1. Introduction

STRINGENT EU EMISSION REDUCTION TARGETS AT RISK

Global warming is, most likely, the greatest threat to humanity. It puts health, livelihoods, food security, and water supply at risk. It reduces biodiversity, both generally and of fisheries in particular, and also reduces the size of fisheries; it negatively affects ecosystems and their services to humans; it impacts freshwater and coastal ecosystems and is causing rises in sea level.¹ It is therefore more than gratifying that the world community has committed itself to engage in climate change mitigation jointly. Under the Paris Agreement 2015 of the United Nations Framework Convention on Climate Change,² the international community has bindingly agreed on a common action plan to limit global warming to a 2°C trajectory above the pre-industrial level.³

In contrast to the Kyoto Protocol,⁴ the Paris Agreement does not focus on a common policy tool, e.g. a worldwide carbon price to mitigate climate change. Instead, it allows its Members to pursue their mitigation objectives through instruments they consider the most effective.⁵ To this end, the Members to the Agreement had to submit their nationally determined contributions. The European Union and its Member States jointly committed to

¹ On the impact of global warming see the latest report of the IPCC, *Global Warming of 1.5°C: An IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* (IPCC 2018).

² UN Paris Agreement (adopted 12 December 2015, opening for signature 22 April 2016, entered into force 4 November 2016), Treaty Series Number 4 (2017) (hereinafter UN Paris Agreement). A critical view on the UN Paris Agreement is provided by, e.g. Oliver Geden, 'The Paris Agreement and the inherent inconsistency of climate policy-making' (2016) 7:6 *Wiley Interdisciplinary Reviews: Climate Change*, 790.

³ Article 2(1)(a) UN Paris Agreement.

⁴ Kyoto Protocol to the United Nations Framework Convention on Climate Change (adopted 11 September 1992, opening for signature 16 March 1998, entered into force on 16 February 2005) Treaty Series vol. 2303, p. 162 (hereinafter Kyoto Protocol).

⁵ Article 4(2) UN Paris Agreement.

a binding greenhouse gas emission reduction target of 40 per cent by 2030 compared to the 1990s level, including all sectors and all sources of emissions.⁶

Such a stringent emission reduction target is nothing new to the European Union, but is in line with its internal climate policy targets. In its Green Paper on a climate framework for climate and energy policy 2030⁷ and its roadmap for moving to a competitive low carbon economy 2050,⁸ the European Union laid down a long-term emission reduction target of 80 to 95 per cent up to 2050 compared to the 1990s level. In its Green Deal, as published in late 2019, the European Commission even proposed a zero net emission goal for 2050.⁹

To reach such deep decarbonisation, the European Union had implemented a portfolio of climate policy instruments aiming at integrated targets such as primary emission cuts,¹⁰ energy efficiency,¹¹ and promotion of renewable energy.¹² These instruments unfolded their desired effect and indeed reduced

⁶ European Commission, 'Submission by Latvia and the European Commission on behalf of the European Union and its Member States' (6 March 2015) (www4.unfccc.int/Submissions/INDC/Published%20Documents/Latvia/1/LV-03-06-EU%20INDC.pdf, accessed 12 September 2020). Cf. also European Council, 'Conclusions of 23/24 October 2014' (EUCO 169/14) at p. 1.

⁷ European Commission, 'Green Paper: A 2030 framework for climate and energy politics' COM(2013) 169 final at p. 3.

⁸ European Commission, 'A Roadmap for moving to a competitive low carbon economy in 2050' COM(2011) 112 final at p. 4.

⁹ European Commission, 'Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions – The European Green Deal' COM(2019) 640 final at p. 2.

¹⁰ Directive 2003/87/EC 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] OJ L275/32 as amended by Directive (EU) 2018/410 of the European Parliament and of the Council of 14 March 2018 amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments, and Decision (EU) 2015/1814 [2018] OJ L 76/3; Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide 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] OJ L140/114; Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020 [2009] OJ L140/136.

¹¹ Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC [2012] OJ L315/1.

¹² 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 2007/77/EC and 2003/30/EC [2009] OJ L140/16.

the Union's emissions.¹³ However, there is a consensus that they are not sufficient to reach the European Union's long-term emission target.¹⁴ Under current policy design without any additional measures, emission reductions in 2050 will level off at around 60 per cent compared to the 1990s level.¹⁵ Against this background, the European Commission proposed several policy tools to encourage emission reductions in the midterm.¹⁶ The legislative proposals have successfully passed the legislative process.¹⁷ Although these measures

¹³ Until 2014, emissions within the European Union dropped by 22.9 per cent compared to the 1990s level. The reasons for these cuts are diverse. Some are attributable to structural changes, some are caused by the financial and economic crises that started in 2008, others are attributable to improvements of energy intensity in the EU as well as to the increase in renewable energy (see EuroStat, 'Europe 2020 indicators – climate change and energy', http://ec.europa.eu/eurostat/statistics-explained/index.php/Europe_2020_indicators_-_climate_change_and_energy#The_EU.E2.80.99s_GHG_emission_reductions_are_approaching_the_2020_target, accessed 12 September 2020). Estimations suggest that emissions within the EU were reduced in 2016 by 23 per cent compared to 1990 levels so that the emission reduction target of 20 per cent in the year 2020 will be met (see European Environment Agency, 'Trends and projections in Europe 2017 – Tracking progress towards Europe's climate and energy targets' (2017) EEA Report No. 17/2017 at p. 20).

¹⁴ European Environment Agency, 'Trends and projections in Europe 2015 – Tracking progress towards Europe's climate and energy targets' (2015) EEA Report No. 4/2015 at p. 26; European Environment Agency (n. 13 above) at pp. 20 *et seq.*

¹⁵ European Commission, 'A Roadmap for moving to a competitive low carbon economy in 2050' COM(2011) 112 final, at p. 5.

¹⁶ European Commission, 'Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC to enhance cost effective emission reductions and low-carbon investment' COM(2015) 337 final; European Commission, 'Proposal for a Regulation of the European Parliament and of the Council on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry into the 2030 climate and energy framework and amending Regulation No. 525/2013 of the European Parliament and the Council on a mechanism for monitoring and reporting greenhouse gas emissions and other information relevant to climate change' COM(2016) 479 final; European Commission, 'Proposal for a Regulation of the European Parliament and of the Council on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 for a resilient Energy Union and to meet commitments under the Paris Agreement and amending Regulation No. 525/2013 of the European Parliament and the Council on a mechanism for monitoring and reporting greenhouse gas emissions and other information relevant to climate change' COM(2016) 482 final; European Commission, 'European Strategy for low-emission mobility' COM(2016) 501 final; European Commission, 'Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources (recast)' COM(2016) 767 final.

¹⁷ Directive (EU) 2018/410 of the European Parliament and of the Council of 14 March 2018 amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments, and Decision (EU) 2015/1814 [2018] OJ L

make the achievement of the 2030 target more likely, they are still insufficient to achieve the 2050 target. Only a profound transformation of the EU can safeguard the EU's long-term emission aims.¹⁸

The European Union identified five key sectors that are responsible for a significant share of the European Union's emissions, and which must be addressed through additional instruments to cut back emissions.¹⁹ One of these sectors is the industry sector, in particular the carbon-intensive materials sector, including iron and steel, cement, aluminium, pulp and paper, and copper. Among these materials, the iron and steel and the cement sectors alone accounted for 37 per cent of the industry's process and product use emissions in 2014.²⁰ Decarbonising the materials sector is thus essential to meet the EU's long-term emission reduction target. The emission reductions achieved up to date in this sector mainly trace back to production efficiency and fuel shifting triggered by the sectors' obligation to surrender allowances under the EU Emissions Trading System, the EU's cornerstone of environmental policy. The potential for emission reductions from production efficiency and fuel shifting, however, has been almost fully exhausted.²¹

Further emission reductions can only be achieved through two additional channels: the consumption channel through materials efficiency as well as the investment channel through the development and use of breakthrough technologies like carbon capture and sequestration. Under the consumption channel, emission reductions result from a decrease in the consumption of carbon-intensive materials. It requires a price signal to be sent along the value

76/3; Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework, and amending Regulation (EU) No. 525/2013 and Decision No. 529/2013/EU [2018] OJ L 156/1, Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013 [2018] OJ L 156/39.

¹⁸ See European Environment Agency (n. 13 above) at p. 22.

¹⁹ Ibid. at p. 6.

²⁰ Data available at European Environment Agency, 'EEA greenhouse gas – data viewer' (www.eea.europa.eu/data-and-maps/data/data-viewers/greenhouse-gases-viewer, accessed 12 September 2020).

²¹ Julian M. Allwood et al., 'Material efficiency: providing material services with less material production' (2013) 371 *Philosophical Transactions. Series A, Mathematical, Physical, and Engineering Science* 20120496, at p. 2; Karsten Neuhoff et al., 'Modernization and innovation in the material sector: lessons from steel and cement' (2015) 28/29 *DIW Bulletin*, 387, at p. 390.

chain to steer consumer needs towards more climate-friendly materials.²² Activating the investment channel involves public funding and support as the development of breakthrough technologies is highly capital intensive and less profitable from an investor's point of view.²³

The current EU ETS design, however, only sends limited incentives to activate the full emission reduction potential of the EU ETS. This was acknowledged by policymakers so that new rules, in particular on allowance allocation, were introduced by the revised EU ETS Directive.²⁴ From Phase IV onwards, intensity-based allocation of allowances to sectors at risk of carbon leakage is the preferred mechanism of allowance allocation. This mechanism allocates allowances to producers of carbon-intensive materials based on efficiency benchmarks and actual output.²⁵ While this eliminates some of the economic efficiencies that arose from the allocation rules of Phase III – benchmark-based allocation based on historic output – it shields carbon prices from consumer prices.²⁶ Accordingly, there are only limited incentives for emission reductions through the consumption channel. Further, free allocation of allowances reduces the volume of allowances to be auctioned at the auction platforms. Consequently, revenue that could otherwise have been used, for example, for the investment in breakthrough technology is lost.²⁷

²² Karsten Neuhoff et al., 'Filling gaps in the policy package to decarbonize production and use of materials' (2018) *Climate Strategies*, at p. 37.

²³ Jon Gibbins and Hannah Chalmers, 'Carbon capture and storage' (2008) 36:12 *Climate Policy*, 4317; Samuela Bassi et al., 'Bridging the gap: improving the economic and policy framework for carbon capture and storage in the European Union' (2015) Centre for Climate Change Economics and Policy and Grantham Institute for Climate Change Policy Brief, pp. 37 *et seq.*

²⁴ Directive (EU) 2018/410 of the European Parliament and of the Council of 14 March 2018 amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments, and Decision (EU) 2015/1814 [2018] OJ L 76/3.

²⁵ Intensity benchmark allocation refers to the allocation of allowances based on actual output. See, e.g. Bram Borkent et al., 'Dynamic allocation for the EU Emissions Trading System: enabling sustainable growth – Final Report' (2014) Ecofys, at p. 7. On the new allocation rules see Article 10a(20) EU ETS Directive.

²⁶ See Michael Grubb and Karsten Neuhoff, 'Allocation and competitiveness in the EU Emissions Trading Scheme: policy overview' (2006) 6:1 *Climate Policy*, 7, at p. 25; Roland Ismer, Klimaschutz als Rechtsproblem (vol. 225 *Jus Publicum*, Mohr Siebeck 2014) at p. 180.

²⁷ On the use of revenue see Article 10(3) EU ETS Directive.

LITERATURE SURVEY AND CURRENT POLICY DEVELOPMENTS

Scholarly literature has discussed several approaches that seek to activate the consumption channel. Some authors regard green public procurement for the public sector as an efficient tool to increase demand for carbon-friendly materials.²⁸ Tenders for public projects would be evaluated not only based on their monetary value but also based on their climate friendliness by employing shadow carbon prices and life cycle assessment. In doing so, demand for innovative materials would be generated despite their consumer-price-related competitive disadvantage. While such green public procurement is already established within the Public Procurement Directive,²⁹ public budget constraints mean that competent authorities are somewhat reluctant to use it.³⁰

²⁸ Mario Tarantini et al., 'A life cycle approach to green public procurement of building materials and elements: a case study on windows' (2011) 36:5 *Energy*, 2473; Francesco Testa et al., 'What factors influence the uptake of GPP (green public procurement) practices? New evidence from an Italian survey' (2012) 82 *Ecological Economics*, 88; Peter Kunzlik, 'Green public procurement – European law, environmental standards and "what to buy" decisions' (2013) 25:2 *Journal of Environmental Law*, 173; Sofia Lundberg and Per-Olov Marklund, 'Green public procurement as a policy instrument: cost effectiveness' (2013) 4:4 *Environmental Economics*, 75; Orsolya Diófási and László Valkó, 'Step by step towards mandatory green public procurement' (2014) 22:1 *Social and Management Science*, 21; Kader Uttam et al., 'Green public procurement (GPP) of construction and building materials' in Fernando Pacheco-Torgal, Luisa F. Cabeza, Joao Labrincha and Aldo Giuntini de Magalhaes (eds), *Eco-Efficient Construction and Building Materials: Life Cycle Assessment (LCA), Eco-Labeling and Case Studies* (Woodhead Publishing 2014); Fabio Irlando et al., 'The relevance of life cycle costing in green public procurement' (2016) 2016:1 *Economics and Policy of Energy and the Environment*, 91; Francesco Testa et al., 'Drawbacks and opportunities of green public procurement: an effective tool for sustainable production' (2016) 112 *Journal of Cleaner Production*, 1893; Olga Chiappinelli and Vera Zipperer, 'Using public procurement as a decarbonisation policy: a look at Germany' (2017) 49 *DIW Economic Bulletin*, 523; Cristina Kassai, 'Safeguarding the environment by choosing green public procurement' (2017) 70:3 *Juridical Current*, 33; Anne Rainville, 'Standards in green public procurement – A framework to enhance innovation' (2017) 167 *Journal of Cleaner Production*, 1029; Magnus Sparrevik et al., 'Green public procurement – A case study of an innovative building project in Norway' (2018) 188 *Journal of Greener Production*, 879; Wenjuan Cheng et al., 'Green public procurement, missing concepts and future trends – critical review' (2018) 176 *Journal of Cleaner Production*, 770.

²⁹ See Articles 67 *et seq.* of Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC [2014] L 94/65.

³⁰ Olga Chiappinelli and Vera Zipperer (n. 28 above) at p. 528.

Others have pleaded that the awareness of consumers might be increased through carbon labelling or environmentally related advertising.³¹

Some scholars have spoken out for border carbon adjustments on imports with full auctioning of allowances within the EU.³² In doing so, incentives for relocation of production plants to carbon havens would diminish as all materials consumed within the EU would face carbon costs irrespective of their place of production. Consequently, carbon costs could be shifted onto consumption prices without the fear of losing market share. The increase in consumer prices for carbon-intensive materials would then create incentives for emission reductions through the consumption channel. Although economically sound,³³ carbon adjustments face both political and legal constraints as their compatibility with the rules of world trade law, in particular the General Agreement

³¹ See Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC [2012] OJ L 315/1; Regulation (EC) No. 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel [2010] OJ L 27/1. See e.g. Michael P. Vandenberg et al., 'Time to try carbon labelling' (2011) 1:1 *Nature Climate Change*, 4; Nancy M. P. Bocken and Julian M. Allwood, 'Strategies to reduce the carbon footprint of consumer goods by influencing stakeholders' (2012) 35 *Journal of Cleaner Production*, 118; Marc A. Cohen and Michael P. Vandenberg, 'The potential role of carbon labelling in a green economy' (2012) 34:51 *Energy Economics*, 53.

³² On the theoretical concept of border carbon adjustments see, e.g. Roland Ismer and Karsten Neuhoff, 'Border tax adjustment: a feasible way to support stringent emission trading' (2007) 24:2 *European Journal of Law and Economics*, 137.

³³ On the effectiveness of border carbon adjustments see, e.g. Justin Caron, 'Estimating carbon leakage and the efficiency of border adjustments in general equilibrium – Does sectoral aggregation matter?' (2012) 34:2 *Energy Economics*, 111; Carolyn Fischer and Alan L. Fox, 'Comparing policies to combat emissions leakage: border carbon adjustments versus rebates' (2012) 64:2 *Journal of Environmental Economics and Management*, 199; Frédéric Branger and Philippe Quirion, 'Would border carbon adjustments prevent carbon leakage and heavy industry competitiveness losses? Insights from a meta-analysis of recent economic studies' (2014) 99 *Ecological Economics*, 29. Some scholars, however, regard border adjustment as less effective, e.g. Onno Kuik and Marjan Hofkes, 'Border adjustment for European emissions trading: competitiveness and carbon leakage' (2010) 38:4 *Energy Policy*, 1741; Marci Ajau and John Barrett, 'Border carbon adjustments: addressing emissions embodied in trade' (2016) 92 *Energy Policy*, 102.

on Tariffs and Trade³⁴ and the Agreement on Subsidies and Countervailing Measures,³⁵ remains unclear.³⁶

Yet, others have proposed consumption-based carbon charges without any obligation for domestic producers and importers to acquire and surrender allowances under emissions trading.³⁷ Again, incentives for substitution of materials would be delivered under this scheme as all materials consumed within one territory would reflect carbon prices. However, the incentives for production efficiency improvements under such a scheme are somewhat limited as incentives are only created on the consumer side.

Recently, the idea of a carbon border adjustment mechanism again gained momentum within the EU. In its Green Deal, the EU Commission announced a proposal for such a mechanism for selected sectors at risk of carbon leakage. In doing so, it wishes for a more accurate reflection of carbon costs in consumer prices. The Commission did not mention a particular mechanism but specified

³⁴ General Agreement on Tariffs and Trade 1994, 15 April 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1A, 1867 U.N.T.S. 187, 33 I.L.M. 1153 (1994) (hereinafter GATT).

³⁵ Agreement on Subsidies and Countervailing Measures, 15 April 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1A, 1869 U.N.T.S. 14 (hereinafter ASCM).

³⁶ On political constraints see Trevor Houser et al., *Leveling the Carbon Playing Field: International Competition and US Climate Policy Design* (Peterson Institute for International Economics and World Resources Institute 2008), at p. 42; Susanne Dröge et al., 'Tackling leakage in a world of unequal carbon prices' (2009) *Climate Strategies*, at pp. 55 and 64. For arguments in favour of the legal adjustability of carbon costs, see Frank Biermann and Rainer Brohm, 'Border adjustments on energy taxes: a possible tool for European policymakers in implementing the Kyoto Protocol' (2005) 74:2 *Vierteljahreshefte zur Wirtschaftsforschung*, 249, at pp. 251 *et seq.*; Roland Ismer (n. 26 above) at p. 419; Joost Pauwelyn, 'Carbon leakage measures and border tax adjustments under WTO law' in Geert Van Calster and Denise Prévost (eds), *Research Handbook on Environment, Health and the WTO* (Edward Elgar 2013) at pp. 448–456. For arguments against the legal feasibility of carbon costs, see Reinhard Quick, "'Border tax adjustment" in the context of emission trading: climate protection or "naked" protectionism?' (2008) 3:5 *Global Trade and Customs Journal*, 163, at 164–166. See also Javier de Cendra, 'Can emissions trading schemes be coupled with border tax adjustments? An analysis vis-à-vis WTO law' (2006) 15:2 *Review of European Community and International Environmental Law*, 131, at 139 *et seq.*; Francesco Sindico, 'The EU and border tax adjustments? An analysis vis-à-vis the WTO?' (2008) 17:6 *European Energy and Environmental Law Review*, 328, at 337.

³⁷ See Gilbert E. Metcalf and David A. Weisbach, 'The design of a carbon tax' (2009) 33:2 *Harvard Environmental Law Review*, 499; Ian Parry, Rick van der Ploeg and Robertson Williams, 'How to design a carbon tax' in Ruud de Mooij et al. (eds), *Fiscal Policy to Mitigate Climate Change: A Guide for Policymakers* (IMF 2012); Donald B. Marron and Eric J. Toder, 'Tax policy issues in designing a carbon tax' (2014) 104:5 *American Economic Review*, 563.

that the instrument must comply with world trade law.³⁸ The Commission emphasised its ambitions again in the EU's Covid-19 Recovery Plan, in which the Commission proposed revenue from a potential carbon border adjustment mechanism as its resources.³⁹

Although only a combination of several policy measures can bring about comprehensive decarbonisation of the materials sector, the reflection of the CO₂ price in the consumer price of materials is of considerable importance. Within scholarly literature, a new approach emerged, which incentivises both the engagement of the private sector towards more efficient consumption and revenue generation from the public to be used for investment in breakthrough technologies and climate mitigation: including consumption of carbon-intensive materials into emissions trading (IoC).⁴⁰

Under this approach, producers of carbon-intensive materials would still be subject to EU ETS legislation. Accordingly, they would have to surrender allowances amounting to their yearly emissions. Allowance allocation to the carbon-intensive materials sector would be aligned to the new allocation rules under the EU ETS so that operators of installations subject to the risk of carbon leakage would receive allowances free of charge based on their actual output

³⁸ European Commission, 'Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions: The European Green Deal' COM(2019) 640 final at p. 5. Public consultation on this issue launched in July 2020 (European Commission, 'Inception Impact Assessment on carbon border adjustment mechanism' Ares(2020)1350037).

³⁹ European Commission, 'Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions: Europe's moment: Repair and Prepare for the Next Generation' COM(2020) 456 final at p. 4.

⁴⁰ Roland Ismer, 'Umweltschutz durch Abgaben und Steuern' in Susanne Sieker (ed.), *Steuerrecht und Wirtschaftspolitik* (vol. 39 of Deutsche Steuerjuristische Gesellschaft, Otto Schmidt 2016) at pp. 450 *et seq.*; Roland Ismer, Manuel Haussner, Karsten Neuhoff and William Acworth, 'Inclusion of consumption into emissions trading systems: legal design and practical administration' (2016) DIW Discussion Paper 1579; Roland Ismer and Manuel Haussner, 'Inclusion of consumption into the EU ETS: the legal basis under European Union law' (2016) 25:1 *Review of European, Comparative and International Environmental Law*, 69; Karsten Neuhoff et al., 'Inclusion of consumption of carbon intensive materials in emissions trading – An option for carbon pricing post-2020' (2016) Climate Strategies; Stefan Pauliuk et al., 'Quantifying impacts of consumption based charge for carbon intensive materials on products' (2016) DIW Discussion Papers 1570; Susanne Roth et al., 'The pulp and paper overview paper – Sector analysis for the Climate Strategies Project on Inclusion of Consumption in Carbon Pricing: Overview Paper' (2016) Climate Strategies. The approach emerged for the first time in Karsten Neuhoff et al., 'The Cement Report: Carbon Control and Competitiveness Post 2020' (2014) Climate Strategies, at p. 42.

and a carbon benchmark calculated according to the best available technology. A reflection of carbon prices would then be established by a carbon-related charge imposed on the consumption of carbon-intensive materials within the EU. Consequently, all consumers of such materials would face the social costs of their consumption and would incorporate carbon costs into their consumption decisions. The money collected through the charge could then be used for climate mitigation measures like the investment in carbon capture and storage.

This approach also seems to be reasonable in times of epidemiological crisis with decreasing economic productivity and rising government spending.⁴¹ First, the additional revenue would secure urgently needed investments or financing aid in green technologies despite declining tax revenues. Resources made available could then be used for economic stimulus measures such as, for example, the reduction of taxes. Second, the consumption-based charge would incentivise emission reductions without harming the liquidity of companies. This is because the charge would only become due at the consumer level. The urgently needed liquidity of companies would, therefore, be preserved even in crises. Third, while the charge would increase consumer prices, price changes for manufactured goods and industrial equipment would be small.⁴² Despite small relative price changes at the end-consumer level, the charge nevertheless would produce efficiency effects as anticipated price changes are the highest at the level of the first users of the material, who would make design choices in the light of their overall production cost increase.

METHODOLOGY

Against this background, this book deals with the economic rationality for such a charge and legal and practical questions that emerge from its implementation in the light of EU law and world trade law.⁴³ The results provided in this book are not confined to an EU ETS integrated charge but can also

⁴¹ Cf. the EU Commission's proposal on a recovery plan for the EU due to the Covid-19 pandemic, in which it supports the idea of green government spending to overcome the current crises and proposes to finance its expenditure *inter alia* through a Carbon Border Adjustment Mechanism (European Commission, 'Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions: Europe's moment: Repair and Prepare for the Next Generation' COM(2020) 456 final, at pp. 4 and 6 *et seq.*).

⁴² On this see Chapter 3, section 3.6.

⁴³ The book is based on previous work and findings (see Roland Ismer and Manuel Haussner (n. 40 above); Roland Ismer, Manuel Haussner, Karsten Neuhoﬀ and William Acworth, 'Inclusion of consumption into emissions trading systems: legal design and practical administration' (2016) DIW Discussion Paper 1579), puts them into a broader

serve as a guide to all policymakers eager to implement consumption-based and carbon-related charges on materials. It provides insights on the design and administration of such a charge, its legal constraints under world trade law and how these constraints could be overcome.

This book relates to the scientific approach of ‘law and economics’, according to which the concepts of economics are deployed ‘to examine the formation, structure, processes, and impact of law and legal institutions’.⁴⁴ Legal norms and institutions are not regarded as God-given but serve the purpose of reaching a predefined outcome.⁴⁵ If their design does not lead to efficient results, there will be a need to change policy instruments so that the preferred outcome will be achieved. Against this background, the main objective of this work is to analyse and optimise existing instruments (the EU ETS) for environmental protection: to be more specific, the deep decarbonisation of the materials sector.

This book is based on three fundamental premises: first, pivotal decisions of society about its legal system as well as agreements governing the coexistence of several states are to be respected. Hence, EU primary law as well as world trade law must be accepted as a given, unchangeable legal framework within which new policy instruments must operate. Second, the existing choice of policy instruments should not be fundamentally changed. In the context of EU environmental policy, this means that the EU ETS should continue to exist as a central instrument for the decarbonisation of the materials sector and that the mode of operation should be reflected in any complementary policy instruments. Accordingly, the EU ETS should be supplemented in such a way that the decision once taken – decarbonisation through price instruments – is supplemented in a sound and systemic manner. Third, the chosen policy instrument should not lead to a shift of emissions to third countries. Otherwise, the instrument cannot be regarded as efficient from a purely environmental point of view. Accordingly, the policy instrument should be trade-neutral. This is based on the fact that global warming is a global problem that cannot be solved where emissions are shifted to third countries.⁴⁶

context and complements them with new findings from a further analysis of the topics addressed.

⁴⁴ Ejan Mackaay, ‘History of law and economics’ in Boudewijn Bouckaert and Gerrit De Geest (eds), *Encyclopedia of Law and Economics* (Edward Elgar 2000) at p. 1.

⁴⁵ See Martin Gelter and Kristoffel Grechenig, ‘Juristischer Diskurs und Rechtsökonomie’ (2007) 15:1 *Journal für Rechtspolitik*, 30, at 32.

⁴⁶ On the problem of carbon leakage see Chapter 2, section 2.3.1.

ARGUMENTS AND LOGICAL COURSE OF INVESTIGATION

The first part of this book deals with the economic case for consumption-based charges. Chapter 2 shows that deep decarbonisation of the materials sector requires emission reductions by a combination of production efficiency and consumption efficiency as well as the development and deployment of breakthrough technologies (three channels of emission reductions). All of them need different incentives to be activated. Production efficiency can be established by employing carbon pricing and establishing credible expectations about a sufficiently high and robust carbon price; emission reductions through consumption efficiency require a reflection of carbon costs along the value chain; the development of breakthrough technologies needs public engagement in financing.

The EU ETS would deliver all those incentives if it operated in a world of equal carbon prices. The obligation to acquire and surrender allowances would deliver incentives to switch towards more efficient production technologies and would encourage fuel shifting. The carbon price would then be passed onto the consumption price of materials so that all actors along the value chain would consider carbon prices in their production and consumption decisions. The revenue generated through auctioning could then be used for climate mitigation. However, the unilateral nature of the EU ETS means that there is a risk of carbon leakage and competitiveness concerns. Free allowances are allocated free of charge to the carbon-intensive materials industry to avoid relocation of production. The new allocation rules, however, hinder a carbon price pass-through onto consumer prices so that only limited incentives for consumption efficiency are currently delivered. Besides, free allowance allocation reduces auction revenue otherwise usable for climate mitigation funding. Against this background, the idea of the IoC charge is to create a carbon price pass-through utilising a consumption-based carbon charge on carbon-intensive materials consumed within the EU.

Chapter 3 discusses the legal design of such a charge. The charge should address materials at risk of carbon leakage. While policymakers should determine the scope, the charge could be imposed on the consumption of steel, aluminium, cement and plastics. The charge should be calculated according to the emission benchmarks used for free allowance allocation and an average carbon price deducted from the auction platform. The charge should be imposed as close as possible to the final consumer. Tracking and tracing of the materials and the liabilities to the charge would be possible where the imposition of the charge follows a hybrid system as used under the EU excise scheme. Accordingly, the production of materials would create liability to the charge.

The application of a so-called duty suspension arrangement would then allow passing of the materials along the value chain. As long as materials are placed under such arrangements, the charge would not be due. Only where no subsequent duty suspension arrangement applies, the material would be deemed to be released for consumption and the charge would have to be collected by the person releasing the materials for consumption (on the application of the charge in the domestic context see Figure 1.1).

Figure 1.1 Charge design in the domestic context – simplified value-added chain

For trade neutrality, importation of materials in the form of primary material or incorporated into intermediary and final products would also create liability to the charge. However, if imported under duty suspension, the charge would not be due immediately. Otherwise, there would be incentives for the importation of such products (on the application of the charge upon importation see Figure 1.2). By contrast, no charge would apply to exported materials if exported under duty suspension. The mechanism should not foresee a reimbursement of the charge once the product had been released for consumption within the EU (on the application of the charge upon exportation see Figure 1.3).

The revenue generated should be used for the acquisition of allowances in the amount corresponding to net carbon imports. The remainder of the revenue should be assigned to the Member State of consumption, for example, to national trust funds and be used for climate mitigation in line with the use of auction revenue as laid down in Article 10(2)(a) to (k) EU ETS Directive.

Economically, the proposed charge in combination with free allowance allocation based on actual output and emissions intensity would be comparable with border tax adjustments and would create a full pass-through of carbon costs onto consumer prices. The impact on households would be limited as

Figure 1.2 Charge design in the international context: importation – simplified value-added chain

Figure 1.3 Charge design in the international context: exportation under duty suspension – simplified value-added chain

the fiscal burden is equally distributed among a large group of consumers. However, since intermediary and final product producers make production decisions in the light of the overall costs borne by the final consumer, material efficiency incentives would not be lost.

Part II then focuses on the legal basis of the charge under the EU Treaties. It demonstrates that the IoC mechanism, although taking the form of an indirect charge, would not be based on the harmonisation competence of Article 113 TFEU. Instead, Article 191 and 192 TFEU – the legal basis for environmental policy – are the correct legal basis for the IoC charge (Chapter 4). The IoC scheme addresses the policy realm of Article 191(1) TFEU and would stick to the environmental principles of Article 191(2) TFEU (the preventive principle,

the principle of rectification at source and the polluter pays principle). It would also primarily aim at environmental matters and not at the harmonisation of indirect taxes.

Chapter 5 then discusses the voting pattern in the Council laid down in Article 192 TFEU.⁴⁷ While Article 192(1) TFEU requires ordinary legal procedure with only majority voting in the Council, Article 192(2)(a) TFEU mandates unanimous voting in the Council for ‘measures primarily of a fiscal nature’. There is no clear evidence on the construction of this provision. However, it seems that this term must be construed by purpose. Accordingly, if a policy measure in the form of a charge or tax primarily aims at generating revenue albeit in the context of environmental policy, it must be considered as ‘primarily of a fiscal nature’. In contrast, if a charge aims to achieve environmental goals and only incidentally uses fiscal policy measures such as a charge or a tax to reach these goals, it does not qualify as primarily of a fiscal nature and hence can be based on Article 192(1) TFEU.

Against this background, the IoC charge is not primarily of a fiscal nature. First, it primarily aims at environmental protection and not at the collection of revenue. Second, the charge is an integral part of the EU ETS. Its fiscal impact on the Member States would be limited to the impact that had been generated under the EU ETS if it worked without constraints. Since the EU ETS itself was based on Article 192(1) TFEU, the same must then be valid for the IoC charge. Accordingly, majority voting is the right voting pattern in the Council.

Part III addresses the charge in the context of world trade law, in particular the General Agreement on Tariffs and Trade and the Agreement on Subsidies and Countervailing Measures. It demonstrates that the IoC charge is fully compatible with world trade law, in particular the national treatment requirement of Article III:2 GATT and the rules on subsidies as laid down in Article VI:4 GATT, Article XVI GATT, Note Ad Article XVI GATT and the ASCM. However, even if someone claims that the charge on imports violates the national treatment requirement, the charge can be justified under Article XX GATT items (b) and (g) (Chapter 6).

Part IV then focuses on the administrative procedures of the IoC scheme.⁴⁸ It shows that the administration of the EU’s excise scheme can serve as an example for its implementation but with simplified procedures. Consequently, to gain knowledge of the materials held under duty suspension, those who wish to deal with materials under duty suspension must gain authorisation to do so.

⁴⁷ Cf. Roland Ismer and Manuel Haussner (n. 40 above).

⁴⁸ See Roland Ismer, Manuel Haussner, Karsten Neuhoﬀ and William Acworth, ‘Inclusion of consumption into emissions trading systems: legal design and practical administration’ (2016) DIW Discussion Paper 1579.

Further, for reporting, monitoring and verification reasons, it is sufficient to add the material content of products to classic business documents such as, for example, invoices for VAT. Verification of these data can then be conducted post-transaction. In the case of importation and exportation, reporting, monitoring and verification procedures can easily be incorporated into current customs procedures.

The book concludes with a summary of the main findings and an outlook.