

Chapter 9

European Union Emissions Trading Scheme: Design Evolution and Effectiveness Analysis

Antonio Marcio Ferreira Crespo

Concordia University, Canada

Chun Wang

Concordia University, Canada

ABSTRACT

The European Union Emissions Trading Scheme (EU-ETS), launched in 2005, is one of the most important market-driven initiatives in support to the global commitment to fight the climate changes and foster sustainable development. The scheme design evolution, comprising four phases, was characterized by continued ineffectiveness in driving emissions reduction, mainly for industries outside the power generation sector. This chapter brings an analysis of the EU-ETS design evolution, aiming at providing an overview on how the EU-ETS design features improvements impacted its effectiveness. The emissions trading scheme's main design features are listed, followed by the description of the EU-ETS design evolution in terms of scope, allowances allocation process, and emissions cap (among others). The greenhouse gases emissions trends, the carbon price behavior, and the availability of allowances in the EU carbon market are presented and discussed as key factors in support to the EU-ETS effectiveness assessment.

INTRODUCTION

Environmentally sustainable development was globally recognized as a critical condition for the continuing habitability of the planet, and such fact has been consistently addressed in several international efforts aimed at implementing a universally agreed framework able to support industry development and protect the environment concomitantly.

DOI: 10.4018/978-1-5225-9570-0.ch009

The United Nations (UN) Conference on Environment and Development Rio Eco92 - Earth Summit, held by Rio de Janeiro in 1992, can be considered the first global attempt towards a blueprint for sustainable development, with the Agenda 21 proposition. In 2000, UN General Assembly adopted the United Nations Millennium Declaration stating fundamental values among which respect for nature is listed and corroborated by a specific target addressing environment protection. The General Assembly resolution 55/2 reinforced the Agenda 21 environmental relevance and highlighted the fundamental importance of reducing greenhouse gases (GHG) emissions, that should be tackled by the Kyoto Protocol signed in 1997.

The UN World Summit on Sustainable Development Rio+10, held by Johannesburg in 2002, recalled the need for the Kyoto Protocol effective implementation, so that a staggered and consistent GHG emissions reduction could be timely accomplished. In general terms, such protocol embraces all the commitments, obligations, goals and targets under the United Nations Framework Convention on Climate Change.

In order to foster the Kyoto Protocol objectives accomplishment, several regions, countries, states and cities designed and implemented market initiatives targeting GHG emissions reductions and/or financial compensations for above-cap emissions, which includes carbon-trading mechanisms. The United Kingdom implemented its domestic emissions trading scheme in 2002, followed by Norway in 2005; both countries had their schemes incorporated to an European-wide comprehensive framework.

The European Union Emissions Trading Scheme (EU-ETS) was launched in 2005 and initially targeted energy intensive industries (energy generation, mineral extraction, ferrous metals production and processing, and the production of pulp from timber, paper and board). In 2009, ten US states implemented the Regional Greenhouse Gas Initiative (RGGI), a mandatory emissions reduction market based program. Tokyo launched its emissions trading scheme in 2010, after a ten years process that followed the establishment of a carbon emissions reduction program. In 2011, the Canadian provinces of British Columbia, Ontario and Quebec, and the US state of California created the WCI Inc., a non-profit organization linked to the Western Climate Initiative with the purpose of supporting CO₂ emissions cap-and-trade systems implementation.

The European Union included within-Europe aviation in the EU-ETS scheme in 2012. In 2003 the International Civil Aviation Organization (ICAO) adopted an Assembly resolution prescribing the establishment of a global market-based mechanism to reduce air transport emissions that should be in force by 2020, which is expected to supersede EU-ETS regulations for aviation.

The United Nations annual climate change conference COP-21 (Conference of the Parties) held in 2015 reviewed some emissions reduction targets and reaffirmed States commitments on environment protection goals, as ratified by the Paris Climate Change Agreement. More recently, in 2017 China, currently the largest emitter of greenhouse gases on the planet, implemented the biggest carbon trading market in the world, initially embracing energy generation based on coal and natural gas.

According to Wang & Wang (2015), carbon emission trading schemes are amongst the most used market measures put in place to support emissions reductions initiatives, and the European Union states that such systems are among the most cost-effective tools for reducing GHG emissions (European Commission, 2018).

Therefore, by considering the unquestionable relevance of emissions trading schemes (ETS) for the sustainable development on the planet, this chapter aims at providing a comprehensive analysis of the EU-ETS implementation, with focus on its design evolution and impacts on the verified emissions, according to the attempted financial strategies and scheme parameters.

The findings presented and discussed hereafter were accrued from the scrutiny of two European Commission (EC) EU-ETS Impact Assessment reports (2014 and 2017), two EC reports on Climate

20 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/european-union-emissions-trading-scheme/241333

Related Content

Improving the Plan of a Manufacturing Network with Non-Integrated Business Units

Atour Taghipour (2014). *International Journal of Applied Logistics* (pp. 1-11).

www.irma-international.org/article/improving-the-plan-of-a-manufacturing-network-with-non-integrated-business-units/121749

Supply Chain Management Using Fermatean Fuzzy-Based Decision Making With ISSOA

Arunadevi Thirumalraj, R. J. Anandhi, V. Revathi and S. Stephe (2024). *Convergence of Industry 4.0 and Supply Chain Sustainability* (pp. 296-318).

www.irma-international.org/chapter/supply-chain-management-using-fermatean-fuzzy-based-decision-making-with-issoa/342680

Relationship Establishment in SCM in a Market with Enforcement and Regulation Challenges: Case of Tanzania

Felix Adamu Nandonde and Winnie Nguni (2016). *Handbook of Research on Global Supply Chain Management* (pp. 354-365).

www.irma-international.org/chapter/relationship-establishment-in-scm-in-a-market-with-enforcement-and-regulation-challenges/141152

Demystifying the Technology Adoption by the Asian Cargo Industry: A Bibliometric Analysis and Future Directions

Narendra Kumar and Swati Sharma (2024). *Global Cargo Industry: Resilience of Asia-Pacific Shipping Industries* (pp. 136-158).

www.irma-international.org/chapter/demystifying-the-technology-adoption-by-the-asian-cargo-industry/344908

Role of Big Data in Continuous Improvement Environments: A Reflection on The Relationship

Brian J. Galli (2019). *International Journal of Applied Logistics* (pp. 53-72).

www.irma-international.org/article/role-of-big-data-in-continuous-improvement-environments/218815