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The European Union's Emissions Trading System: Climate Policymaking Model, or Muddle? (Part 1)

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Try again. Fail again. Better again.

—Samuel Beckett, *Worstward Ho* (1983)

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I. INTRODUCTION

The European Union's Emissions Trading System (EU-ETS),[1] operating in the twenty-eight Member States of the European Union, as well as Iceland, Liechtenstein, and Norway,[2] is an extremely important component of global climate policymaking. It has been characterized by the European Commission as "the cornerstone of the EU's strategy for fighting climate change,"[3] an economic bloc of more than 500 million people, representing the third largest source of greenhouse gas emissions globally.[4] The EU-ETS is also "the engine of the global carbon market,"[5]

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1. Directive 2003/87, of the European Parliament and of the Council of 13 October 2003 Establishing a Scheme for Greenhouse Gas Emission Allowance Trading within the Community and Amending Council Directive 96/61/EC, 2003/87/EC, 2003 O.J. (L 275) 32.

2. EUROPEAN COMM'N, THE EU EMISSIONS TRADING SYSTEM (2015), https://ec.europa.eu/clima/sites/clima/files/docs/ets_handbook_en.pdf (guide does not represent views of the European Commission and should not be used for legal reference). The EU-ETS began operation with fifteen Member States, with subsequent expansion in three phases: accession of primarily Eastern European States to the European Union in May 2004, subsequent expansion to include Bulgaria and Romania at the beginning of 2007, and inclusion of three members of the European Economic Area in 2008. DENNY ELLERMAN, MIT JOINT PROGRAM ON THE SCI. AND POLICY OF GLOB. CHANGE, REP. NO. 170, THE EU'S EMISSIONS TRADING SCHEME: A PROTOTYPE GLOBAL SYSTEM? 3 (Feb. 2009), https://dspace.mit.edu/bitstream/handle/1721.1/49515/MITJPSPGC_Rpt170.pdf?sequence=1.

The three non-Member States of the European Union that are parties to the EU-ETS, Norway, Liechtenstein, and Iceland, operate under the rubric of the European Economic Area (EEA). The EEA brings together the EU and three members of the European Free Trade Association (excluding Switzerland), into a single market, referred to as the "Internal Market," to guarantee the free movement of goods, capital, services, and people—the EU's "four freedoms." Agreement on the European Economic Area, art. I, 1994 O.J. (L 1) 7. The Agreement on the European Economic Area provides for, *inter alia*, cooperation between EU Member States and Iceland, Liechtenstein, and Norway, on environmental matters. *Id.* The EU-ETS Directive was linked to the European Economic Area Agreement in 2007, Europa. European Commission Press Release IP/07/1617, Emissions Trading: Commission Announces Linkage EU ETS with Norway, Iceland and Liechtenstein (Oct. 26, 2007). The decision of the United Kingdom to leave the European Union, in the so-called "Brexit" vote in June of 2016, has left its future participation in the EU-ETS highly uncertain. One analyst recently suggested that the United Kingdom might opt for, and be permitted to remain in the EU-ETS, institute its own emissions trading system, and seek to link up with the EU-ETS, or opt for a carbon tax. *Brexit, and an Uncertain Road for the European Emissions Trading Scheme*, GRANTHAM INST.: CLIMATE & ENV'T AT IMPERIAL (Mar. 28, 2017), https://granthaminstitute.wordpress.com/2017/03/28/brexit-and-an-uncertain-road-for-the-european-emissions-trading-scheme/. The United Kingdom has expressed it preference to remain within the EU-ETS. Alex Morales & Matthew Carr, *U.K. Said To Prefer Staying in EU Carbon Market After Brexit*, BLOOMBERG (Dec. 8, 2016), https://www.bloomberg.com/news/articles/2016-12-09/u-k-said-to-prefer-retaining-eu-emissions-trading-post-brexit. As the European Union's second largest emitter, its continued participation could help to prevent increasing the glut of surplus allowances that currently bedevils the EU-ETS. *Id.*

3. European Commission Press Release M/08/35, Questions and Answers on the Revised EU Emissions Trading System, Question 1 (Jan. 23, 2008).

4. *CO2 Emissions*, GLOBAL CARBON ATLAS, http://www.globalcarbonatlas.org/en/CO2-emissions (last visited on Apr. 3, 2017).

representing 80% of emissions trading by volume, and more than 77% of the global market value of trading permits.[6] Moreover, a number of other States and sub-national actors have either linked their emissions trading systems to the EU-ETS or contemplate potentially doing so in the future.[7] Given the size of the EU-ETS, these countries are thus potentially tying the viability of their emissions trading schemes to the health of the EU-ETS.[8] Finally, the lessons learned from the EU-ETS are highly pertinent for other emerging national and regional emissions trading schemes,[9] or serve as a "template" for a future global carbon market.[10]

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5. ALEXANDRE KOSSOY & PIERRE GUIGON, WORLD BANK, STATE AND TRENDS OF CARBON MARKET 9 (2012).

6. EUROPEAN COMM'N, THE EU EMISSIONS TRADING SYSTEM (EU ETS) (2016), https://ec.europa.eu/clima/sites/clima/files/factsheet_ets_en.pdf; Aurora D'Aprile & Marinella Davide, *Carbon Markets*, *Dec. 2015- Jan. 2015*, INT'L CLIMATE POL'Y, 2016, at 16.

7. The European Union envisions establishing an international carbon market by linkage with other domestic cap and trade systems. *See, e.g.*, EUROPEAN COMM'N, THE EU EMISSIONS TRADING SYSTEM (EU ETS) (2017). The Directive implementing the EU-ETS provides for such linkage with other emissions trading schemes. Council Directive 2003/87, art. 25, 2003 O.J. (L 275) 39 (EC). The EU and Switzerland penned an agreement in 2016 to link their emissions trading schemes. Press Release, Federal Office for the Environment (FOEN), Negotiations on Linking of Swiss and EU Emission Trading Schemes Concluded (Jan. 25, 2016), https://www.admin.ch/gov/en/start/dokumentation/medienmitteilungen.msg-id-60425.html. In 2012, the Australian government and the European Union agreed to a two-stage linkage of the emissions trading component of Australia's Clean Energy Future Plan and the EU-ETS. Under the plan, Australian entities were eligible to purchase European emissions trading allowances immediately, and it was contemplated that full bilateral trading of allowances would begin by 2018. *Australia and European Commission Agree on Pathway Towards Fully Linking Emissions Trading Systems*, EUR. COMMISSION (Aug. 28, 2012), http://ec.europa.eu/clima/news/articles/news_2012082801_en.htm. However, in July of 2014, the Australian Senate backed Prime Minister Tony Abbott's call for repeal of the tax before its implementation later that month. Roz Bulleid, *Australia Scraps Its Carbon Pricing Mechanism*, ENDS EUR. (July 17, 2014), http://www.endseurope.com/36521/australia-scraps-its-carbon-pricing-mechanism?referrer=search. The EU is also engaged in negotiations to link the EU ETS to the world's second largest carbon market in California. Felicity Carrus, *EU Plans To Link Emissions Trading Scheme with California*, GUARDIAN (Apr. 7, 2011, 6:35 AM), http://www.theguardian.com/environment/2011/apr/07/eu-emissions-trading-california (amended Apr. 11, 2011). The EU has also discussed linkage with cap and trade systems in New Zealand, Japan, the United States, South Korea, and China. DANNY ELLERMAN ET AL., EUROPEAN UNIV. INST., ROBERT SCHUMAN CENTRE FOR ADVANCED STUDIES, THE EU ETS: EIGHT YEARS AND COUNTING 5 (2014); FRIENDS OF THE EARTH EUROPE, THE EU EMISSIONS TRADING SYSTEM: FAILING TO DELIVER 8 (2010).

8. *Australia To Join EU ETS by 2018: Europe Must Put Its House in Order Before Then*, WWF (Aug. 28, 2012), http://www.wwf.eu/?206048/Australia-to-join-EU-ETS-by-2018-Europe-must-put-its-house-in-order-before-then; *ETS, RIP?*, ECONOMIST (Apr. 20, 2013, 1:00 AM), http://www.economist.com/news/finance-and-economics/21576388-failure-reform-europes-carbon-market-will-reverberate-round-world-ets.

9. FRANK CONVERY ET AL., THE EUROPEAN CARBON MARKET IN ACTION: LESSONS FROM THE FIRST TRADING PERIOD, CDC CLIMAT, http://www.cdcclimat.com/IMG/pdf/ENG_The_European_carbon_market_in_action_ExecSummary.pdf (last visited Jan. 13, 2014). For a list of the proliferating regional and national emissions trading schemes, *see* INT'L CLIMATE ACTION P'SHIP, EMISSIONS TRADING WORLDWIDE, INTERNATIONAL CARBON ACTION PARTNERSHIP (ICAP)

However, in midst of its third phase of implementation,[11] policymakers and commentators are increasingly questioning the future of the EU-ETS in the face of growing evidence of ineffectiveness and plummeting allowance prices.[12] As *The Economist* concluded, "[t]he emerging network of global carbon trading and European climate policy as a whole could sink."[13]

The purpose of this two-part Article is to assess why the EU-ETS is struggling, and what can be done to strengthen the keystone instance of global cap-and-trade market mechanisms. In this first Article, I will focus on the early stages of development of the EU-ETS. My analysis proceeds as follows: in Part II, I will briefly outline the genesis and evolution of the EU-ETS; in Part III, I will discuss implementation the EU-ETS in its first and second phases.

II. OVERVIEW OF THE EUROPEAN UNION'S EMISSIONS TRADING SYSTEM

A. Directive 2003/87/EC

The genesis of European climate policymaking can be traced to the late 1970s, with the initial emphasis on scientific assessments rather than governance issues.[14] In 1988, the European Commission[15] issued a

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STATUS REPORT 2014 2 (2014), https://icapcarbonaction.com/en/?option=com_attach&task=download&id=349.

10. Ian Bailey, *The EU Emissions Trading Scheme*, 1 WIRES CLIMATE CHANGE 144, 149 (2010).

11. The EU-ETS has been implemented in three operational phases to date, Phase 1 (2005-2007), Phase 2 (2008-2013), and Phase 3 (2013-2020).

12. *See, e.g.*, Pravda Capital Partners, *"Let's Talk Real: The ETS Is Bust, It's Dead"—EON AG's CEO Mr. Teyssen*, http://www.pravda.eu/en/let-s-talk-real-the-ets-is-bust-it-s-dead-eon-ag-s-ceo-mr-teyssen (last visited Dec. 16, 2013); David Kashi, *Carbon Trading Scheme in Europe Dying? Why Banks in London Are Exiting the Carbon Trade*, INT'L BUS. TIMES (Nov. 19, 2013, 10:15 AM), http://www.ibtimes.com/carbon-trading-scheme-europe-dying-why-banks-london-are-exiting-carbon-trade-1476254; Arthur Nielson, *Power Chief: Carbon Credits Face a 'Junk Bond' Future*, EURACTIV.COM (Jan. 30, 2013), http://www.euractiv.com/section/climate-environment/news/power-chief-carbon-credits-face-a-junk-bond-future/ (Europe Policy Officer of Climate Action Network stated that EU-ETS could become "irrelevant.").

13. *ETS, RIP?*, *supra* note 8.

14. Andrew Jordan et al., *Understanding the Paradoxes of Multi-Level Governing: Climate Change Policy in the European Union*, 12(2) GLOBAL ENVTL. POL'Y 43, 47 (2012).

15. The European Commission has sole authority in the European Union to draft proposals for new EU legislation, as well as the responsibility to ensure that EU policies are implemented, which includes the authority to apply to the European Court to financially sanction non-compliant Member States. It also oversees spending of EU funds. *European Commission: Overview*, EUR. UNION, http://europa.eu/about-eu/institutions-bodies/european-commission/index_en.htm (last updated Mar. 5, 2017); EUROPEAN CLIMATE FOUND., FROM ROADMAPS TO REALITY: A FRAMEWORK FOR POWER SECTOR DECARBONISATION IN EUROPE 12 (2013), http://www.roadmap2050.eu/attachments/files/Fromroadmapstoreality(web).pdf. The Commission is organized

Communication on climate change.[16] The Communication initially assessed the state of climate science and linkages to anthropogenic factors. Additionally, the Commission formulated a work program that, *inter alia*, identified policy options to reduce greenhouse gas emissions, established a framework to assess the effectiveness of potential emissions control strategies, and outlined potential adaptation responses.[17]

While the focus of EU environmental policy was on "command and control" regulations for a long time,[18] serious consideration of the potential role of market-based approaches, including in the context of climate policy, began in the 1980s and early 1990s. At the outset of the nineties, in preparation for the Rio Earth Summit, the European Union began the consideration of establishing a harmonized tax on fossil fuels according to the carbon emissions associated with their use. In 1992, the then fifteen Member States of the European Community, as well as the Community itself, signed the United Nations Framework Convention on Climate Change (UNFCCC).[19] In that same year, the European Commission proposed a carbon energy tax.[20] Many in Europe envisioned that a carbon tax would serve as the key policy mechanism to reduce greenhouse gas emissions. However, the proposal was met with substantial resistance by several European States, who viewed it as undermining their alleged autonomy regarding taxation, as well as by powerful industrial lobbies.[21] As a consequence, the proposal was

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into 40 Directorates General, or departments, of which one is Environment. *Environment Directorate—General*, EUR. COMMISSION, http://ec.europa.eu/dgs/environment/index_en.htm (last updated Nov. 21, 2016).

16. *Commission Communication to the Council on "The Greenhouse Effect and the Community" Commission Work Programme Concerning the Evaluation of Policy Options to Deal with the Greenhouse Effect and Draft Council Resolution on the Greenhouse Effect and the Community*, COM (88) 656 final (Nov. 16, 1988).

17. *Id.* at 65-72.

18. Simone Borghesi & Massimiliano Montini, *The European Emissions Trading System: Flashing Lights, Dark Shadows and Future Prospects for Global ETS Cooperation*, TRANSWORLD WORKING PAPER 26, 3 (May 13, 2013), http://www.transworld-fp7.eu/wp-content/uploads/2013/05/TW_WP_26.pdf.

19. *See* U.N. Conference on Environment and Development, *Framework Convention on Climate Change*, 31 I.L.M. 849, 849 (May 9, 1992). The Convention entered into force on March 21, 1994. *First Steps to a Safer Future: Introducing the United Nations Framework Convention on Climate Change*, U.N. FRAMEWORK CONVENTION ON CLIMATE CHANGE, http://unfccc.int/essential_background/convention/items/6036.php (last visited Nov. 23, 2013).

20. *Commission Proposal for a Council Directive Introducing a Tax on Carbon Dioxide Emissions and Energy*, at 4, COM (92) 226 final (June 30, 1992). The proposal would have imposed a $3/barrel levy on the carbon content of fossil fuels, which would have risen $1/barrel until 2000.

21. Frank Convery, *Origins and Development of the EU ETS,* 43 ENV. RES. ECON. 391, 392 (2009); A. DENNY ELLERMAN, FRANK J. CONVERY & CHRISTIAN DE PERTHUIS, PRICING CARBON: THE EUROPEAN UNION TRADING SCHEME 9 (2010); Andrew Jordan et al., *Governing*

withdrawn by the Commission in 2001.[22] In 1993, the European Council adopted a Decision for Member States for monitoring greenhouse gas emissions and evaluating the progress toward meeting their commitments under European law and the UNFCCC.[23] In 1997, the European Community and its Member States committed themselves under the Kyoto Protocol[24] to reduce their collective greenhouse emissions by 8% below 1990 levels in the period between 2008-2012.[25] However, while

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with Multiple Policy Instruments?, in ENVIRONMENTAL POLICY IN THE EU 317 (Andrew Jordan & Camilla Adelle eds., 3d ed. 2013). Industrial opposition to the carbon tax was spearheaded by the Union of Industrial and Employers' Confederations (now BusinessEurope). OSCAR REYES, LIFE BEYOND EMISSIONS TRADING 24 n.53 (2014).

22. JONAS MECKLING, CARBON COALITIONS: BUSINESS, CLIMATE POLITICS, AND THE RISE OF EMISSIONS TRADING 115 (2011).

23. Council Decision 93/389 of June 24, 1993, A Monitoring Mechanism of Community CO2 and Other Greenhouse Gas Emissions, 1993 O.J. (L 167) 31-33 (EEC). The Decision was subsequently repealed and replaced in 2004 by a mechanism to do the same under the Kyoto Protocol. Council Decision 280/2004/EC, of the European Parliament and of the Council of 11 February 2004 Concerning a Mechanism for Monitoring Community Greenhouse Gas Emissions and for Implementing the Kyoto Protocol, 2004 O.J. (L49) 1 (EC).

24. Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 11, 1997, 2303 U.N.T.S. 162 [hereinafter Kyoto Protocol]; Council Decision 280/2004, 2004 O.J. (L49) 1 (EC).

25. Kyoto Protocol, *supra* note 24, 2303 U.N.T.S at 233 (concerning the approval, on behalf of the European Community, of the Kyoto Protocol to the United Nations Framework Convention on Climate Change and the joint fulfilment of commitments thereunder); *see also* Council Decision 2002/358 of the European Parliament and of the Council of 25 April 2002 Concerning the Approval, on behalf of the European Community, of the Kyoto Protocol to the United Nations Framework Convention on Climate Change and the Joint Fulfilment of Commitments Thereunder, 2002 O.J. (L 130), 1-3 (CE). Under the Article 4(1) "bubble" provision of the Protocol, which the EU and its Member States had strongly lobbied for in the treaty,

> [a]ny Parties included in Annex I that have reached an agreement to fulfil their commitments under Article 3 jointly, shall be deemed to have met those commitments provided that their total combined aggregate anthropogenic carbon dioxide equivalent emissions of the greenhouse gases listed in Annex A do not exceed their assigned amounts calculated pursuant to their quantified emission limitation and reduction commitments . . . .

Under the so-called "burden sharing agreement" the EU-15 (Member States in the European Union prior to the accession of ten candidate countries on 1 May 2004) agreed to national emissions reduction or limitation targets that collectively reduce the emissions of Member States by 8% below 1990 levels in the period of 2008-2012, while providing for widely varying national targets. Germany, for example, agreed to a 21% reduction below 1990 levels, the United Kingdom agreed to a 12% reduction. Some countries, including Spain (+15%), Portugal (+27%), Greece (+25%), and Ireland (+13%), were allowed to increase their emissions substantially above 1990 levels. Table of Quantified Emission Limitation or Reduction Commitments for the Purpose of Determining the Respective Emissions Levels Allocated to the European Community and its Member States in Accordance with Article 4 of the Kyoto Protocol. *Id.* at 19. The bubble/burden sharing concept was driven by political considerations within the EU due to resistance by many States to a European-wide greenhouse gas emission target. The compromise agreement permits sharing of the burden of implementing Kyoto among EU States based on their

the United Kingdom and Germany made substantial progress in reducing their emissions during the 1990s, many other Member States struggled.[26]

In 1998, the European Commission issued a Communication entitled *Climate Change—Towards an EU Post Kyoto Strategy*,[27] suggesting that an EU-internal trading scheme might help ensure that the overall reduction target of Kyoto was attained in a cost-effective manner.[28] In May 1999, the Commission adopted another Communication on climate change.[29] The Communication emphasized the need for a "rapid and sustained policy response" to ensure that the EU would meet its Kyoto Protocol obligation in the face of rising

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differentiation in terms of national energy structures and consumption rates, as well as consideration of the objective of fostering economic development and stability. LEONARDO MASSAI, THE KYOTO PROTOCOL IN THE EU 68 (2011); Anne Sophie Tabau & Sandrine Maljean-Dubois, *Non-compliance Mechanisms: Interaction Between the Kyoto Protocol System and the European Union,* 21(3) EUR. J. INT'L L. 749, 751 (2010).

26. PEW CTR. ON GLOB. CLIMATE CHANGE, THE EUROPEAN UNION EMISSIONS TRADING SCHEME (EU-ETS) INSIGHTS AND OPPORTUNITIES 4-5 (2005), http://www.c2es.org/docUploads/EU-ETS%20White%20Paper.pdf; *see also* BERND GUGELE ET. AL., EUROPEAN ENVTL. AGENCY, EUROPEAN TOPIC CENTER ON AIR AND CLIMATE CHANGE, ANNUAL EUROPEAN COMMUNITY GREENHOUSE GAS INVENTORY 1990-2001 AND INVENTORY REPORT 2003 95 (2003).

27. *Commission Communication from the Commission to the Council and the European Parliament: Climate Change—Towards an EU Post-Kyoto Strategy*, at 1, COM (1998) 383 final, (Mar. 6, 1998).

28. *Id.* at 17. Ironically, the Europeans had strongly opposed market-based approaches during Kyoto negotiations, accepting incorporation of the flexibility mechanisms into the instrument only in the face of strong support by the United States and some of its allies. MICHAEL GRUBB ET AL., THE KYOTO PROTOCOL: A GUIDE AND ASSESSMENT 94 (1999); FRÉDÉRIC BRANGER ET AL., IRED, No. 48-2013, THE EUROPEAN UNION EMISSIONS TRADING SYSTEM: SHOULD WE THROW THE FLAGSHIP OUT WITH THE BATHWATER? 6 (2013). The George H.W. Bush administration advocated the use of emissions trading mechanism in international forums, including the UNFCCC, based on the successful implementation of a sulfur dioxide trading program under the U.S. Clear Act. RICHARD SCHMALENSEE & ROBERT N. STAVINS, MIT CTR. FOR ENERGY & ENVTL. POLICY RESEARCH, CEEPR WP 2012-012, THE SO2 ALLOWANCE TRADING SYSTEM: THE IRONIC HISTORY OF A GRAND POLICY EXPERIMENT 7-11 (2012); ELLERMAN, *supra* note 2, at 3. Some commentators have also suggested that the success of the program ultimately helped to persuade the Commission of the judiciousness of emissions trading. Chad Damro & Pilar Luaces-Méndez, *Emissions Trading at Kyoto: From EU Resistance to Union Innovation*, 12 ENVT'L POL'Y 71, 71-94 (2003). Once the Kyoto Protocol was adopted (though, ironically, not by the United States), the European Union had a strong incentive to avail itself of the flexibility mechanisms to reduce costs associated with implementation of the treaty. JON BIRGER SKJÆRSETH & JØRGEN WETTESTAD, EU EMISSIONS TRADING 70 (2008). It was also suggested that the development of market-based mechanisms by several EU Member States in the 1990s to address environmental issues, including Denmark and the United Kingdom, convinced the European Commission that it needed to move fast to avoid a "patchwork of schemes." FRANK CONVERY ET AL., MIT JOINT PROGRAM ON THE SCI. & POLICY OF GLOB. CHANGE, REP. NO. 162, THE EUROPEAN CARBON MARKET IN ACTION: LESSONS FROM THE FIRST TRADING PERIOD 8 (2008); Bailey, *supra* note 10, at 146.

29. *Commission Communication to the Council and the Parliament on Preparing for Implementation of the Kyoto Protocol*, at 1, COM (1999) 230 (May 19, 1999).

emissions.[30] In 2000, the Commission launched the European Climate Change Programme, with the objective of identifying and developing "all those elements of a European Climate Change strategy that are necessary for the implementation of the Kyoto Protocol."[31] In the same year, in a Green Paper,[32] the Commission initiated a discussion of a potential greenhouse gas emissions trading regime to help meet the EU's Kyoto Protocol commitment.[33] In October 2001, the Commission adopted a Directive[34] for EU-wide emissions trading, and the draft proposal was

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30. *Id.* at 2. It should be emphasized, however, that implementation of the EU ETs was not made contingent on implementation of the Kyoto Protocol. Moreover, continuation of the EU ETS to 2020 is not contingent on any subsequent agreements under the UNFCCC or Kyoto Protocol. ELLERMAN ET AL., *supra* note 7, at 5.

31. *Communication from the Commission to the Council and the European Parliament on EU Policies and Measures To Reduce Greenhouse Gas Emissions—Towards a European Climate Change Programme* (ECCCP), at 8, COM (2000) 88 final (Aug. 3, 2000). The objective of the European Climate Change Programme (ECCP) is to "identify and develop all the necessary elements of an EU strategy to implement the Kyoto Protocol." *First European Climate Change Programme*, EUR. COMMISSION, http://ec.europa.eu/clima/policies/eccp (last updated Mar. 4, 2017). The ECCP has been implemented into two phases. In the first phase, the Commission established eleven working groups to focus on pertinent areas for reducing greenhouse gas emissions, ranging from emissions trading to agriculture and transport and sought to focus a multi-stakeholder consultative process. *First European Climate Change Programme*, *supra.* In the second ECCP, the focus has been on, *inter alia*, promotion of renewable energy in the heating sector, as well as the establishment of new working groups in several areas, including carbon capture and sequestration, carbon dioxide emissions from light-duty vehicles and adaptation to the impacts of climate change. *Second European Climate Change Programme*, EUR. COMMISSION, http://ec.europa.eu/clima/policies/eccp/second/index_en.htm (last updated Mar. 3, 2017).

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> Green Papers are documents published by the European Commission to stimulate discussion on given topics at European level. They invite the relevant parties (bodies or individuals) to participate in a consultation process and debate on the basis of the proposals they put forward. Green Papers may give rise to legislative developments that are then outlined in White Papers.

Glossary of Summaries: Green Papers, EUR-LEX, http://eur-lex.europa.eu/summary/glossary/green_paper.html?locale=en (last visited Nov. 26, 2014).

33. *Commission Green Paper on Greenhouse Gas Emissions Trading Within the European Union*, at 22, COM (2000) 87 final (Aug. 3, 2000) [hereinafter *Green Paper on Greenhouse Gas*]. Some have argued that the ECCP has also promoted horizontal integration of climate policy across the Directorates General of the Commission. Måns Nilsson & Lars J. Nilsson, *Towards Climate Policy Integration in the EU: Evolving Dilemmas and Opportunities*, 5 CLIMATE POL'Y 363, 367 (2005).

34. A European Union Directive establishes certain end results that must be achieved in Member States, leaving Member States with discretion, however, on how to effectuate these objectives. Directives also require harmonization of national legislation, particularly for matters affecting the single market. GEERT VAN CALSTER & LEONIE REINS, EU ENVIRONMENTAL LAW 51 (2017). Directives can be contrasted with Regulations, which are binding in their entirety, and which bind Member States and are legally enforceable at both the national and Community levels. CINNAMON PIÑON CARLARNE, CLIMATE CHANGE LAW & POLICY 150 (2010). Decisions are also applicable to both States and individuals or companies. *Id.* at 151.

submitted for formal consideration to the Council of Ministers and the European Parliament.[35] In what became one of the "fastest ever adopted EU laws,"[36] the EU-ETS became law in October 2003,[37] and began operation in 2005 in the twenty-five States that were members of the EU at the time.[38]

The 2003 EU-ETS Directive is a quantity-based "cap and trade" system, whereby a "cap" is set on the total amount of certain greenhouse gases that can be emitted by regulated facilities, with trade in allowances permitted between regulated entities. Such systems constitute the primary global mechanism for addressing climate change.[39]

The purpose of this market-based approach is to establish price signals that internalize externalities associated with greenhouse gas emissions while maximizing economic efficiency and providing substantial incentives for technological innovation.[40] As Grubb explains:

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35. Council Directive 2003/87, art. 25, 2003 O.J. (L 275) 39 (EC). The Council of the European Union, composed of one ministerial representative from each Member State, shares responsibility with the European Parliament to pass legislation proposed by the European Commission. Moreover, it can request that the Commission examine issues and advance proposals. The Council also shares budgetary authority with European Parliament and central authority in foreign and security policy and economic coordination. Directive 2003/87, *supra* note 1; CARLARNE, *supra* note 34, at 145. The European Parliament is elected by European voters every five years and represents citizens of the EU. It is responsible for debating and passing proposed European legislation, including environmental initiatives, exercising oversight over other European institutions, particularly the Commission, and debating and adopting the EU budget, in conjunction with the Council of the European Union. Directive 2003/87, *supra* note 1. It is also required to consent to international agreements in areas that are encompassed under original legislative procedure. CARLARNE, *supra* note 34, at 146; ELLERMAN ET AL., *supra* note 21, at 24.

36. David B. Hunter & Nuno Lacasta, *Lessons Learned from the European Union's Climate Policy*, 27 WIS. INT'L L.J. 575, 583 (2009).

37. Council Directive 2003/87, art. 25, 2003 O.J. (L 275) 32 (EC).

38. The Commission emphasized, however, that while the EU-ETS was a mechanism to assist in meeting EU obligations under the Kyoto Protocol, it was a "domestic scheme" that would proceed independently of what happened in terms of the Protocol. ELLERMAN ET AL., *supra* note 21, at 18.

39. Richard Lane & Benjamin Stephan, *Zombie Markets or Zombie Analyses, in* THE POLITICS OF CARBON MARKETS 2 (Benjamin Stephan & Richard Lane eds., 2015).

40. Joseph E. Aldy & Robert N. Stavins, *The Promise and Problems of Pricing Carbon: Theory and Experience,* 21(2) J. ENV'T & DEV. 152, 153 (2012); *How Cap and Trade Works*, ENVTL. DEF. FUND (EDF), http://www.edf.org/climate/how-cap-and-trade-works (last visited Dec. 16, 2013). Reductions in emissions in a cap and trade program are effectuated by the establishment of the cap, whereas the role of the trading mechanism is to ensure that reductions are effectuated in an economically optimal fashion by allowing regulated entities to find the cheapest route, either by reducing their emissions or purchasing allowances in the market. Sabina Manea, *Defining Emissions Entitlements in the Constitutional of the EU Emissions Trading System*, 1:2 TRANSNAT'L ENVTL. L. 303, 308 (2012). Supporters of this approach in the environmental community sometimes contend that the added flexibility afforded by the trading component of cap and trade systems can also facilitate the setting of more stringent caps. David M. Driesen, *Cap Without Trade: A Proposal for Resolving the Emissions Trading Problem*

> Based on Coasian theory, defining rights to emit and permitting trade in these allowances enables participants to look for the cheapest way of delivering the aggregate environmental goal. A market emerges and price of emission allowances defines the lowest-cost way of meeting the constraint set. The external impact is internalized, with maximum efficiency.[41]

In virtually all cap and trade approaches, the cap is lowered over time, increasing the scarcity of emissions allowances, resulting in price rises that further incentivize fuel switching and technological innovation.[42]

The Directive emphasizes these objectives, characterizing the EU-ETS as a system "to promote reductions of greenhouse gas emissions in a cost-effective and economically efficient manner."[43] It should be emphasized that the EU-ETS is *not* an economy-wide cap and trade program. Rather, it regulates approximately 11,500 downstream installations in the energy and industrial sectors,[44] including power plants and other combustion facilities, as well as facilities engaged in production of steel, cement, glass, lime, bricks, pulp, paper, aviation, petrochemicals, ammonia, and aluminum.[45] Approximately 60% of

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Under CAA § 111, 34 ENVTL. L. REP. 10555, 10561 (2013). On the other hand, Driesen argues that industry may oppose trading proposals if the alternative might be less stringent mandates. David M. Driesen, *The Limits of Pricing Carbon*, 4 CLIMATE L. 107, 113 (2014).

41. MICHAEL GRUBB, THE EUROPEAN EMISSIONS TRADING SCHEME: AN OVERVIEW OF OPERATION AND LESSONS, CESIFO DICE, REP. 4/2007 17 (2007), http://www.cesifo-group.de /DocDL/dicereport407-forum4.pdf.

42. RŰDIGER K.W. WURZEL ET AL., ENVIRONMENTAL GOVERNANCE IN EUROPE 159 (2013).

43. Council Directive 2003/87, art. 1, 2003 O.J. (L 275) 32 (EC).

44. Timothy Laing et al., *The Effects and Side-Effects of the EU Emissions Trading Scheme*, 5 WIRES CLIMATE CHANGE 509, 509 (2014).

45. Council Directive 2003/87, *supra* note 43, at Annex I; Directive 2009/29 of the European Parliament and of the Council of 23 April 2009 Amending Directive 2003/87/EC So As To Improve and Extend the Greenhouse Gas Emissions Allowance Trading Scheme of the Community, 2009 O.J. (L 140) 29 (EC). The categories of greenhouse gas-emitting activities to be regulated under the EU-ETS are set forth in Annex I, and potential greenhouse gases subject to regulation in Annex II. Article 30(1) also provides for amendment of Annex I to include other activities and emissions of other greenhouse gases listed in Annex II. This provided the authority, for example, for the decision in 2008 to extend the scope of regulated activities to the aviation sector. Directive 2008/101, of the European Parliament and of the Council of 19 November 2008 amending Directive 2003/87/EC So As To Include Aviation Activities in the Scheme for Greenhouse Gas Emission Allowance Trading Within the Community, 2008 O.J. (L 8) 8. Civil aviation accounts for 2.1% of global emissions of carbon dioxide. U.N. ENVTL. PROGRAMME, BRIDGING THE EMISSIONS GAP (2011). Civil aviation accounts for approximately 4% of EU carbon dioxide emissions. BRIAN PEARCE, *Aviation Under the EU ETS*, GREENHOUSE GAS MARKET REPORT 70 (2010). Additionally, the International Civil Aviation Organization (ICAO) has projected that global aviation emissions will increase by 155-300% by 2036 from 2006 levels. ANTTO VIHMA & HARRO VAN ASSELT, THE FINNISH INST. OF INT'L AFFAIRS, BRIEFING PAPER NO. 150, THE CONFLICT OVER AVIATION EMISSIONS: A CASE OF RETREATING EU LEADERSHIP? 3 (2014). The Aviation Directive regulates greenhouse gas emissions "from all

regulated emissions are from electricity generating facilities.[46] Overall, the system currently regulates approximately 40% of greenhouse gas emissions in the EU,[47] translating into approximately two billion tons of carbon dioxide and other greenhouse gases, or about 4% of global emissions.[48]

The original incarnation of the EU-ETS required Member States to develop National Allocation Plans (NAPs) setting forth the total number of greenhouse gas allowances (denominated European Union

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flights . . . which depart from an aerodrome situated in the territory of a Member State and those which arrive in such an aerodrome from a third country." *Id.*at 3. The Directive met with substantial opposition from a number of countries and airlines, who maintained that it: (1) Violated Article 2(2) of the Kyoto Protocol, which provides for regulation of greenhouse gas emissions from the aviation sector by the ICAO; (2) Constitutes illegal extraterritorial regulation of activities occurring outside of the EU; and (3) Breaches the Chicago Convention by allegedly imposing an illegal charge or tax on aircraft operators. *See* CENTRE FOR INT'L SUSTAINABLE DEV. LAW, LEGAL ANALYSIS ON THE INCLUSION OF CIVIL AVIATION IN THE EUROPEAN UNION EMISSIONS TRADING SYSTEM 3-5 (2012), http://cisdl.org/public/docs/news/CISDL_EU_ETS_Expansion_Legal_Brief.pdf; *see also*, Sonja van Renssen, *Climate Battle for the Skies*, 2 NATURE CLIMATE CHANGE 308, 308 (2012), http://www.nature.com/nclimate/journal/v2/n5/pdf/nclimate1493.pdf. In April 2013 the EU temporarily suspended enforcement of the Aviation Directive for flights operated in 2010, 2011, and 2012 from or to non-European countries, while maintaining regulation of emissions from flights within and between countries in Europe. *Inclusion of Aviation in the EU ETS,* EUR. COMMISSION, http://ec.europa.eu/clima/policies/transport/aviation/index_en.htm (last visited Dec. 12, 2013). During the past few years, the EU has sought to influence the ICAO to develop a global market-based mechanism to regulate aviation greenhouse gas emissions. At its 38th Session in 2013, the ICAO Assembly passed a resolution that calls on its Member States to develop such a mechanism to be brought to the next ICAO Assembly in 2016. INT'L CIVIL AVIATION ORG. (ICAO), A38-WP/430, REPORT OF THE EXECUTIVE COMMITTEE ON AGENDA ITEM 17 (2013). In 2014, in the face of continued pressure from three countries, the EU has now agreed to example emissions from any flight entering or leaving EU airspace, thus essentially exempting all foreign flights from complying with the Aviation Directive. Dave Keating, *Will MEPs Bow to Pressure on ETS?*, POLITICO EU (Mar. 3, 2014, 2:00 PM CTE), http://www.europeanvoice.com/article/imported/will-meps-bow-to-pressure-on-ets-/80039.aspx. This reduces the amount of covered carbon dioxide emissions by three quarters from the original scheme. Keating, *supra*. Some commentators have questioned the EU's decision to restrict the scope of the Aviation Directive because there are no assurances that the ICAO will ultimately reach an agreement on a global mechanism. Sophie Yoo, *UN Aviation Emissions Deal Strikes Harsh Blow to EU Trading Scheme*, CLIMATE HOME (Oct. 4, 2013, 5:02 PM), http://www.climatechangenews.com/2013/10/04/un-aviation-emissions-deal-strikes-harsh-blow-to-eu-trading-scheme/; *see* SANDBAG, AVIATION AND THE EU ETS 2 (2012), https://sandbag.org.uk/wp-content/uploads/2016/11/Sandbag_Aviation_Briefing.pdf.

46. MIRZHA DE MANUEL ARAMENDÍA, BRUGES EUROPEAN ECON. RESEARCH PAPERS, MARKET EFFICIENCY IN THE EU EMISSIONS TRADING SCHEME 5 (2011), https://www.coleurope.eu/content/studyprogrammes/eco/publications/BEER/BEER20.pdf.

47. Anna Kijewska & Anna Bluszcz, *Analysis of Greenhouse Gas Emission in the European Union Member States with the Use of an Agglomeration Algorithm,* J. SUSTAINABLE MINING (2017), http://dx.doi.org/10.1016/j.jsm.2017.02.001.

48. ELLERMAN ET AL., *supra* note 7, at 1.

Allowances, or EUAs)[49] they intended to allocate to regulated installations, and methods for allocation for current and potential new entrants.[50] These plans were subject to approval by the Commission, which was tasked with ensuring Member State consistency with, *inter alia*, their respective obligations under the Kyoto Protocol and the EU Council Decision implementing the Kyoto Protocol.[51] The Commission was assisted in this task by the Climate Change Committee, which was composed of representatives from Member States and chaired by a representative of the European Commission.[52]

Operators of regulated installations,[53] in turn, are required under the EU-ETS to annually surrender allowances equal to the total verified

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49. An "allowance" is defined as "an allowance to emit one tonne of carbon dioxide equivalent during a specified period . . . ." Council Directive 2003/87, art. 3(a), 2003 O.J. (L 275) 32 (EC).

50. *Id.* arts. 9(1), 11. The original version of the EU-ETS required Member States to allocate at least 95% of the allowances for free until January 1, 2008, at which point, 90% of allowances were to be allocated for free five years thereafter. *Id.* art. 10. Due primarily to pressure from industry, States opted for much lower levels than even this, auctioning only 0.13% of EUAs between 2005-2013, and very low levels also in the period of 2008-2012. A. Denny Ellerman & Barbara K. Buchner, *The European Union Emissions Trading Scheme: Origins, Allocation, and Early Results*, 1(1) REV. ENVTL. ECON. & POL'Y 66, 73 (2007). Free allowances were allocated to regulated entities in the First and Second Phase of implementation of the EU-ETS largely on the basis of historical emissions, a practice known as "grandfathering." Lars Zetterberg et al., *Short-Run Allocation of Emissions Allowances and Long-Term Goals for Climate Policy*, 41 AMBIO 23, 23 (2012). However, 40% of allowances, virtually all in the electricity sector, were slated to be auctioned beginning in 2013, with an EU goal of phasing out free allocation in most other sectors by 2027. Certain sectors may be determined to be threatened competitively and consequently continue to receive free allocations at the full benchmark level. *Climate Action: Auction*, EUR. COMMISSION, http://ec.europa.eu/clima/policies/ets/cap/auctioning/index_en.htm, (last visited Nov. 27, 2013).

51. Council Directive 2003/87, art. 10(3), 2003 O.J. (L 275) 39 (EC) art. 10(3), Annex III; *see also* para. 10, 2002 O.J. (L 130/1), 15/2002 P. 0003, http://eur-lex.europa.eu/Lex UriServ/LexUriServ.do?uri=CELEX:32002D0358:EN:HTML (last visited Nov. 23, 2013). The Commission assessed proposed National Allocation Plans on the basis of eleven allocation criteria, including "consistency with the country's overall strategy to reach its Kyoto target and emissions developments, non-discrimination, respect for EU competition and state aid rules, and certain technical aspects." European Commission Press Release IP/or/762, Emissions Trading: Commission Approves Last Allocation Plan Ending NAP Marathon (June 20, 2005). Operators were allocated 2.2 billion tons of carbon dioxide allowances during the EU-ETS's first commitment period of 2005-2007. Yue-June Zhang & Yi-Ming Wei, *An Overview of Current Research on EU ETS: Evidence from Its Operating Mechanism and Economic Effect*, 87 APPLIED ENERGY 1804, 1805 (2010).

52. Council Directive 2003/87, art. 9(3), 23(1), 2003 O.J. (L 275) 35, 38 (EC). The Climate Change Committee was established in 1993. Council Decision no. 93/389 of 14 June 1993, art. 8, 1993 O.J. (L 167) 33 (EEC).

53. An "installation" is defined as "a stationary technical unit where one or more activities listed in Annex I are carried out and any other directly associated activities which have a technical connection with the activities carried out on that site and which could have an effect on emissions and pollution. . . ." Council Directive 2003/87, art. 3(e), 2003 O.J. (L 275) 34 (EC). An "operator" is defined as "any person who operates or controls an installation or, where this is

emissions of their respective installations.[54] They are also permitted to meet a portion of their obligations by purchasing allowances from other regulated entities or third countries recognized under Article 25,[55] as well as project-based mechanisms, including the Joint Implementation and the Clean Development Mechanisms of the Kyoto Protocol.[56] Regulated entities thus have three options under the EU- ETS: make investments to effectuate emissions reductions and facilitate the sale of excess allowances; reduce capacity and selling excess allowances; or choose to maintain or expand operations and purchase allowances on the market.[57] Operators of regulated installations that fail to surrender sufficient allowances to cover its emissions each year are subject to a penalty of 100 euros for each excessive ton of carbon dioxide equivalent

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provided for in national legislation, to whom decisive economic power over the technical functioning of the installation has been delegated. . . ." *Id.* art. 3(f).

54. *Id.* art. 6(2)(e).

55. See *id.* art. 12(1). Under Article 25, regulated entities may conclude agreements with countries listed in Annex B to the Kyoto Protocol "to provide for the mutual recognition of allowances between the Community scheme and other greenhouse gas emissions trading schemes in accordance with the rules set out in Article 300 of the Treaty." *Id.* art. 25(1).

56. *Id.* art. 30(3). The EU-ETS provided that linkage to the Kyoto project-based mechanisms could be effectuated through a Community Directive. In 2004, the EU-ETS was amended by the so-called "Linking Directive" to allow regulated entities to use emission reduction units (ERUs) from Joint Implementation projects and certified emissions reductions (CERs) from Clean Development Mechanism projects to meet a portion of their obligations. Directive 2004/101/EC of the European Parliament and of the Council of 27 October 2004, *Amending Directive 2003/87/EC Establishing a Scheme for Greenhouse Gas Emission Allowance Trading within the Community, in Respect of the Kyoto Protocol's Project Mechanisms*, para. 5, 2004 O.J. (L 338) 2. In Phase 1 of the ETS, Member States were permitted to achieve 50% of their emissions reductions obligations through the use of offsets. However, this option had "no practical importance" given the abundance of EUAs available during this period. Jon Birger Skjæseth & Jørgen Wettestad, *Fixing the EU Emissions Trading System? Understanding the Post-2012 Changes*, 10 GLOBAL ENVTL. POL'Y 101, 117 (2010). In Phase 2, the use of the flexibility mechanisms for offsetting was limited to different levels based on the national plans of Member State, ranging from 0% to 20% of the reductions required by the EU ETS. ETS installations used approximately 1.4 billion available credits to meet their commitments. *Id.* at 107 n.24. This likely reduced abatement efforts in the EU by decreasing the price of EUAs. Moreover, the integrity of many offset projects is questionable. *See* BRANGER ET AL., *supra* note 28. In Phase 3, existing installations can utilize up to a maximum of 1.6 billion external credits, representing up to a minimum of 11% of their allocation from 2008-2012. New sectors and entrants will be provided a guaranteed minimum access of 4.5% of their verified emissions during this period. European Commission Press Release M/08/35, *supra* note 3. The Directive also includes several other restrictions, including precluding the use of offsets associated with nuclear power. *Id. a*rt. 11(3)(a), or from investments in changes to land-use or forestry practices and related sinks. *Id.* art. 11(3)(b). Additionally, offsets from large hydroelectric dams are only permitted if they meet the World Commission on Dams' environmental and social conditions or other "relevant international criteria." *Id.* art. 11(6).

57. DE MANUEL ARAMENDÍA, *supra* note 46, at 2.

emissions.[58] The EU-ETS Directive provided for an initial allocation of emissions allowances for a three-year pilot period (2005 to 2007).[59] This was to be followed by allocations by Member States for the period of 2008 to 2013, corresponding to the first commitment period under the Kyoto Protocol, and each subsequent five-year period.[60] During the first two phases of the EU-ETS, the total emissions cap constituted the total number of EUAs, which represented the aggregate of all Member State allocation plans.

B. Directive 2009/29/EC

Article 30 of the EU-ETS Directive provided for the European Commission to file a report with the European Parliament and Council by the end of June 2006. The report was to include, *inter alia*, potential amendments to the EU-ETS to expand regulated sectors; the relationship of the EU-ETS and other EU efforts to reduce greenhouse gas emissions; the functioning of the allowance market; and the relationship of the EU-ETS and international emissions trading that was slated to begin under the Kyoto Protocol in 2008.[61]

While the Commission in its 2006 report indicated that it was premature to make legislative proposals at that point, it announced the establishment of a Working Group on the Review of the EU-ETS within the framework of the European Climate Change Program. It was contemplated that the Working Group would produce a report that would inform a legislative proposal by the Commission to amend the EU-ETS by 2007.[62] Moreover, the Commission proffered several suggestions, including the following:

(1) The Commission should explore the potential extension of the EU-ETS to other sectors and greenhouse gases should be part of a comprehensive review of the EU-ETS;[63]
(2) The Commission should explore the option of implementing a single EU–wide cap or maintaining separate national caps after 2012;[64]

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58. Council Directive 2003/87, art. 16(3), 2003 O.J. (L 275) 37 (EC). Regulated entities must also purchase a sufficient number of allowances from the market to cover the shortfall.

59. *Id.* art. 11(1).

60. *Id.* art. 11(2).

61. See *id.* art. 30(2).

62. *Commission Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions on Building a Global Carbon Market—Report Pursuant to Article 30 of Directive 2003/87/EC,* at 3 COM(2006) 676 final (Nov. 13, 2006).

63. *Id.* at 7.

(3) The Working Group should explore options to further reduce greenhouse gas emissions to enhance prospects for limiting global mean surface temperature increases to 2°C above pre-industrial levels, with reduction pathways of 15%-30% by 2020;[65] and
(4) Any amendments to the EU-ETS should take effect from 2013.[66]

The European Climate Change Program's Working Group on Climate Change subsequently convened four times and provided input into proposals for revamping the EU-ETS.[67]

In 2007, the Commission issued a Communication laying out a plan for limiting temperature increases to 2°C above pre-industrial levels.[68] Beyond advocating greenhouse gas emissions reductions of 20% from 1990 levels by 2020 (30% with commensurate measures by other developed States),[69] the Communication also outlined several measures to strengthen the EU ETS. These included making allocations of EUA allowances for periods longer than five years, extending the scheme to other gases and linking to other emissions trading schemes.[70]

In the same year, the Council of the EU also released conclusions by its Environment Council.[71] The Council reaffirmed its previous finding that developed countries should collectively reduce their 1990 emissions by 60% to 80% by 2050.[72] The conclusions also contained prescriptive measures for strengthening the EU-ETS, including extending carbon markets and using project-based mechanisms,

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64. *Id.* at 8.
65. *Id.* at 12.
66. *Id.* at 5-6.
67. *Commission Proposal for a Directive of the European Parliament and the Council Amending Directive 2003/87/EC So As To Improve and Extend the Greenhouse Gas Emission Allowance Trading System of the Community*, at 3, COM(2008) 16 final, (Jan. 23, 2009) [hereinafter *Proposal for a Directive of the European Parliament*].
68. *Commission Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions—Limited Global Climate Change to 2 Degrees Celsius: The Way Ahead for 2020 and Beyond*, at 2, COM(2007) 2 final (Jan. 10, 2007).
69. *Id.* at 2, 5.
70. *Id.* at 6.
71. COUNCIL OF THE EUROPEAN UNION, INFORMATION NOTE 6621/07, EU OBJECTIVES FOR FURTHER DEVELOPMENT OF THE INTERNATIONAL CLIMATE REGIME BEYOND 2012—COUNCIL CONCLUSIONS 2-8 (2007). The Environment Council of the Council of the European Union is composed of Ministers for the environment in EU States and is tasked with "tackling the issues of climate change and other environmental problems, to foster the harmonious, balanced and sustainable development of economic activities, and the prudent and rational utilization of natural resources." *Meeting of the Environmental Council*, LITHUANIAN PRESIDENCY COUNCIL EUR. UNION 2013 (Oct. 15, 2013), http://www.eu2013.lt/en/events/political-meetings/councilmeetings/meeting-of-the-environment-council-envi.
72. COUNCIL OF THE EUROPEAN UNION, *supra* note 71, at 2-3.

including the Clean Development Mechanism and Joint Implementation of the Kyoto Protocol, to efficiently meet emissions reductions goals.[73]

In the following year, the Commission submitted a proposal to amend Directive 2003/87,[74] as well as an accompanying staff working document.[75] The proposal was subsequently adopted by the European Parliament and Council as Directive 2009/29/EC,[76] and was slated to begin operation in 2013.[77] Reform of the EU-ETS was one piece of the European Climate and Energy Package, a set of policies and measures that seeks to implement the EU's "20-20-20" targets for 2020. These objectives, implemented through several Directives and other measures, include reducing EU greenhouse gas emissions by 20% from 1990 levels, raising the percentage of European energy consumption produced from renewable resources to 20%,[78] and improving energy efficiency by 20% during this period.[79] The most recent study by the European

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73. *Id.* at 5-6.

74. *See Proposal for a Directive of the European Parliament*, *supra* note 67.

75. Commission Staff Working Document—Accompanying Document to the Proposal for a Directive of the European Parliament and of the Council Amending Directive 2003/87/EC So As To Improve and Extend the EU Greenhouse Gas Emission Allowance Trading System—Summary of the Impact Assessment, EUR. PARL. DOC. SEC/2007/0054 Final (2008) [hereinafter Commission Staff Working Document].

76. Council Directive 2009/29, Annex I, 2009 O.J. (L140) 85 (EC).

77. *Id.* para. 48.

78. Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the Promotion of the Use of Energy from Renewable Sources and Amending and Subsequently Repealing Directives 2001/77/EC and 2003/30/EC, 2009 O.J. (L140), 13. The Renewable Energy Directive establishes mandatory national targets "consistent with a 20% share of energy from renewable sources and a 10% share of energy from renewable sources in transport in Community energy consumption by 2020." *Id.*; *see also Report from the Commission to the Council and the European Parliament on Sustainability Requirements for the Use of Solid and Gaseous Biomass Sources in Electricity, Heating and Cooling,* COM (2010) 11 final (Feb. 25, 2010). The Directive's targets varied between Member States based on starting points and potential for increasing renewable energy production, ranging from 10% in Malta to 49% in Sweden. *2020 Climate & Energy Package*, EUR. COMMISSION, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0063:0087:en:PDF (last visited Nov. 25, 2014).

79. *Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions, Limiting Global Climate Change to 2 Degrees Celsius. The Way Ahead for 2020 and Beyond*, at 5,6, COM (2007) 2 final (Jan. 10, 2007). The EU adopted an Energy Efficiency Plan in 2011. *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Energy Efficiency Plan,* COM (2011) 109 final (Mar. 8, 2011); Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on Energy Efficiency, Amending Directive 2009/125/EC and 2010/30/EU and Repealing Directives 2004/8/EC and 2006/32/EC, 2012 O.J. (315), 1. The Directive established a framework for meeting the 20% headline target on energy efficiency. *Id.* art. 1. At the time that the Directive was adopted, the EU was only on track to increase efficiency by 9% by 2020. European Commission Press Release MEMO/11/440, The Commission's New Energy Efficiency Directive (June 22, 2011), http://europa.eu/rapid/press-release_MEMO-11-440_en.htm?locale=en.

Environment Agency concludes that the EU is on track to meet the 20% renewable energy target in 2020 and is "moving towards the level of ambition required" to meet the energy efficiency target.[80] Other components of the package include national targets for non-EU-ETS emissions,[81] an establishment of a legal framework for carbon capture and sequestration (CCS).[82] The European Union has also endorsed the objective of reducing emissions in the Union by 80% to 95% below 1990 levels by 2050,[83] and established the "Roadmap for Moving to a Competitive Low Carbon Economy in 2050."[84] The 2007 Treaty of Lisbon also emphasized that combating climate change was the

80. EUROPEAN ENV'T AGENCY, EEA REP. NO. 10/2013, TRENDS AND PROJECTIONS IN EUROPE 2013 11(2013).

81. Decision No. 406/2009/EC of 23 April 2009, art. 14, 2009 O.J. (L104) 144 (EC), art. 14, 2009 O.J. (L140/136). The so-called "Effort Sharing Decision" establishes binding emissions targets for non-EU-ETS sectors, including transportation (other than aviation and maritime shipping), waste, agriculture, and the building sector. *Effort Sharing* Decision, EUR. COMMISSION, http://ec.europa.eu/clima/policies/effort/index_en.htm (last visited Dec. 7, 2013). The National Emissions Targets are differentiated among Member States based on relative wealth (Gross Domestic Product per capita). Council Decision No. 406/2009 of 23 Apr. 2009, art. 8, Annex 2, 2009 O.J. (L140). The Effort Sharing Decision enables Member States to meet their respective targets flexibly, including acquiring international credits or through trade with Member States that are able to exceed their targets. The Targets are intended to ensure a 10% reduction in regulated greenhouse gas emissions by 2020 from 2005 levels. *Id.* art. 7, Annex 11; *see also* Commission Decision of 26 March 2013 on Determining Member States' Annual Emission Allocations for the Period from 2013 to 2020 Pursuant to Decision No 406/2009/EC of the European Parliament and of the Council, 2013 O.J. (L 90/160).

82. See Council Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the Geological Storage of Carbon Dioxide and Amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC, 2008/1/EC and Regulation (EC) No 1013/2006, 2009 O.J. (L140/114). Carbon capture and storage is a process whereby carbon dioxide whereby carbon dioxide is collected from power stations and industrial facilities and pumped into terrestrial underground storage formations or deep under the ocean. Max Krahé et al., *From Demonstration to Deployment: An Economic Analysis of Support Policies for Carbon Capture and Storage*, 60 ENERGY POL'Y 753, 753 (2013); PETER FOLGER, CONG. RESEARCH SERV., NO. 7-5700, CARBON CAPTURE AND SEQUESTRATION (CCS) (2009). The European Union has projected that CCS could provide up to 15% of the reductions in greenhouse gases required in 2030. Directive 2009/31/EC, at para. 5, 2009 O.F. (L 140).

83. *EU Action on Climate*, EUR. COMMISSION, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0063:0087:en:PDF (last visited Nov. 25, 2014).

84. *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions*, *a Roadmap for Moving to a Competitive Low Carbon Economy in 2050*, COM (2011) 112 final (Mar. 8, 2011). The Roadmap, *inter alia*, establishes milestones for reaching the objective of reducing emissions in the EU by 80%-95% by 2050, investments needs, barriers to achieving the goals, and opportunities in various sectors. *Id.* at 3-5.

cornerstone of EU's international and regional efforts to address environmental issues.[85]

The amended Directive framed the challenges facing Europe and the world community in seeking to hold projected temperatures to no more than 2°C above pre-industrial levels. It re-affirmed the European Union's commitment to reduce its emissions by at least 20% below 1990 levels by 2020, and at least 30% should other industrialized countries make commensurate commitments.[86] Moreover, it emphasized the need for global greenhouse gas emissions to be reduced by at least 50% below 1990 levels by 2050, with developed countries reducing their emissions by 60%-80% during this period.[87]

Given the need for "increasing of efforts by the Community,"[88] the amended Directive dramatically transformed the EU-ETS in a number of ways:

(1) Expansion of the scope of regulated sectors and gases.
The amended Directive extended the scope of sectors regulated under the EU-ETS, as well as the scope of regulated greenhouse gases. The Commission concluded that this expansion in regulatory scope would both enhance the environmental effectiveness of the scheme by covering a larger proportion of EU emissions, and potentially render the system more efficient by introducing new and additional abatement options that might lower compliance costs.[89] Among the new categories of activities and respective greenhouse gas emissions encompassed under the amended Directive are: production of ferrous metals (carbon dioxide); production of primary aluminum (carbon dioxide and perflourocarbons) and secondary aluminum (carbon dioxide); production or processing of non-ferrous metals (carbon dioxide); production of petrochemicals (carbon dioxide); production of nitric, adipic, glyoxal and glyoxylic acid (carbon dioxide and nitrous oxide); production of ammonia (carbon dioxide); and capture, transport or storage of greenhouse gases related to carbon

85. Treaty of Lisbon Amending the Treaty on European Union and the Treaty Establishing the European Community, signed at Lisbon, 13 December 2007, art. 191(2), 2007 O.J. (L306) 1.

86. Council Directive 2009/29, paras. 4-5, 2009 O.J. (L140) 63 (EC).

87. *Id.* paras. 3-4.

88. *Id.* para. 2.

89. *Proposal for a Directive of the European Parliament*, *supra* note 67, at 4; *Commission of the European Communities, Proposal for a Directive of the European Parliament and of the Council Amending Directive 2003/87/EC So As To Improve and Extend the Greenhouse Gas Emission Allowance Trading System of the Community*, at 7, COM (2008) 16 final (2008).

capture and sequestration operations (carbon dioxide) and aviation (carbon dioxide).[90] These changes in the scope of the regulated categories are equivalent to bringing a net additional 120-130 million tons of carbon dioxide emissions into the system.[91]

(2) Establishment of a Linear Reduction Factor for Emissions.

To help facilitate the EU's objective of reducing its overall emissions by at least 20% below 1990 levels by 2020, the amended Directive calls for a linear decline in the quantity of emissions allowances of 1.74% annually until 2020 and beyond,[92] translating into an annual reduction of 37 million EUAs.[93] This was projected to result in a 21% reduction in allowances by 2020 from 2005 levels.[94] The rationale for the so-called linear reduction factor (LRF) was to provide regulated entities with clarity and predictability to ensure critical investments in technologies and other approaches to reduce greenhouse gas emissions.[95] Moreover, it was contemplated that the steadily tightening cap under the Directive would result in steadily rising allowance prices, inducing operators in the short term to pursue efficiency gains, and in the longer term to "turn to less carbon-intensive technologies and investment . . . ."[96] The new Directive provided for a default cap beyond 2020 to ensure regulatory stability.[97] Under the EU's climate and energy framework for 2020 to 2030, the annual linear

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90. Council Directive 2009/29, Annex I, 2009 O.J. (L 140) 85 (EC). France and the Netherlands had unilaterally extended the scope of their emissions regulatory structure to include nitrous oxides in the second phase of EU-ETS implementation, CLAUDIA KETTNER ET AL., WORKING PAPERS, NO. 368/2010, THE EU EMISSION TRADING SCHEME: INSIGHTS FROM THE FIRST-TRADING YEARS WITH A FOCUS ON PRICE VOLATILITY 2 (2010).

91. EUROPEAN COMM'N, EU ACTION AGAINST CLIMATE CHANGE: THE EU EMISSION TRADING SCHEME 15 (2009).

92. Report from the Commission to the European Parliament: The State of the European Carbon Market in 2012, at 4, COM (2012) 652 Final (Nov. 14, 2012). The linear factor was applied to average annual total quantity of allowances issued by States in their national allocation plans from 2008-2010. Decision No. 406/2009 of 26 March 2013, art. 9, 2013 O.J. (l. 90) 107.

93. Georg Zachmann, *You'd Better Bet on the ETS*, BRUEGEL POL'Y BRIEF, Apr. 2013, at 2.

94. European Commission Memo/08/35, Questions and Answers on the Commission's Proposal To Revise the EU Emissions Trading System, at para.5 (Jan. 23, 2008). The proposed annual ETS cap was set by the Commission under the new Directive at 2083 billion metric tons of carbon dioxide equivalent in 2013, dropping to 1720 billion metric tons of carbon dioxide equivalent in 2020. *Id.* at para.12.

95. EUROPEAN COMM'N, *supra* note 91, at 15.

96. Commission Staff Working Document, *supra* note 75, at 6.

97. European Commission, *Commission Staff Working Document, Information Provided on the Functioning of the EU Emissions Trading System, the Volumes of Greenhouse Gas Emission Allowances Auctioned and Freely Allocated and the Impact on the Surplus of Allowances in the Period Up to 2020*, at 4, COM (2012) 416 final (July 25, 2012).

reduction factor is slated to increase to 2.2% at the start of phase 4 in 2021.[98]

(3) Community-Wide Allowance Allocation.
In a "fundamental shift"[99] from the original incarnation of the EU-ETS, the new Directive eliminated National Allocations Plans and replaced them with EU-wide rules for quantities of allowances, allowance allocations and auctioning rules.[100] The rationale for this appeared to be several-fold. First, as developed more fully in Part III of this Article, the national allocation process had been subject to "free-riding behaviour and protectionist policies" that encouraged over-allocation of allowances.[101] Second, it was suggested that a harmonized approach would substantially reduce Member States' administrative costs.[102] Third, the Commission contended that the widely differing allocation methods of Member States had caused economic distortions that had denuded the economic efficiency of the system.[103]

(4) Extension of Compliance Period.
The new Directive expands the trading period from five years to eight years, with the third trading period slated for 2013 to 2020

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98. *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions, a Policy Framework for Climate and Energy in the Period from 2020 to 2030*, at 5, COM (2014) 15 final (2014).

99. CARBON TRUST, CUTTING CARBON IN EUROPE: THE 2020 PLANS AND THE FUTURE OF THE EU ETS 19 (2008).

100. See *id.* The European Commission had recommended this approach during the formulation of the original EU-ETS Directive. Peter Vis, *The First Allocation Round: A Brief History, in* 4 EU ENVIRONMENTAL LAW: THE EU GREENHOUSE GAS EMISSIONS TRADING SCHEME 187-212 (J. Delbeke ed., 2006). The EU has also established a Union Registry for the trading period beginning on January 1, 2013, and subsequent periods, Commission Regulation 389/2013 of 2 May 2013, Establishing a Union Registry Pursuant to Directive 2003/87/EC of the European Parliament and of the Council, Decisions No 280/2004/EC and No 406/2009/EC of the European Parliament and of the Council and Repealing Commission Regulations (EU) No 920/2010 and No 1193/2011, art.2, 2013 O.J. (L 122) 3. The Registry replaces Member States' national registries, which were established under the original version of the EU-ETS and records allocations of free allowances to operators, accounts of companies or physical persons holding allowances, transfers of allowances by account holders, annual carbon dioxide emissions from installations and annual reconciliation of allowances and verified emissions. *Union Registry*, EUR. COMMISSION, http://ec.europa.eu/clima/policies/ets/registry/ (last visited Dec. 8, 2013).

101. Stephano Clò & Emanuele Vendramin, *Is the ETS Still the Best Option*, INSTITUTIO BRUNO LEONI SPECIAL REP., May 10, 2012, at 9.

102. *Proposal for a Directive of the European Parliament*, *supra* note 67, at 172.

103. *Id.* at 14. Other commentators have also suggested that this new allocation approach will reduce prospects for legal challenges and the uncertainty this might engender. Émilie Alberola & Oliver Sartor, *Reduction in Free Allowances for Phase 3 of the EU ETS*, TENDANCES CARBONE, Sept. 2013, at 1.

and the fourth trading period from 2021 to 2028.[104] The extension of the compliance period was intended to send a more long-term price signal that would help to incentivize investments in emissions reductions projects.[105]

(5) Expansion of Auctioning of Allowances.

As indicated earlier in this Article, the EU-ETS originally provided for the vast majority of EUAs to be allocated to regulated entities for free.[106] This is an approach often taken in cap-and-trade programs to engender political support and to reduce the initial economic shock of such programs.[107] However, many regulated entities reaped windfall profits from selling free allowances on the market during the first two phases of implementation of the EU-ETS, engendering a backlash against this approach.[108] The new Directive dramatically alters the equation. With limited exceptions,[109] power producers will be required to purchase all of their allowances beginning in 2013, and free allowances will be phased out for operators in most sectors by 2027.[110] Overall, these

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104. European Commission Memo/08/796, Questions and Answers on the Revised EU Emission Trading System, at 5 (Dec. 17, 2008).

105. BLAS LUIS PÉREZ HENRÌQUEZ, ENVIRONMENTAL COMMODITIES MARKETS AND EMISSIONS TRADING 213 (2013).

106. Council Directive 2003/87, arts. 9(1), 10-11, 2003 O.J. (L 275) 36 (EC); *see generally supra* note 50 and accompanying text.

107. Penni Takade, *California's Precarious Path to Climate Change Mitigation*, 40 ECO. L. CURRENTS 10, 13 (2013), INGRID JEGOU & LUCA RUBINI, INT'L CTR. FOR TRADE & SUSTAINABLE DEV. GLOB. PLATFORM ON CLIMATE CHANGE, TRADE 3 SUSTAINABLE ENERGY, ISSUE PAPER NO. 18, THE ALLOCATION OF EMISSION ALLOWANCES FREE OF CHARGE: LEGAL AND ECONOMIC CONSIDERATIONS (2011).

108. CARBON TRADE WATCH, EU EMISSIONS TRADING SYSTEM: FAILING AT THE THIRD ATTEMPT 4 (2011), Gernot Klepper, *The Future of the European Emission Trading System and the Clean Development Mechanism in a Post-Kyoto World*, 33 ENERGY ECON. 687, 689 (2011). During Phase 2, ten companies held a surplus of 240 million EUAs. Laing et al., *supra* note 44, at 515. This resulted in earnings from their sale of as much as 3.8 billion euros, "more than four times Europe's environment budget over the period." Press Release, Ecofys, Weak Ambition in the Past, Weak Ambition for the Future (Dec. 20, 2010), http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.473.2216&rep=rep1&type=pdf.

109. The new Directive provides for transitional allocation of free allowances for certain electricity power plants in EU States with per capita GDP at market price that doesn't exceed 50% of the average per capita GDP of the Community. Council Directive 2009/29, art. 10(c), 2009 O.J. (L 140) 76 (EC). Eight EU Member States that have joined since 2004—Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Lithuania, Poland, and Romania—have availed themselves of the derogation, which will terminate at the end of 2020. Council Directive 2009/29, art. 10(c)(2), 2009 O.J. (L 140) 76 (EC); see also *Auctioning,* EUR. COMMISSION, http://ec.europa.eu/clima/policies/ets/cap/auctioning/index_en.htm (last updated Apr. 21, 2017).

110. Council Directive 2009/29, art. 10(1), 2009 O.J. (L 140) 71 (EC). It is estimated that approximately one billion EUAs will be sold annually in EU ETS auctions by 2020. Guillaume Chevaleyre, *Auction Revenues in EU ETS Phase 3: A New Public Resource,* CLIMATE BRIEF, Jan. 2013, at 1. However, operators at risk of "carbon leakage" will receive free allowances up to

> provisions will increase the number of allowances that will be auctioned in Phase 3 to more than half, compared to fewer than 4% in Phase 2.[111]

The next Part of this Article seeks to assess the impact of the EU-ETS to date in meeting EU climate policymaking objectives.

III. IMPLEMENTATION OF PHASES 1 AND 2 OF THE EU-ETS

As indicated earlier, the EU-ETS has been implemented in three phases to date.[112] Phases 1 and 2 are discussed below in this Article. Phase 3 will be covered in a later publication of the second half of this Article.

A. Phase 1

The EU-ETS was launched on January 1, 2005, with the first phase running from 2005 to 2007. The initial phase was denominated by EU officials as a "warm up phase" or "trial period,"[113] during which it was contemplated that firm buy-in would be engendered, and critical

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their performance benchmark, which is based on the average 10% most efficient installations in a given sector. Council Directive 2009/79, art.10, 2009 O.J. (L 140) 73 (EC). Carbon leakage may occur when carbon prices result in higher production costs and electricity prices for domestic industry, resulting in a loss of market share to foreign competitors not subject to such regulations. Moreover, domestic producers may ultimately choose to transfer production to other countries with laxer climate regulations to avoid costs associated with climate regulations, potentially resulting in commensurate or even greater emissions. Joshua Prentice, *Carbon Leakage and Competitiveness Under the EU ETS*, 22 EUR. ENERGY & ENVTL. L. REV. 132, 132 (2013). For a good discussion of the application of performance benchmarks for the allocation of free EUAs, *see* Oliver Sartor, *Free Allocations Under Phase 3 Benchmarks: Early Evidence of What Has Changed*, TENDANCES CARBONE, Apr. 2013, at 1; *see also* STEPHEN LECOURT, CLEMENTE PALLIERE & OLIVER SARTOR, EUROPEAN UNIV. INST., ROBERT SCHUMAN CTR. FOR ADVANCED STUDIES CLIMATE POLICY RESEARCH UNIT, WORKING PAPERS RSCAS 2013/17, THE IMPACT OF EMISSIONS-PERFORMANCE BENCHMARKING ON FREE ALLOCATION IN EU ETS PHASE 3 (2013). The list of sectors deemed to be at risk of carbon leakage was to be reviewed beginning in 2014, with an eye to revision. Many believe that the current list is too long, leading to windfall profits for certain sectors. Valerie Flynn, *Carbon Leakage List Consultation Launched*, ENDS EUR. (June 6, 2013), http://www.endseurope.com/32090/.

111. *The European Union Emissions Trading Scheme: A Cost-Effective Tool for Addressing Climate Change*, EU INSIGHT, Dec. 2010, at 4. In September 2013 the Commission announced that it would allocate 6.6 billion free EUAs to industrial installations, a 11.6% reduction from the initial request by Member States. Alberola & Sartor, *supra* note 103, at 1.

112. *Supra* note 11 and accompanying text.

113. JOSEPH KRUGER & WILLIAM A. PIZER, REG. FOR THE FUTURE, DISCUSSION PAPER 04-24, THE EU EMISSIONS TRADING DIRECTIVE: OPPORTUNITIES AND POTENTIAL PITFALLS 3 (2014); ELLERMAN, *supra* note 2, at 4.

institutions developed to facilitate emissions trading and reductions in greenhouse gas emissions in the System's second phase.[114]

The first phase of the EU-ETS did not constitute a propitious start for operationalizing cap and trade in Europe. As Wråke et al. observes:

> The environmental effect of a cap and trade system is governed by the total allocated volume of allowances. The price of emissions allowances and the resulting economic incentives for firms to reduce emissions are determined by the scarcity of allowances.[115]

As indicated earlier in this Article, during the first two phases of the EU-ETS Member States were tasked with making initial decisions as to the total number of allowances to allocate, and how these allowances should be distributed to sources within their respective jurisdictions in National Allocation Plans.[116] In the first phase of the EU-ETS, many EU Member States engaged in over-allocation of allowances in order to protect domestic industries from potential competition against companies in jurisdictions not subject to Kyoto Protocol mandates, as well as to maintain a propitious environment for domestic investments and capacity expansion.[117] As de Sépibus concluded, many Member States faced a type of "Prisoner's Dilemma," whereby all States would benefit from achieving emissions reductions goals, but faced an incentive to over-allocate allowances to benefit domestic constituencies.[118]

Moreover, Member State regulators were bedeviled by unreliable databases for the allocation of allowances. This was attributable to the fact that the underlying historical emissions data that served as the baseline for setting national allocations was sparse and non-uniform for emissions at the national level and for individual installations.[119] As a

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114. *See, e.g.*, *Green Paper on Greenhouse Gas*, *supra* note 33; Hei Sing Chan et al., *Firm Competitiveness and the European Emissions Trading Scheme,* 63 ENERGY POL'Y 1056, 1058 (2013).

115. Markus Wråke et al., *What Have We Learnt from the European Union's Emissions Trading System?*, 41 AMBIO 12, 13 (2012).

116. *See supra* notes 49 & 50 and accompanying text.

117. Frank J. Convery & Luke Redmond, *Market and Price Developments in the European Union Emissions Trading Scheme*, 1 REV. ENVTL. ECON. & POL'Y 88, 94 (2007); TAMARA GILBERTSON & OSCAR REYES, DAS HAMMARSKJOLD FOUND., OCCASIONAL PAPER SERIES, NO. 7, CARBON TRADING: HOW IT WORKS AND WHY IT FAILS 35 (2009).

118. J. J. DE SEPIBUS, SWISS NAT'L CTR. OF COMPETENCE IN RESEARCH, NCCR TRADE REGULATION, WORKING PAPER NO. 2008/18, LINKING THE EU EMISSIONS TRADING SCHEME TO JI, CDM AND POST-2012 INTERNATIONAL OFFSETS 2 (2008); *see also* Christian Egenhofer, *The Growing Importance of Carbon Pricing in Energy Markets*, *in* THE HANDBOOK OF GLOBAL ENERGY POLICY 361 (Andreas Goldthau ed., 2013). ("The allocation of allowances by member states . . . led to a 'race to the bottom.'").

119. Markus Pohlmann, *The European Union Emissions Trading Scheme*, *in* LEGAL ASPECTS OF CARBON TRADING, KYOTO, COPENHAGEN AND BEYOND 353 (D. Freestone & C.

consequence, regulators were compelled to rely on voluntary submissions from installation owners that were largely unverified.[120] This severely undermined the efforts of regulators to establish emissions caps that reflected actual emissions and harmonized projections.[121] The extremely tight schedule of six months faced by Member States for formulating their initial National Action Plans also made it difficult to rectify such data limitations.[122] Finally, an absence of verification protocols and metrics to ensure comparability of emissions reporting across States further undermined the integrity of the process.[123]

Exercising its authority to review and amend National Allocation Plans,[124] the European Commission downwardly adjusted the allocations of fourteen of the proposed twenty-five NAPs,[125] reducing the final cap by 4.3%.[126] This translated into an allocation of approximately 2.2 billion allowances.[127] However, many commentators concluded that the Commission's allocations were unwarranted by historical emissions and insufficiently stringent to ensure adequate price signals to effectuate the objectives of reducing greenhouse gas emissions in the shorter term through strategies, e.g., fuel-switching and driving long-term technological innovation.[128]

Streck eds., 2009); UK NAT'L AUDIT OFFICE, BRIEFING FOR ENVIRONMENTAL AUDIT COMMITTEE—NAO REVIEW OF EUROPEAN UNION EMISSIONS TRADING SCHEME 34 (2009). Bailey suggests that many industries in the EU exacerbated this problem by inflating "business as usual" emissions forecasts. Bailey, *supra* note 10, at 147.

120. Raphael Calel, *Carbon Markets: A Historical Overview,* 4 WIRES CLIMATE CHANGE 107, 113 (2013).

121. Hunter & Lacasta, *supra* note 36, at 592.

122. See CONVERY ET AL., *supra* note 9, at 9-10; U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-09-151, INTERNATIONAL CLIMATE CHANGE PROGRAMS: LESSONS LEARNED FROM THE EUROPEAN UNION'S EMISSIONS TRADING SCHEME AND THE KYOTO PROTOCOL'S CLEAN DEVELOPMENT MECHANISM 17 (2008).

123. See Michael Grubb, *From NAP I to NAP II: A View to the Future*, TENDANCES CARBONE, June 2007, at 1; LARS ZETTERBERG ET AL., IVL SWEDISH ENVTL. RESEARCH INST., IVL REP. B1591, ANALYSIS OF NATIONAL ALLOCATION PLANS FOR THE EU ETS 1 (2004).

124. *See supra* note 51 and accompanying text. As Ellerman points out, the EU-ETS is an unusual EU Directive, in that it grants the Commission functions that goes beyond its general executive powers, which in the case of Directives normally is restricted to ensuring that they are "transposed" into national law that conforms to the mandates the Directives. By contrast, the EU-ETS imbued the Commission with the power to review and reject National Allocation Plans of Member States. ELLERMAN, *supra* note 2, at 7.

125. Lesley McAllister, *The Overallocation Problem in Cap-And-Trade: Moving Toward Stringency*, 34 COLUM. J. ENVTL. L. 395, 409 (2009).

126. CHRISTINA HOOD, INT'L ENERGY AGENCY, INFORMATION PAPER, REVIEWING EXISTING AND PROPOSED EMISSIONS TRADING SYSTEMS 40 (2010).

127. HENRÌQUEZ, *supra* note 105, at 210.

128. See Wråke et al., *supra* note 115, at 13.

Unfortunately, this adjustment by the body tasked to "enforce scarcity of European Union Allowances"[129] ultimately proved inadequate. The first year of trading under the EU-ETS saw prices for EUAs rise more than anticipated, peaking at over thirty euros.[130] However, when 2005 verified emissions were released in April 2006, revealing a 4% over-allocation of allowances,[131] permit prices dropped precipitously,[132] ultimately plummeting to 0.02 euros per ton in December 2007.[133] At the end of the first phase, EU data revealed that regulated entities had been permitted to emit 130 million more tons of carbon dioxide than they actually emitted, translating into a surplus of 2.3%.[134]

Moreover, the total emissions of regulated entities grew by approximately 2% on a comparable basis.[135] As Abrell et al. concluded, it remains a contested proposition as to whether the EU-ETS reduced greenhouse gas emissions at all during Phase 1.[136]

B. Phase 2

The primary objective of Phase 2 of the EU-ETS (2008 to 2012) was to ensure that Member States met their obligations under the Kyoto Protocol during its first commitment period.[137] However, in the face of

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129. 1 Gouvernance Europeenne et Coopolitique De L'Energie, Abatement of CO2 Emissions in the European Union 13 (Jacques Lesourne & Jan Horst Keppler eds., 2007).

130. TOMMY LUNDGREN ET AL., CTR. FOR ENVTL. & RES. ECON., WORKING PAPER 2013:4, CARBON PRICE AND INCENTIVES FOR TECHNOLOGICAL DEVELOPMENT 6 (2013). EUAs reached a peak price of €31.58 ($37.48) per metric ton on April 19, 2006. U.S. GOV'T ACCOUNTABILITY OFFICE, *supra* note 122, at 13.

131. EUROPEAN ENV'T AGENCY, EEA TECHNICAL REPORT NO. 13/2008, APPLICATION OF THE EMISSIONS TRADING DIRECTIVE BY EU MEMBER STATES—REPORTING YEAR 2008 14 (2008).

132. KETTNER ET AL., *supra* note 90, at 1. Allowance prices fell from thirty-five euros at the beginning of April 2006 to twelve euros by the end of the month after it became obvious that there was an excessive number of allowances in the market. EUROPEAN ENV'T AGENCY, supra note 131, at 16.

133. *See* CONVERY ET AL., *supra* note 28, at 15. The decline of EUA prices to near zero was also partially attributable to the non-transferability of allowances between Phase 1 and Phase 2 in virtually all Member States, rendering them "basically worthless" during the final six months of 2007. LARRY PARKER, CONG. RESEARCH SERV. NO. 7-5700, CLIMATE CHANGE AND THE EU EMISSION TRADING SCHEME (ETS): LOOKING TO 2020 4 (2010).

134. MARTIJN VERDONK ET AL., NETH. ENVTL. ASSESSMENT AGENCY, EVALUATION OF POLICY OPTION TO REFORM THE EU EMISSION TRADING SYSTEM: EFFECTS ON CARBON PRICE, EMISSIONS AND THE ECONOMY 17 (2013).

135. CONVERY ET AL., *supra* note 28, at 14; Olivier Gloaguen & Emilie Alberola, *One Billion Tonnes of CO2 Avoided by the EU Power Sector and Industry Since 2005: Half Due to Energy-Climate Policies and Half Due to Economic Context,* 32 CLIMATE BRIEF, No. 32, at 4 (Oct. 2013), http://www.i4ce.org/download/climate-brief-n32-one-billion-tonnes-of-co2-avoided-since-2005-in-europe-half-due-to-energy-climate-policies-and-half-due-to-economic-context/.

136. JAN ABRELL ET AL., BRUEGEL WORKING PAPER, ASSESSING THE IMPACT OF THE EU ETS USING FIRM LEVEL DATA 7 (July 2011).

137. Gloaguen, *supra* note 135, at 1.

clear evidence of over-allocation of allowances by the parties in Phase 1, Member States proposed National Allocation Plans that would have, in aggregate, resulted in an approximate 5% *increase* in emissions relative to 2005 levels, only slightly below "business-as-usual" projections.[138]

In conducting its review of Member State NAPs, the Commission emphasized that if allowances were over-allocated in Phase 2 "[t]he development and deployment of existing and new clean technologies would stall, and the evolution of a dynamic and liquid global market would be seriously undermined."[139] Accordingly, the NAPs of Member States were subsequently cut by 10.4% in the Commission review, with only four countries not facing downward revisions of their proposed caps.[140] This resulted in a cap of 10 billion EUAs for Phase 2, or approximately 5% below 2005 verified emissions levels,[141] and 12% lower than the Phase 1 cap.[142]

However, the potentially detrimental impacts of exogenous forces on the operation of the EU-ETS was brought into stark relief during Phase 2. From 2008 to 2013, Europe found itself in the throes of the so-called "Great Recession." This manifested itself in a double-dip recession.[143] This precipitated substantial declines in economic production, including a 13.85% drop in production of electricity and industrial goods in 2009.[144] This, in turn, resulted in a substantial decline in greenhouse gas emissions during this period, including a 11.6% drop in emissions in regulated sectors of the EU-ETS in 2009.[145]

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138. GRUBB, *supra* note 41, at 19.

139. *Commission of the European Communities, Communication from the Commission to the Council and to the European Parliament on the Assessment of National Allocation Plans for the Allocation of Greenhouse Gas Emission Allowances in the Second Period of the EU Emissions Trading Scheme Accompanying Commission Decisions of 29 November 2006 on the National Allocation Plans of Germany, Greece, Ireland, Latvia, Lithuania, Luxembourg, Malta, Slovakia, Sweden and the United Kingdom in Accordance with Directive 2003/87/EC*, at 2, COM (2006) 725 final (Nov. 19, 2006), at 2.

140. KETTNER ET AL., *supra* note 90, at 3. The four Member States with NAPs that passed mustard initially were Denmark, France, Slovenia, and the United Kingdom. *Id.*

141. ELLERMAN, *supra* note 2, at 14; Gloaguen, *supra* note 135, at 1. The Commission provided for the allocation of 9.9 billion free allowances and auctioning of 0.4 billion allowances. Additionally, regulated entities could use up to 1.4 billion credits generated from Kyoto's flexible mechanisms, the Clean Development Mechanism and Joint Implementation to meet their ETS obligations.

142. ELLERMAN, *supra* note 2, at 14.

143. *Eurozone Falls Back into Recession*, BBC NEWS (Nov. 15, 2012), http://www.bbc.com/news/business-20337245.

144. CARBON TRADE WATCH, EU EMISSIONS TRADING SYSTEM: FAILING AT THE THIRD ATTEMPT 2 (Apr. 2011), http://www.carbontradewatch.org/downloads/publications/ETS_briefing_april2011.pdf.

145. *Id.*

This has adversely impacted the viability of the EU-ETS in several ways. First, the substantial decline in emissions has resulted in a drastic drop in the price of European Union Allowances. While the Commission anticipated that the revised EU-ETS would yield allowance prices of thirty euros,[146] prices slumped in four of the five years of Phase 2, plummeting to 6.67 euros on the futures exchange at the end of the second phase.[147] Several studies concluded that this price signal was far too low to incentivize either fuel switching from coal to natural gas, idling many gas plants. Moreover, the price was insufficient to drive investments in low-carbon technologies.[148] This greatly depressed price also meant that no additional abatement might be required to meet the emissions reductions objectives in the upcoming Phase 3 of the EU-ETS.[149]

The reduction in demand for EUAs precipitated by the economic downturn also resulted in a substantial drop in emissions. In fact, the lion's share of the drop in emissions during Phase 2 was probably attributable to the recession in Europe.[150] This resulted in a huge surplus of over 1.7 billion EAUs at the end of Phase 2, with excess allowances in every year except 2008.[151] This surplus boded badly for implementation of the EU-ETS during Phase 3, since the credits could be carried over. Indeed, the International Energy Agency concluded that the buildup of surplus EUAs could ensure that emissions of regulated installations might not fall through 2020.[152]

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146. MARTIJN VERDONK & HERMAN VOLLEBERGH, PBL NETH. ENVTL. ASSESSMENT AGENCY, EVALUATION OF THE EUROPEAN COMMISSION'S PROPOSAL TO SET ASIDE EMISSION ALLOWANCES 4 (Nov. 2012).

147. *European Carbon Permit Prices Cap Another Losing Year*, AGE: BUSINESS (Jan. 1, 2013), http://www.theage.com.au/business/carbon-economy/european-carbon-permit-prices-cap-another-losing-year-20130101-2c3s9.html.

148. European Commission, *Commission Staff Working Document, Proportionate Impact Assessment Amending Regulation (EU) No 1031/2010 in Particular to Determine the Volumes of Greenhouse Gas Emission Allowances To Be Auctioned in 2013-2020* (2012), at 12, https://ec.europa.eu/clima/sites/clima/files/ets/auctioning/docs/swd_2012_xxx_en.pdf, site visited on Apr. 10, 2016; Sonja van Renssen & Karel Beckman, *How To Find a Cure for the Emission Trading Scheme Without Killing It,* EUR. ENERGY REV. (June 28, 2012), at 1, http://www.eurelectric.org/media/50531/2012%2006%2028%20EER%20-%20how%20to%20find%20a%20cure%20for%20the%20ETS%20without%20killing%20it.pdf.

149. Nicola Berghmans, *Reforming the EU ETS: Give It Some Work!,* Climate Brief, No. 28 (Feb. 2013), at 1, http://www.i4ce.org/download/tendances-carbone-n78-reforming-the-eu-ets-give-it-some-work/.

150. DAMIEN MORRIS & BRYONY WORTHINGTON, SANDBAG, CAP OR TRAP: HOW THE EU ETS RISKS LOCKING-IN CARBON EMISSIONS 24 (2010).]

151. Gloaguen & Alberola, *supra* note 135, at 4.

152. INT'L ENERGY AGENCY, WORLD ENERGY OUTLOOK 181 (2009), http://www.worldenergyoutlook.org/media/weowebsite/2009/WEO2009.pdf.

IV. CONCLUSION: PART I

While the European Union has often been portrayed as a "reluctant" adopter of the cap and trade approach to addressing climate change,[153] it resolutely set out to adopt it in earnest in the middle of the last decade. As the first part of this Article indicated, its success to date, at most, has been mixed. The second part of this Article will assess the implementation of the EU-ETS to date during its third phase, which is slated for the period of 2013 to 2020. Moreover, it will discuss the prospects for its fourth phase, and, finally, outline a series of proposals that might help to strengthen the world's flagship emissions trading system.

153. John Fialka, Europe Becomes a Reluctant Emissions Trading Pioneer, CLIMATEWIRE (May 12, 2016), https://www.eenews.net/stories/1060037087; BRANGER ET AL., *supra* note 28, at 6.