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Sustainable Development, Climate Politics and EU-Leadership: A Historical-Comparative Analysis

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Abstract:
The pressure on EU countries to abandon a leadership role on sustainable development and climate change politics is growing. However, no other source of global leadership is emerging that could fill the gap. The present analysis examines the relative role of four political drivers that influence policy and governance responses to global environmental issues. The conclusion is that over the last two decades, international negotiations, civil society activism, and private sector initiatives on their own have not been decisive factors shaping outcomes while political opportunity structures in key countries explain broad policy trajectories that favor or undermine sustainable development policies. EU countries - where Green Parties at times have been able to critically shape policy direction - are the only actors that have developed the long-term socio-political and economic foundation for a coherent approach to sustainable development. Such a structural foundation on the other hand is missing in the United States and in key emerging economies. This means the EU must continue to lead because without it there will be no coherent political leadership on global environmental issues.

Key words: Sustainable development, climate change, global environmentalism, EU leadership, U.S. climate politics

1. Introduction

An overwhelming body of scientific research demonstrates that human development is affecting rapid global environmental changes with potentially far-reaching consequences (UNEP, 2012; IPCC, 2013/2014; IUCN, 2015). Global warming is now recognized by political leaders around the world as a towering long-term challenge for humankind. Large-scale conversion and degradation of ecosystems not only impoverishes the natural world but is starting to undermine the very basis on which human existence depends. Continuing threats to the ozone layer, global chemical pollution, and air, water and soil pollution problems in emerging economies are further concerns with long-term consequences. The United Nations medium projection sees the world population increase from today's 7.3 billion to 9.7 billion by 2050 and 11.2 billion by 2100 (UNPOP, 2015). The question is whether humankind can control and manage global environmental change in ways that will allow the world to continue on its recent path to prosperity and avoid potentially catastrophic global warming (World Bank, 2014)?

This article assesses four broad socio-political drivers that have shaped the world's response to global environmental challenges: international negotiations, civil society activism, market forces (and private sector initiatives), and national policy. The

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impact of the first three transnational drivers is examined first. The fourth driver - domestic politics -is then examined based on a comparison of Germany with the United States, two developed countries of central economic importance but with distinctly different environmental policy trajectories. The European Union with Germany as its largest member country will also be briefly considered. The EU – the largest trading block and only supranational entity in the world - has been the leading force behind binding international environmental policy targets.

Developing countries are only briefly discussed. Although growing rapidly, their contribution to global environmental problems historically has been small and existing international environmental agreements recognize this fact. While emerging economies will be central to a global sustainability transition, there is no sign that any of them is ready to assume a leadership role that they firmly maintain must be played by the developed world and that could undermine short-term economic development goals (BRICS, 2015; Hurrell and Sengupta, 2012; Clémençon, 2010). The Paris climate conference (COP21) that took place in December 2015 reinforced this fact. Although the adopted Paris Agreement was celebrated as a historic achievement it contains no legally binding commitments for either developed or developing countries and is based entirely on voluntary country pledges (Clémençon, 2016).

The following discussion synthesizes research from different disciplines. The academic literature, however, does not provide a coherent theoretical framework or empirical understanding on how the four intertwined levels of analysis examined here interact, and how their relative importance should be assessed.[1] A better understanding of the relative contributions of each driver however is critical as trust in one or the other driver as dominant will bias policy decisions in a particular direction. Much faith over the last decades has been put into the power of markets as much as in a growing awareness of the general public, which is seen in many quarters as lessening the need for government regulation and leadership.

Two basic understandings provide the backdrop for the subsequent discussion. The world is currently not doing enough to respond to potentially catastrophic environmental challenges and - related to this - despite significant policy initiatives and technological innovation, the world is still far from moving away from business-as-usual. For example, although investments into renewable technologies have been growing until last year, in total volume they continue to be far outstripped by investments into traditional fossil fuel exploration (Frankfurt School-UNEP Centre/BNEF, 2014). Similarly, although the installation of renewable energy technologies continues to grow, renewables still provide only a tiny fraction of the worlds' primary energy supply and the use of fossil fuels continues to grow at almost the same rate. In 2013, the contribution to total global final energy consumption of wind, solar, biomass and geothermal was still only 1.3 % (REN21, 2015, p. 18).

The Paris Climate Agreement adopted in December 2015 sets out to hold the increase in the global average temperature to well below 2° C above pre-industrial levels and even aspires to limit the temperature increase to 1.5° C. But if all currently pledged

[1] For a similar analytical framework and a critique of a focus on regime design and effectiveness see Bernstein and Cashore, 2012).

"intended nationally determined contributions" (INDCs) are fully implemented the world would still be on track to a temperature rise of around 3° C above pre-industrial times and 4° C if no further measures were to be adopted (UNEP, 2015). 2015 began with the warmest winter on record on a global scale, and ended as the hottest year since records began, after 2014 had already broken new temperature records, with average global temperatures reaching 1° C above pre-industrial levels for the first time ("A Milestone Year?" 2016).

Further hampering a rapid transition to a new energy and conservation future is a lack of consensus on how exactly sustainable development should be defined along different dimensions, such as how equity considerations across time and space should be recognized and how ethical considerations of an intrinsic value of the natural world and species richness should be factored in (for an overview of this debate see Clémençon, 2012). Further difficulties arise from assuming various degrees of substitutability between the worlds' natural and environmental resources and human knowledge, technology, and infrastructure (Stern, 2006; Ackerman, 2010).

2. What To Expect From International Negotiations and Agreements

In 1992, the UN Conference for Environment and Development (Rio Conference) recognized human-induced global environmental change as a critical challenge to sustained economic development, and many international meetings since have added urgency to this understanding. International negotiations attempt to solve collective action problems related to global public goods (O'Neill, 2009; Miles et al. 2010; Mitchell, 2010). But binding agreements that break truly new ground rarely result from international negotiations alone and must be seen more as codification of domestic leadership in key countries. Although international environmental negotiations have produced many incremental steps forward, comprehensive global agreements on most of today's critical issues are few, with the Montreal Protocol to phase out ozone-depleting substances the most important exception (Benedick, 1991). U.S. leadership or lack thereof has been a critical component of relative agreement success or failure.

Climate change negotiations garner the most public attention. In 1992, countries negotiated the UN Framework Convention on Climate Change and in 1997 agreed to the Kyoto Protocol that set binding emissions control commitments to be reached by 2012 (Legget, 2001; Clémençon, 2010). Although the Protocol has ultimately had limited impact, its normative reach has been significant. It has not only provided the EU with the foundation for its mandatory emissions trading scheme but encouraged sub-national climate policies around the world (Betsill and Bulkeley, 2004). But a much anticipated climate conference held in Copenhagen in 2009 failed to deliver a globally comprehensive agreement. The Paris Climate Agreement adopted in December 2015 managed to define broad global objectives but does not contain legally binding emissions reduction or financial support commitments (Clémençon, 2016).

International negotiations related to the conservation of biodiversity have lingered in political obscurity for more than two decades. The adoption – in 2010 - of the Nagoya Protocol to the 1992 Convention on Biodiversity represents some progress as it set targets for quantifiable and measureable conservation of biodiversity and

ecosystems (Morgera and Tsioumani, 2011). But the loss of biodiversity is progressing unabated, with not only the number of endangered species increasing, but the population numbers of many endangered species continuing to decline despite an increasing number of internationally funded governmental and non-governmental conservation initiatives (Ceballos, et al. 2015; IUCN, 2015; UNEP, 2012).

In September 2015, the United Nations General Assembly adopted 17 Sustainable Development Goals (SDG) to succeed the Millennium Development Goals that had been adopted in 2000. The SDGs are an important step as a new global benchmark for sustainability but rather vague and with no immediate legal implications for countries. They furthermore are much more about economic development and poverty alleviation than about preserving the global environment (UNGA, 2015).

International environmental negotiations furthermore are sidelined by short-term economic priorities and related free trade concerns. The Transatlantic Trade and Investment Partnership (TTIP) being negotiated between the EU and the US, the Trans-Pacific Partnership Trade Agreement (TPP) between the US and Asia, and similar bilateral trade agreements follow the familiar economic liberalization playbook, with few provisions that advance global environmental agreements or even just protect countries' freedom to maintain or choose more ambitious consumer protection and environmental policies (Cardoso et al., 2013). With respect to the TTIP, many see the application of the EU's 2006 precautionary principle at stake as well as the ability to maintain locally adapted domestic support systems for renewable energy ("EU dropped pesticide laws,"2015; Tews, 2015).

Multilateral cooperation has produced many benefits by developing shared understanding of the problems, promoting capacity building in developing countries and by funding important and innovative project and program work around the world targeting global environmental problems (GEF, 2013; Clémençon, 2006). As such it is laying important and necessary ground work but it cannot make up for a lack of domestic action in key countries.

3. Environmentalism, Global Civil Society and Public Opinion

The environmental movement has been celebrated as the most enduring social phenomenon of the last century and the number of global civil society organizations has risen dramatically over the last two decades (Dunlap and Mertig, 1992; Radkau, 2011; Glasius et al., 2002; Rootes, 1999). Many hope that an increasingly enlightened global citizenry that demands green products and services will create the momentum for reshaping our consumer societies (Wapner, 1996; Falkner, 2012; 350.org). But the extent to which environmental movement ideas – particularly on global environmental issues - have spilled over into the political mainstream critically depends on existing political opportunity structures within domestic settings, as discussed below and in more detailed in the next section.

The environmental movement has followed different trajectories in the United States and European countries. U.S. environmentalism has its roots in the nature and landscape conservation battles of the late 19th century (Dunlap and Mertig, 1992; Phaelke, 1989). It gained its mainstream character in the 1960s, successfully fighting local

pollution and many large-scale development projects, using an issue-focused, grass-roots approach. In the 1990s, environmental organizations eventually came to embrace environmental justice concerns, but beyond this, have struggled to develop a coherent social and political agenda that could be seen as challenging the American way of life. On climate change in particular, US environmentalism has not succeeded to change mainstream political trajectories (Anderson, 2010; Shellenberger and Nordhaus, 2004; Oreskes and Conway, 2010).

The European strand of environmentalism rose predominantly out of the opposition to nuclear power – military and civilian - and a decade later coalesced around the fight against air pollution and acid rain spewing from Europe's coal-fueled industrial centers (Bürklin, 1984; Kitschelt, 1986). A critical difference to the U.S. was that the political opportunity structure in most European countries - representative parliamentary systems –did allow Green parties to emerge and become part of the formal political process (Mair, 1990; Carter, 2007). Green parties have been influential in many European countries over the last two decades, notably in Austria, Denmark, Finland, France, Sweden, Switzerland, and the United Kingdom, and perhaps with most far-reaching political consequences in Germany. Green parties represent an institutionalized mainstream environmental movement that has reached its ultimate functional goal, to be directly represented in the political process.

As far as a global environmental movement exists it is at a high level of normative abstraction dominated by a Northern style nature conservationist agenda led by international NGOs like Greenpeace, WWF and Friends of the Earth (Wapner, 1996; Chapin, 2004). These organizations largely work within the existing neo-liberal free-market ideology, often drawing on government support (Reimann, 2006). They have made few attempts or not been able to influence domestic politics related to production and consumption patterns. The Internet-based climate justice group 350.org has emerged as a mobilizing force among college students drawing on support from various groups engaged in anti-coal, anti-pipeline, anti-fracking and fossil fuel divestment campaigns (2015). But so far it has not developed a coherent political influence able to bridge existing political polarization, particularly in the United States (Leiserowitz et al., 2013). Wide differences exist furthermore between Northern and Southern NGOs on how sustainability should be defined with respect to economic and environmental priorities, including how indigenous peoples' rights and traditional knowledge can be protected in this context (Doherty, 2006).

The environmental movement continues to be influential on local and national issues. But it has not been able to tip public opinion on global environmental problems which continue to rank at the bottom of what the public considers the biggest threats in today's world (PEW, 2014). The last three decades show that translation of latent environmentalism into a broad based policy platform requires conducive political opportunity structures. But even in countries where this has allowed green political parties to emerge, environmental sensibility has not necessarily grown more salient. But it has become more mainstream and a more broadly shared concern across the political spectrum (Carter, 2013).

4. Free Markets, Private Sector Initiatives and Sustainable Development

A third assumption is that market forces and the private sector will at some point sufficiently respond to long-term global environmental problems, in response to either market signals, public demand or changing corporate ethics. This belief comes in many varieties but in its core reflects a neoliberal economic policy frame that sees more government regulation as fundamentally undesirable and counterproductive (Harvey, 2007; Woods, 2006).

Political events, ideological shifts and globalization led to the unchallenged spread of the neoliberal economic development paradigm across the world which has fundamentally redefined the relationship between the private and public sectors. It provided the economic rationale for across the board market deregulation and government pull-back, ultimately triggering the global financial crisis of 2008,and decisively shaping the broader sustainable development discourse and impacting environmental policy options (Johnson and Kwak, 2011; Newell and Paterson, 2010).

The least interventionist version of a market-friendly approach is to rely on voluntary private sector initiatives to achieve sustainable development objectives. Anti-regulatory sentiments have been particularly strong in the United States Congress. If not by design than by default, voluntary corporate sustainability initiatives were proposed as viable alternatives to direct regulation or pollution taxes (Rosenbaum, 2007 9th ed; Oreskes and Conway, 2010). Many voluntary certification systems have emerged to fill the governance gap, with mixed results and unresolved challenges to mainstream their supply chain monitoring systems beyond a niche market (Auld, 2014). Many companies use green claims for image advertisement but with few measureable environmental benefits to show (Plec and Pettenger, 2012).

The recent performance of two large corporations shows that trust in voluntary private sector compliance with public policy objectives is misplaced. In September 2015, Volkswagen, one of the largest and most reputable German car manufacturer admitted that it had installed software created deliberately to cheat on emissions tests in 11 million of its diesel vehicles worldwide. In January 2016, the U.S. government sued Volkswagen for installing illegal devices in nearly 600,000 diesel engine systems and violating clean air standards ("U.S. Sues Volkswagen," 2016). A newspaper report published in Dec. 2015 detailed how Exxon made a strategic decision in the late 1980s to publicly emphasize doubt and uncertainty regarding climate change science even as its internal research embraced the growing scientific consensus. It further provides evidence how Exxon, Mobil and Shell joined a multimillion-dollar industry effort to stave off new regulations to address climate change while they were quietly safeguarding billion-dollar infrastructure projects from rising sea levels, warming temperatures and increasing storm severity ("Big Oil braced for global warming while it fought regulations," 2015).

Regulatory market-based environmental policy approaches have emerged in two basic forms. The first involves fiscal instruments - environmental taxes, fees or charges on energy or resources use - and the second trading of pollution rights.

Theoretically, environmental taxes can be used to integrate environmental costs into the prices of goods and services which creates market incentives for companies and consumers to become more resource efficient (OECD, 1995; O'Riordan, 1997). This can

achieve the same environmental policy objectives at less cost as compared to setting traditional pollution standards which give companies little flexibility. Tax revenues could furthermore be used to lower income taxes or social security payments, providing a double-dividend by creating both environmental benefits and efficiency gains from fiscal reform.

Translating this theoretically compelling idea into effective policy turned out to be difficult, however. In 1992, the European Commission proposed a European-wide carbon tax directive that would have resulted in a fundamental shift towards progressively taxing energy consumption, only to see it falter quickly (Barnes and Barnes, 1999; OECD, 2001). Several European countries nevertheless unilaterally introduced CO_2 taxes, but they largely exempted their most energy-intensive export industries for fear of losing economic competitiveness in global markets. Over 20 years later, overall revenues from environmentally related taxes in percentage of GDP has remained stagnant in all OECD countries or even declined. In 2012, they amounted to close to 4% of GDP in Denmark and the Netherlands but only 0.8 % in the United States (EEA/OECD, 2013). The great environmental tax reform never took place.

Trading pollution rights, or emissions trading, is the second market-based approach that requires regulatory intervention (Aldy and Stavins, 2012). The government sets an overall economy- or sector-wide emissions cap. Entities that fall under this cap can either reduce pollution through investments, or if this comes cheaper to them, purchase emission rights from other entities. A big reason why this approach gained support in some quarters was that although it requires government intervention it does not involve taxes that would provide governments with a revenue stream (Kysar, 2010; Pooley, 2010).

Tradable pollution permits were first introduced in the US in 1990 to reduce sulfur dioxide emissions from power plants and under insistence of the U.S. - against early opposition by the EU - the model set the precedent for emissions trading under the Kyoto Protocol. Ironically, the U.S. eventually stepped away from the Kyoto Protocol and so far has not legislated any federal CO_2 emission targets or mandatory emissions trading.

It was the EU that implement an emissions trading system (ETS) after the Kyoto Protocol entered into force in 2005. The EU ETS covers some 14000 installations and is now in its 3rd implementation period. But soon after its start, prices for carbon emission certificates collapsed in 2008 and a large oversupply of emissions credits has plague the system ever since. Neither a revamping of rules for the 2013–2020 phase nor the adoption of the Paris Climate Agreement has changed this while dropping oil prices are further undermining cost-benefit considerations of firms (De Clercq, 2015; Point Carbon, 2014; Wettestad, 2014).

The EU's greenhouse gas emissions have fallen in the decade since the ETS began operating but there is little evidence that emissions trading caused these reductions. Electricity generation accounts for the majority of emissions covered by the ETS, but reductions in this sector are largely the result of other environmental policies, notably feed-in tariffs, subsidies for renewable energy, and of macro-economic factors like the global crisis after-2008, and fuel switching (from coal to gas) in response to dropping natural gas prices.

Emissions rights are not a physical commodity like coffee or oil but socially constructed – much like national currencies (Descheneau, 2012). As such demand for them critically depends on governments' being able to set overall emission caps at sufficiently low levels and to adjust them if necessary. The experience with the European ETS shows that both these requirements have not been met while private entities have been able to game the system for windfall profits (Chan, 2010; Laing, et al., 2013). A recent study furthermore shows that international emission offsets may have enabled global greenhouse gas emissions to be much higher than they would have been if countries had met their emissions reduction commitments domestically (Kollmuss and Schneider, 2015). Finally, emissions trading that takes place under an overall emissions cap provides no incentives to firms to overachieve particularly if prices of emissions rights remain as low as they have now been for years.

Marked-based approaches have also gained currency for biodiversity conservation. The capitalization and co modification of non-use ecosystem services has been promoted to achieve carbon sequestration and biodiversity conservation objectives through the generation of carbon emissions credits (REDD) and payment for ecosystem services (PES) (Barbier, 2012; McDermott, et al., 2011). But in many cases, the monetary value of ecosystem services cannot replace ethical-political considerations of cultural and social preferences as a basis for conservation (Leach, et al., 2012).

Making markets work to recognize environmental externalities will be a critical component of any strategy to meet global environmental challenges. But evidence from two decades of advocating market-based approaches as the corner stone of global environmental governance arrangements shows that the right mix of private-public sector collaboration has yet to be found. Serious and measureable voluntary industry commitments have been few and far between and government-designed market instruments have not been implemented at levels at which they would have had a significant impact on business-as-usual. On the other hand, the often ideology-driven promotion of market-instruments has undermined political support for direct pollution or technology standard setting policies that have historically served countries well.

5. Nation States in an Age Of Globalization: Leaders and Laggards Still Matter

The following section looks at the different political manifestations of environmentalism in Germany and the United States. The selection of these two countries is based on their economic centrality as well as the extent to which they have shaped the international global environmental debate in different ways. A brief look at the European Union, in which Germany plays a key role, is also included here.

German eco-modernization

Germany is the largest economy in the European Union and the 4th largest in the world. It also has one of the comparatively most ambitious CO_2 emissions reduction targets of any country matched by one of the highest percentage of electricity (30%) coming from renewable technology (Energy Transition, 2015). Germany has embraced a "precautionary" environmentalism and decided to exit nuclear power and impose a moratorium on the use of Genetically Modified Organisms. It has supported the new

European Chemicals regime (REACH)initiated by the Nordic EU countries that has led to the ban of a number of agrochemicals still in use in the U.S. and other countries (De Sadeleer, ed., 2007; Fisher, et al., 2006; Vogel, 2012). In 2008, Germany adopted a national sustainable development strategy, mapping out a long-term comprehensive approach to social, economic and environmental challenges. The federal government submitted its first progress report in 2012 (Bundesregierung Deutschland, 2012).

German environmental policy has been strongly influenced by the rise of the Green Party which was made possible by Germany's Post World War II representative electoral system. It allowed the environmental movement to consolidate under the Green Party umbrella and enter formal politics, first on the state and in 1983 on the federal level (Bürklin, 1984; Fischer, 2007). While the Green Party had to reign in its radical activist wing behind a common party platform, traditional parties on the left and right were forced to pay more attention to green issues (Hillebrand, 2013; Carter, 2007). This has over time translated into a centrist consensus around broad sustainable development objectives.

Much of Germany's pollution abatement legislation was put in place under the center-right coalition government of Christian Democrat Helmut Kohl, German Chancellor from 1982 until 1998. These pollution and energy conservation laws were to a large extent triggered by the acid rain problem but they also set the country on track to lower CO_2 emissions (Schreurs, 2002).

Up until 1998, the German Greens' influence as a small opposition party was limited. This changed with the 1998 elections, when the Social Democratic Party (SPD) depended on the Greens to form a coalition government and had to cede influential ministerial posts to the Greens – foreign, agricultural, environment - and compromise on a government platform that came to include the exit from nuclear power, the introduction of a CO_2 tax, and the large-scale promotion of renewable energy technologies (Fischer, 2007). Even though the Green party has no longer been part of a coalition government since 2005 its legacy as a governing coalition member goes far in explaining international German leadership on global environmental issues (Rüdig, 2015).

Despite Germany's comparative leadership, the German Green Party and environmental organizations have become sharply critical of Chancellor Angela Merkel and her center-right Grand Coalition for a slow approach on phasing out coal subsidies, waning price support for renewable energy, and exemption of export industries from key environmental provisions (Heinrichs und Laws, 2012; Schlesinger et al., 2014). Germany's green reputation also became tarnished internationally when Merkel in 2013 – under pressure from luxury automakers – forced an unprecedented renegotiation of an EU ministerial decision on new CO_2 emissions standards for cars ("Angela Merkel 'blocks' EU plan," 2013). Standards were finally adopted later in the year, but the shuffle set a bad precedent for less economically powerful EU members. The German government has since responded with a new bundle of decisions - adopted in December 2014 –in support of its 2020 reduction goal of 40% below 1990 levels (Germanwatch, 2014). Ironically, the new measures mainly target the power sector and are feared to further undermine the European Emissions Trading system as demand for emissions

rights from German companies will drop ("Deutsche Klimapolitik drückt CO2-Preise weiter," 2014).

The European Union and the Precautionary Principle

On many environmental and social issues other Northern European countries have generally been more progressive than Germany (Emerson, et. al. 2012; Bertelsmann Stiftung, 2014) and – together with a proactive European Commission –pushed a sustainable development policy framework at the EU level (Andersen& Liefferink, 1997; De Sadeleer, 2007). In 1997, EU member countries signed the Amsterdam agreement which declared sustainable development a fundamental objective of the European Union and set the stage in 2001 for the development of a sustainable development strategy (European Commission, 2005; Benson and Jordan, 2010). In 2000, the European Commission adopted a Communication on the use of the Precautionary Principle that is based on Principle 15 adopted by the 1992 Rio Conference on Environment and Development. On June 2007, REACH (Regulation on the registration, evaluation, authorization and restrictions of chemicals) entered into force, the EU's most consequential application of the precautionary principle (Fisher et al.,2006, Vogel, 2012).

In October 2014, the EU ministerial conference adopted the European Commission's 2030 climate and energy policy framework to reduce greenhouse gas emissions by 40% below 1990 levels, and to generate at least 27 percent of its energy from renewable sources and improve energy efficiency by 27 percent (EC, Oct.30 2014).The overall EU targets, however, are modest given that the European Union is on target to meet its 20% reduction goal set in 2008 for 2020 (EEA, 2014). The renewable energy target furthermore is not binding on the national level and the energy efficiency target remains "indicative" only. The European Environment Agency furthermore reports that the ambitious 2050 goal to cut greenhouse gas emissions by 80-95% remains far out of reach with current policy proposals (EEA, 2015).

The EU continues to lead globally in controlling greenhouse gas emissions but its leadership ambitions have clearly tired (Bals, et al., 2013). The prolonged economic crisis combined with geo-political challenges, a faltering emissions trading system, the lack of binding commitments by the United States, pull-back from earlier climate policy commitments by Japan, Canada and Australia, and the drop in oil and natural gas prices are all factors that are undermining the EU's collective political resolve. A major challenge to EU climate and energy policy furthermore comes from European industry leaders who fear a negative economic impact of a go-it-alone approach. They have invested heavily in promoting the argument that Europe - with a much larger population than the U.S. but only 11% of the world's emissions - cannot save the planet on its own, but risks high economic costs when its industries are driven out of the EU zone by cheaper and dirtier competitors from abroad ("Klimapolitik nervt Europas Stahlkocher," 2014).

European member countries are a micro cosmos of the difficult environmental policy trade-offs that countries face internationally. Central and Eastern EU member states in particular are balking at stringent renewable energy targets and phase-out of coal. Poland is one of the most outspoken opponent of a more ambitious EU energy and

climate policy ("Europe and the 'why me?' approach," 2014). The narrow defeat of the former liberal Polish President by a conservative challenger in June 2015 is likely to further complicate climate politics on the EU level (Hahn-Fuhr and Dabrowska, 2015).

Setting ambitious climate goals is one challenge, implementing a coherent set of policy instruments to reach them yet another. The further expansion of wind and solar energy to meet ambitious renewable energy targets (for now the 27% goal) will likely mean that fewer emission certificates will be needed. This in turn will further undermine the price of carbon certificates in the EU emissions trading system and make meeting reduction goals in the industry sector more difficult.

The United States and Science-Based Environmental Policy

The United States has pioneered key pieces of environmental legislation earlier than most European countries, such as the Clean Air Act of 1970, the Endangered Species Act 1973, and the Toxic Waste Clean-up Act of 1985 which have all served as models for most other OECD countries (Rosenbaum, 2007; Layzer, 2006; Burgess, 2001). This impressive leadership role, however, came to a halt in the late 1980s and has not been revived since.

U.S. environmentalism has its origin in the nature and landscape conservation activism associated with 19th century great push to the West (Phaelke, 1989; Dunlap & Mertig, 1992; Shabecoff, 2003). The 1960s gave birth to a broad citizen movement reacting to industrial pollution. Concern for population growth, resource depletion and deforestation in developing countries, and atmospheric ozone depletion emerged soon after. Progressive environmental policy momentum came to a halt with the election of Republican Ronald Reagan in 1980 and has languished ever since. The democratic administration of Bill Clinton that followed in 1992 only partially succeeded in reviving an environmental agenda, mostly by using executive power to expand America's National Park system and by signing on to the Kyoto Protocol. The U.S. Congress failed to adopt a comprehensive energy climate bill during the Clinton administration in 1993, which would have fundamentally changed the countries energy policy trajectory.

The 2000 presidential election turned out to be one of the most controversial in U.S. history. The Democratic candidate, incumbent Vice-President and certified environmentalist Al Gore, lost to George W. Bush, after some progressive environmental groups – in a strategic miscalculation of far-reaching consequences for U.S. environmentalism –decided to support a more progressive Green party candidate (Shellenberger and Nordhaus, 2004). Given the majoritarian electoral system in the U.S. (Dahl, 2002), the third party candidate cost Al Gore enough votes in the crucial state of Florida to let Bush prevail (albeit by a Supreme Court decision). George W. Bush proceeded to push for a roll back of key environmental policy accomplishments and, in March 2001, he declared that the U.S. would step away from the Kyoto Protocol that the previous administration had signed in 1997 (Shulman, 2006; Barcott, 2004; Pope, 2004).

In 2008, Barak Obama – a Democrat - was elected to the White House, giving new hope to the environmental movement. But President Obama has not been able to fundamentally revive a progressive environmental agenda, not even during a brief period when the Democratic Party held majorities in both chambers of Congress. As in 1993,

the U.S. Congress again failed in 2009 to pass a comprehensive energy and climate bill (Pooley, 2010). Only after his reelection in 2012, has Obama started to use executive power notably to cut CO_2 from the nation's power plants using the existing clean air act (EPA, 2015). Although these steps have signaled a reversal of the U.S.'s prior snubbing of climate change politics, the political polarization between parties remains deep and Obama's executive orders face prolonged legal and political challenges.

President Obama has tried to revive a U.S. leadership role in the languishing international climate negotiations. Most notably, the U.S. brokered a bilateral climate agreement with China which was jointly announced in Beijing by presidents Obama and Xi Jinping on November 12, 2014 ("Secret talks and a personal letter," 2014). China agreed to slow and then stop its emissions growth by 2030, which translates to a reduction in energy intensity by about 4% per year instead of the 3% per year per previous announcements (Carraro, 2015). The U.S. pledge to reduce emissions by 26–28% by 2025 (from 2005 levels)amounts to a 16.3% reduction in greenhouse gas emissions compared with 1990 levels but it is significantly below the 40% reduction goal the EU has adopted for 2030.The U.S. continued to oppose legally binding emissions commitments during the 2015 Paris climate negotiations (Clémençon, 2016).

Political symbolism on the international level is important, but domestic political barriers continue to loom large in the U.S.. Generic public support for climate action has increased recently in the U.S. and a Jan. 2015 poll shows that a large majority of Americans – 78 percent - believe global warming to be at least a "somewhat serious" threat and that the government should do something about it (77 percent) (NYT, Jan. 30, 2015). The same poll, however, shows that support for actual measures, such as gasoline and electricity price increases are opposed at almost the same margins. Economic recovery combined with dropping oil and gas prices may further undermine achievement of the U.S. target. Supply of gasoline was up 6.6% in December 2014 over the previous year and sales of less fuel efficient vehicles are growing solidly again (U.S. EIA, 2015).

A more comprehensive sustainable development debate has been absent on the federal level in the United States since an initiative by the Clinton administration fizzled in 1999. Perhaps most consequentially, the technical foundation for U.S. environmental policy has not changed since the 1980s. Science-based risk assessment and management remain the basis for setting pollution standards and cost-benefit analysis for most other regulatory initiatives including for climate change (Kysar, 2010; Vogel, 2012; Andrews, 2000). The burden of proof for any environmental regulation rests with an underfunded Environmental Protection Agency, which has afforded special economic interests a decisive role in policy formulation and implementation (Rosenbaum, 2007; Michaels, 2008; Oreskes and Conway, 2010). A free-market and anti-regulatory ideology combined with a polarizing U.S. electoral system have ultimately restrained any U.S. administration from attempts at fundamentally reassessing the basis for environmental policy formulation which could extend to global environmental issues. This is particularly remarkable, as U.S. universities and think thanks have long been at the forefront of cutting-edge research on global environmental issues, as evident from their participation in international scientific assessments.

On the international level, the U.S. government continues to pursue positions that either directly undermine the spirit if not the word of international environmental accords, such as by opposing global aviation taxes, failing to provide significant government financing to support developing countries in addressing global environmental problems, or dragging countries before the World Trade Organization that choose to ban genetically modified organism based on the precautionary principle (Luhmann, 2014; Stephan, 2012).

The Limitations of Subnational Actors

Subnational actors have played an important role in pushing climate politics, which includes state, regional and urban climate action initiative soften linked globally (Betsill and Bulkeley, 2004). In the United States, California has set overall reduction targets and introduced a mandatory emissions trading system. But subnational actors invariably are operating within existing national policy frameworks, which can significantly reduce the effectiveness of their policy steps due to leakage effects. For example, as utilities have sold off stakes in utilities in other states they satisfy the Californian law, however, with no actual emissions' reductions having taken place (Cullenward, 2014).

Emerging Economies to the Rescue?

This analysis has focused on two major developed country actors and the EU, the world's only supranational organization. The inclusion of large emerging developing economies like Brazil, China, India, South Africa cannot be expected to change the outlook. The collective action problem on the international level continues to lock countries into a "common but differentiated responsibilities" frame, recognizing historic contributions to global environmental problems and ability to payfor addressing them as core principles for international cooperation (Clémençon, 2010; Hurrel and Sengupta, 2012). Politically it will be extremely difficult for even large emerging economies to make binding and unconditional commitments before all industrialized countries, particularly the U.S., have done so (Dubash, 2012). Furthermore, all these countries are dealing individually with large socio-economic challenges and political and institutional weaknesses which make leadership aspirations difficult to pursue for now. Finally, China, India, Brazil – to focus just on the heavy weights - have different interests relating to climate negotiations and sustainable development goals (Hallding et al., 2013, Clémençon, 2016).

Many developing countries have taken important policy steps forward, notably Mexico and China (See Climate Action Tracker for up-to-date country profiles, 2015a). Development challenges and the lure of cheap fossil fuels remain huge with 2440 coal plants still planned for construction around the world (Climate Action Tracker, 2015b). This remains true for developed countries as well. Five of the seven G7 member countries - Britain, Germany, Italy, Japan and France increased their coal consumption between 2009 and 2013 while demanding that poor countries reduce their carbon emissions (Hanks and Richards, 2015). The U.S. and Canada have reduced coal

consumption over the same period – albeit from a higher level than the other countries – but almost exclusively because of a large drop in natural gas prices.

Conclusion

Rapid global environmental changes pose dramatic challenges to the world but a transition to sustainable development that meets these challenges – most urgently a stop to global warming and to the rapid decline in global biodiversity - is at best slow in unfolding. This analysis has considered experience with two decades of global environmental governance to answer the question where momentum towards a faster sustainability transition can be expected to come from? Four potential drivers that are to various degrees shaping human societies' response to global environmental challenges have been considered: international negotiations, civil society activism, market forces (and private sector initiatives), and national policy.

The first conclusion is that while all drivers exert critical influences – sometimes reinforcing and sometimes obstructing each other - and are intertwined in their causality it appears that only deliberate regulatory state intervention so far has produced frameworks that sustain relatively ambitious environmental objectives. But the last two decades have seen a decisive shift away from government regulation to governance arrangements that are primarily market-compatible. The historic record, however, offers no support for the idea that sustainable development will eventually emerge as a result of a combination of growing public concern and private sector response, facilitated primarily by market-friendly policy approaches. Recent history also does not provide support for the idea that international negotiations and sophisticated international governance regimes can provide the breakthroughs needed to neutralize a lack of domestic leadership. In fact, by highlighting different countries' shortfalls, they can discourage domestic action by encouraging finger-pointing that plays into domestic populism and helps rationalize do-nothing attitudes.

A second conclusion is that in the foreseeable future domestic political leadership is not likely to come from anywhere else but the European Union. The EU is the only group of countries in the world that collectively has defined a shared vision of climate policy and sustainable development through a comparatively democratic process that has been able to bridge political divides (Benson and Jordan, 2010). This is rooted in the broader project of European integration built on shared values, norms and policy objectives that include sustainable development and precaution as guiding principles (Fisher, et al., 2006; Manners, 2008).

Proportional electoral systems have been crucial for mainstreaming global environmental concerns into European politics as they have allowed a broadly defined environmental movement to formalize into Green parties and to directly influence the political discourse and legislative process in many European countries, and ultimately on the EU level as well. Recent economic and political turmoil facing EU member countries on many fronts, such as the dramatic refugee crisis, does not change this fundamental structural shift, although it clearly increases the difficulties for the EU to continue pushing a common position on any issue including climate change and sustainable development.

The United States on the other hand has long been and remains polarized on climate change. Neither has it developed a comprehensive national sustainable development strategy that could make U.S. environmental policy more coherent, less piece-meal and more preventive. Political stalemate and the enormous influence of "dark" special interest money have – by default – elevated market forces and private sector initiatives as the main pathway for global environmental initiatives and put the Environmental Protection Agency under constant assault from the U.S. Congress and special interests. Despite attempts to show political leadership on climate change, American unilateral emissions reduction commitments are modest and challenges to implementing them – largely by regulating new coal fired power plants - daunting. The modest reduction in U.S. emissions over the last three years is mostly the result of a market-driven shift from coal to natural gas facilitated by the boom in geological fracking. This is not a position of strength from where to lead internationally.

Emerging economies – China, India, Brazil among others - will be critical to any long-term solution but given their many economic and political problems are not willing or in a position to spearhead policy leadership on global environmental issues for which they see developed countries as primarily responsible and which are not immediately rewarded in the global market economy.

For all of the reasons summarized above, the European Union remains the only actor that can realistically be expected to provide leadership on global environmental problems for the coming decade or two. It is the only actor in the world that already exhibits the structural and normative foundation on which a coherent long-term approach to global sustainable development can be built and further developed. It therefore must resist the pressure by some of its member states and industry leaders to give up its leadership ambitions because of short-term economic considerations and because of a misplaced believe in either the ability of other countries – notably the United States - to step up to the plate. Neither is a naïve trust in an automatic market-driven transition to sustainable production and consumption patterns or in the voluntary willingness of the private sector to do the right thing warranted. The structural constraints to a sustainability transition are too significant and can only be overcome with deliberate policy intervention.

Among the concrete EU priority concerns must be the strengthening of ambitious greenhouse gas targets in the wake of the Paris Climate Agreement and their forceful implementation. This will require better protection of domestic industries from foreign competitors not subjected to EU standards. Further priorities should include defense of the EU carbon tax on international air travel and extension to maritime transportation, broad fiscal reform that moves decisively from income to consumption and carbon taxes, stepped up financial support for conservation measures and climate action in developing countries tied to clear objectives, corporate sustainability standards for resource sourcing and rejection of free trade arrangements like the EU-U.S. Transatlantic Trade and Investment Partnership (TTIP) that undermine EU sustainable development objectives.

By reestablishing its leadership role, the EU can influence policy decisions around the world and support actors in other countries – such as civil society groups - that are working hard to push their own governments to reign in the vested interests

who still profit from business-as-usual and who continue to oppose a measurable transition to a sustainable development paradigm while paying lip service to sustainability. Without EU leadership, it is hard to see right now from where momentum for a profound sustainability transition in the world economy should come from.

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