducing" effect on the zebras – i.e. the fossil fuel market and production-segment.

And therefore I will argue that only if broken down and, by fierce EU-level economic managing measures such as the carbon tax, re-built can capitalist economy be beneficiary to the fight against climate-change today. There are massive potential profits to be derived from the 2nd generation energy-sector, just as there was with the first. And if that change in "diet" indeed would be achieved, it is likely that capitalist economy could be very environmentally beneficiary. At least behaviorally.

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