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STATE AID FOR GREEN TECHNOLOGIES IN THE EUROPEAN UNION: LIMITATIONS AND RISKS

Abstract: *This article analyzes the recently adopted European Union State aid rules designed to facilitate the implementation of “green” technologies. This initiative is in line with European objectives to combat climate change and transition to an emission-free economy. By contextualizing State aid rules within the broader regulatory policy landscape, the author aims to assess the inherent limitations of these tools. Based on this evaluation, the article attempts to determine if and to what extent EU State aid law can be successfully utilized to promote environmental objectives.*

The analysis begins with an overview of the State aid toolbox and its role in regulatory policies, situated on a spectrum between incentive-based and obligation-based approaches. Subsequently, it delves into the evaluation of potential consequences, encompassing risks such as the deepening disparities between wealthier and poorer Member States, inadequate safeguards against offshoring in pursuit of lenient environmental norms, and the peril of fostering subsidy dependence.

Keywords: carbon leakage, environmental aid, EU law, GBER, State aid

INTRODUCTION

The rapidly accelerating degradation of the environment and the swiftly closing window of opportunity to take action and prevent irreversible changes have increasingly penetrated political debates as a primary concern.¹ At the European Union (EU, the Union) level, a noticeable drive is underway to craft policies aimed at establishing a zero-net economy, which entails achieving an emission-free, climate-neutral

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¹ There is an extensive body of research on the subject. The following titles provide a synoptic snapshot, encapsulating the main vectors of the debate: B. Cross, *Climate Change and the Politics of Apocalyptic Redirection*, 21(2) Political Studies Review 223 (2023); R.J. Brulle, *Advocating Inaction: A Historical Analysis of the Global Climate Coalition*, 32(2) Environmental Politics 185 (2023), and sources quoted therein.

economy by 2050.² Whilst lofty declarations often draw criticism for creating an impression without meaningful action – described by the trending buzzword “greenwashing” – the Russian invasion of Ukraine served as a catalyst for legislative action. Apparently following the famous adage attributed (probably incorrectly) to Winston Churchill, “never let a good crisis go to waste”, the European Commission (EC or the Commission) seized the opportunity. They sought to utilise the increased State aid going to businesses affected by this conflict in order to align the subsidies with environmental objectives, thereby working towards achieving both objectives and decreasing reliance on Russian energy sources simultaneously.³ At around the same time, following a wave of political momentum embracing greater acceptance towards increased subsidisation and the pursuit of “green policies”, a series of new aid instruments (listed in Section 2) were also adopted. These developments, among other things, involve revisions to the General Block Exemption Regulation (GBER) and new guidelines for environmental aid. These changes have provided more flexible and streamlined options within the State aid framework, aimed at facilitating the adoption of eco-friendly technologies.

Such advancements finally seem to go beyond the merely superficial policy statements and wishful thinking often associated with greenwashing. In this context, this paper aims to evaluate the implemented strategy of promoting green technologies through the mechanisms embedded in EU State aid law. The analysis adopts a research perspective that positions State aid law as an integral component of broader policies aimed at fostering “green” technologies. Recognising it as a cog in the larger machinery allows us to discern practical, rather than purely dogmatic, interactions with other non-state aid instruments described here in the form of a textbook as incentive-based and obligation-based, and thus to carry out such an evaluation.

To fulfil such research objectives, the paper takes the following avenue of inquiry. The analysis commences by introducing the EU State aid toolbox, which was specifically designed to facilitate the adoption of eco-friendly technologies. Following this introduction is an assessment of how this toolbox aligns with broader environmental policy models. Deliberately avoiding an in-depth exploration of policy intricacies, the author instead opts to present large blocks of the two contrasting models: incentive-based and obligation-based. This approach prevents the primary line of inquiry veering off course by avoiding an in-depth dive into secondary details – especially considering that, fundamentally, all regulatory philosophies can be encapsulated

² 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 of 11 December 2019 *The European Green Deal*, COM(2019) 640 final.

³ *State aid: Commission adopts Temporary Crisis Framework to support the economy in context of Russia’s invasion of Ukraine*, European Commission, 23 March 2022, available at: https://ec.europa.eu/commission/presscorner/detail/en/statement_22_1949 (accessed 30 August 2024).

within the conceptual framework of these models. Subsequently, the analysis delves into areas identified in the course of the preceding discussion where potentially adverse interactions could undermine State aid's ability to achieve its stated "green" objectives. These areas encompass the risks of widening disparities between richer and poorer Member States, inadequate prevention of offshoring in the pursuit of more lenient environmental norms and the potential creation of subsidy-dependent sectors.

1. THE EU STATE AID TOOLBOX FOR PROMOTING "GREEN" TECHNOLOGIES

Adopted in 2022 in the immediate aftermath of the Russian invasion of Ukraine, and amended twice since then, the Temporary Crisis and Transition Framework (TCTF) is largely based on a formula that was "battle-tested" in the COVID Temporary Framework.⁴ However, the TCTF goes beyond short-term relief dictated by exigency and has ultimately evolved into a tool to promote the EU "green" agenda.⁵ This is because, in addition to the State aid known from the pandemic temporary framework aimed at compensating losses, granted on the basis of Art. 107(2)(b) TFEU, and aid intended to ensure positive cash flow, granted on the basis of Art. 107(3)(b) TFEU, the new framework includes a package of aid measures permissible under Art. 107(3)(c) TFEU.

The latter measures encompass support for transitioning to green energy, as delineated in the policy document RePowerEU.⁶ They include investment and operating aid for initiatives simultaneously serving "green" objectives and reducing reliance on Russian fuel sources, whereas the TCTF allows investment and operating aid for the rollout of renewable energy and energy storage, including the production of renewable hydrogen, electricity and thermal storage and storage for renewable hydrogen, biofuels, bioliquids, biogas and biomass fuels.⁷ Additionally, aid is permitted for decarbonising industrial processes, particularly through the adoption of hydrogen-based solutions. This entails investment aid that targets significant reduc-

⁴ Communication from the Commission, *Temporary Crisis and Transition Framework for State Aid measures to support the economy following the aggression against Ukraine by Russia* [2022] OJ C 131/1. Cf. Communication from the Commission, *Temporary Framework for State aid measures to support the economy in the current COVID-19 outbreak* [2020] OJ C 91/1.

⁵ N. Gràcia, I. Lunneryd, A. Papaefthymiou, *The Race Towards a More Sustainable Future: Is Current State Aid Policy Fit for Purpose?*, 8(2) Competition Law & Policy Debate 92 (2023), p. 95.

⁶ 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 of 8 March 2022 on *REPowerEU: Joint European Action for more affordable, secure and sustainable energy*, COM(2022) 108 final.

⁷ Communication from the Commission, *Temporary Crisis and Transition Framework for State Aid measures to support the economy following the aggression against Ukraine by Russia* [2022] OJ C 131, section 2.6.

tions in greenhouse gas emissions from industrial activities relying on fossil fuels or feedstock, alongside reduced energy consumption within industrial processes.⁸ Furthermore, the framework allows Member States to adopt aid schemes – aid measures directed at multiple beneficiaries under transparent eligibility conditions – for undertakings engaged in the production of key equipment such as batteries, solar panels, wind turbines, heat pumps, electrolyzers and equipment for carbon usage and storage; the production of key components designed and primarily used as direct input for the production of the aforementioned equipment; and the production or recovery of related critical raw materials for the production of the aforementioned equipment and components.⁹

All aid falling under Art. 107(3)(c) TFEU is notifiable; however, the EC assesses it in an expedited manner.¹⁰ At the time of writing (March 2024), measures providing short-term relief to undertakings affected by the conflict have expired, whilst those aimed at promoting “green” goals are set to remain applicable until the end of 2025.¹¹

Another set of tools for supporting “green” objectives within the State aid framework comprises Art. 107(3)(c) TFEU aid set out in the Climate, Energy, and Environmental Aid Guidelines (CEEAG).¹² Adopted at the close of 2021, these guidelines replaced the former Energy and Environmental State Aid guidelines.¹³ The new guidelines have retained previous aid measures, which include aid for energy from renewable sources; aid for energy efficiency measures, including cogeneration and district heating and district cooling; aid for resource efficiency and particularly waste management; aid for carbon capture and storage; aid in the form of reductions in or exemptions from environmental taxes and reductions in funding support for electricity from renewable sources; aid for energy infrastructure; aid for so-called energy adequacy, aiming to increase the share of renewable energy sources and transition from a system of relatively stable continuous supply to one with more numerous, small-scale and variable sources; aid for tradable permit schemes enabling emissions reduction; and aid for relocating pollutants to areas where their operations will create fewer negative externalities.¹⁴

⁸ *Ibidem*.

⁹ *Ibidem*, section 2.8.

¹⁰ Gràcia, Lunneryd, Papaefthymiou, *supra* note 5, p. 96.

¹¹ *Commission consults Member States on a proposal for a partial adjustment of the phase-out schedule of the State aid Temporary Crisis and Transition Framework in view of the upcoming winter heating period*, European Commission, 6 November 2023, available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_23_5525 (accessed 30 August 2024).

¹² Communication from the Commission, *Guidelines on State aid for climate, environmental protection and energy 2022* [2022] OJ C 80/1.

¹³ Communication from the Commission, *Guidelines on State aid for environmental protection and energy 2014–2020* [2020] OJ C 200/1.

¹⁴ *Cf. Ibidem*, sections 3.3–3.11; Commission, *supra* note 12, sections 4.1, 4.2, 4.4.

In addition, the CEEAG introduced new categories of Art. 107(3)(c) TFEU aid. These include aid for the reduction and removal of greenhouse gas emissions, including through support for renewable energy and energy efficiency;¹⁵ aid for clean mobility, to reduce or avoid emissions of CO₂ and other pollutants from the air, road, rail, waterborne and maritime transport sectors;¹⁶ and aid for resource efficiency and for supporting the transition towards the so-called circular economy, an economic model that emphasises maximal reusability and recycling of materials to minimise waste.¹⁷ Furthermore, the CEEAG provides a framework for aid aimed at remediating environmental damage, rehabilitating natural habitats and ecosystems, protecting or restoring biodiversity and implementing nature-based solutions for climate change adaptation and mitigation.¹⁸ It also covers aid for the closure of power plants using and mining operations extracting coal, peat or oil shale.¹⁹

It should be noted, as an aside, that the aid categories specified in the CEEAG somewhat overlap with activities that may receive support under the TCTF.²⁰ This scenario is not optimal, as it impacts the legal certainty, primarily due to differing formal compatibility criteria – specifically quantitative criteria such as intensity limits – between these two acts (whilst their other qualitative criteria derive from the common assessment principles shared among all Art. 107(3)(c) TFEU forms of aid). Given the high priority of “green” objectives on the EU agenda, it is plausible that the Commission might opt for the more lenient criteria within these overlapping areas.²¹ However, since there is no assurance of this approach, this overlap must be acknowledged as a concern, albeit only a potential one, considering the EC practice so far.²²

¹⁵ Commission, *supra* note 12, section 4.1.

¹⁶ *Ibidem*, section 4.3.

¹⁷ *Ibidem*, section 4.4.

¹⁸ *Ibidem*, section 4.6.

¹⁹ *Ibidem*, section 4.12.

²⁰ Cf. *Ibidem*, section 4.1; Communication from the Commission, *Temporary Crisis and Transition Framework for State Aid measures to support the economy following the aggression against Ukraine by Russia* [2022] OJ C 131, sections 2.5, 2.6.

²¹ Though the data at this point is not conclusive, a discernible trend of leniency towards “green”-orientated aid is evident. For instance, see measures approved under the TCTF, which could very well have been approved under the CEEAG: Authorisation for State aid pursuant to Articles 107 and 108 of the Treaty on the Functioning of the European Union – Cases where the Commission raises no objections – SA.110511 [2024] OJ C 1361; TCTF/RRF - Slovakia: Investment support for electricity storage, available at: <https://competition-cases.ec.europa.eu/cases/SA.106554> (accessed 30 August 2024); Authorisation for State aid pursuant to Articles 107 and 108 of the Treaty on the Functioning of the European Union – Cases where the Commission raises no objections – SA.108953 [2023] OJ C 258.

²² Gràcia, Lunneryd, Papaefthymiou, *supra* note 5, p. 97.

Art. 107(3)(c) TFEU aid, granted under the GBER, provides an additional pathway to promote “green” objectives.²³ The extensive growth in GBER aid measures stands as one of the more visible trends in EU State aid in recent years.²⁴ The GBER, unlike typical State aid – and thus differing from all other aid measures described in this section – is not subject to *ex ante* control. Instead, it is presumed to be compatible with the internal market and is exempted from notification obligations. The GBER introduces sets of criteria for each type of aid covered, leaving it to the Member States to ensure compliance. Control therefore operates *ex post* and only on a spot-check basis.²⁵ The architecture facilitates streamlining procedures and relieving the Commission’s resources to focus on critical cases, which is effective given that the specified aid categories are generally deemed non-problematic in both their scale and objectives.²⁶ The system, wherein Member States primarily ensure compliance with the compatibility requirements set out at the EU level, has generally been praised as a success story.²⁷ Over the years, local officials in Member States have accumulated the necessary experience to fully capitalise on funding opportunities offered by the GBER. Consequently, its usage does not raise any major concerns. This positive trend is further evidenced by the repeated addition of new categories to the GBER. As of 2021, the latest available State Aid Scoreboard data reveals that Block-exempted aid represents 65% of all active measures, compared to 41% in 2014 when the current rules were adopted.²⁸

The revised GBER, adopted concurrently with the TCTF (by Regulation 2023/1315) – which at the time of writing is set to remain in effect until the end of 2026 – empowers Member States to establish aid schemes targeted at transitioning

²³ Commission Regulation (EU) No. 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty (consolidated version) [2023] OJ L 167/1.

²⁴ T.E. Stuart, I. Roginska-Green, *Sixty Years of EU State Aid Law and Policy: Analysis and Assessment*, Wolters Kluwer, Alphen aan den Rijn: 2018, pp. 882–885; V. Lemonnier, *The EU Green Deal Industrial Plan*, 22(2) European State Aid Law Quarterly 123 (2023).

²⁵ Cf. Commission Regulation (EU) No. 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty (consolidated version) [2023] OJ L 167, Art 12(2); Case C-493/14 *Dilly’s Wellnesshotel GmbH v. Finanzamt Linz*, EU:C:2016:577.

²⁶ This stems from the objectives of the State Aid Modernisation (SAM) reform. See Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, and the Committee of the Regions of 8 May 2012 *EU State Aid Modernisation*, COM(2012)209 final, especially para. 25.

²⁷ P. Werner, V. Verouden (eds.), *EU State Aid Control: Law and Economics*, Wolters Kluwer, Alphen aan den Rijn: 2016, pp. 225–226; A. Heimler, *State Aid Control: Recent Developments and Some Remaining Challenges*, in: P.L. Parcu, G. Monti, M. Botta (eds.), *EU State Aid Law: Emerging Trends at the National and EU Levels*, Edward Elgar Publishing, Cheltenham: 2020, pp. 53–54.

²⁸ *State aid Scoreboard 2023*, European Commission, 9 April 2024, available at: https://competition-policy.ec.europa.eu/document/download/0b2037c5-c43f-4917-b654-f48f74444015_en?filename=state_aid_scoreboard_note_2023.pdf (accessed 30 August 2024), p. 89.

to climate neutrality and achieving a net-zero industry.²⁹ The updated GBER has broadened safe harbour conditions for energy efficiency projects in buildings and for the development of recharging and refuelling infrastructure for low-emission road vehicles. Furthermore, the new framework introduced additional categories, including investment aid for the acquisition of clean or zero-emission vehicles, retrofitting of vehicles and aid for decarbonisation initiatives, specifically for equipment, machinery using renewable hydrogen and infrastructure for transporting renewable hydrogen. It also encompasses operating aid to encourage the use of electricity generated from renewable sources, investment aid for energy efficiency measures in buildings and aid in the form of reduced environmental taxes or parafiscal levies, allowing intensity ceilings of up to 100%.³⁰ The allowance of such high intensity levels, which is relatively uncommon under the GBER, underscores the priority the EU gives to objectives associated with these measures.

Finally, there is always an option to grant aid directly under the Treaty, in this instance almost exclusively under Art. 107(3)(c) TFEU.³¹ Over the years, the Commission has aimed to enhance transparency in its decision-making process regarding State aid assessment. To achieve this, it has consistently attempted to quasi-codify its approach through several soft-law guidelines, intending to reduce reliance on an ad hoc approach.³² Consequently, the approval of State aid directly under the Treaty is regarded as a Plan B, accessible in “exceptional circumstances”.³³ Nonetheless, in practice, its utilisation is not that uncommon.³⁴

²⁹ Commission Regulation (EU) No. 2023/1315 of 23 June 2023 amending Regulation (EU) No. 651/2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty and Regulation (EU) No. 2022/2473 declaring certain categories of aid to undertakings active in the production, processing and marketing of fishery and aquaculture products compatible with the internal market in application of Articles 107 and 108 of the Treaty [2023] OJ L 167/1, especially recitals 5 and 15–17.

³⁰ Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty (consolidated version) [2023] OJ L 167, Art. 36(5) and (9), 36a(5), 36b(5)(a), 38(7), 41(10), 45(9)(a), 46(9), 48(6).

³¹ In addition, there is the possibility to approve measures as serving the “common European interest” under Art. 107(3)(b) TFEU. However, since this provision applies only to a small number of high-profile, usually one-off projects, it will not be explored further.

³² O. Ștefan, *Soft Law in Court: Competition Law, State Aid, and the Court of Justice of the European Union*, Wolters Kluwer, Den Haag: 2013, pp. 52–57; A. Bouchagiar, *The Binding Effects of Guidelines on the Compatibility of State Aid: How Hard is the Commission’s Soft Law?*, 8(3) *Journal of European Competition Law & Practice* 157 (2017).

³³ Case C-526/14 *Tadej Kotnik and Others v. Državni zbor Republike Slovenije*, EU:C:2016:570, paras. 41–43, 98; Case C-431/14 P *Greece v. Commission*, EU:C:2016:145, paras. 70–75.

³⁴ See e.g. European Commission, *Commission Staff Working Document Accompanying the Document Report from the Commission Report on Competition Policy 2022*, Brussels, 4 April 2023, COM(2023) 184 final, especially Annex II.

2. IN SEARCH OF AN OPTIMAL REGULATORY MIX: THE ROLE AND INHERENT LIMITATION OF STATE AID LAW

The relationships between State aid and other areas of EU law are generally outlined by the Court's dicta in the C-390/06 *Nuova Agricast* case. The Court stated that the application of State aid provisions must not lead to results contrary to the Treaties, including those that conflict with other European policies.³⁵ Subsequent jurisprudence, particularly in T-57/11 *Castelnou Energia* and C-594/18 P *Austria v. Commission*, reemphasised the imperative of ensuring consistency across various EU policies.³⁶ However, in T-228/99 *WestLB* the Court clarified that there is no obligation to directly apply non-State aid rules in State aid cases unless "the aspects of aid are so inextricably linked to the object of the aid that it is impossible to evaluate them separately."³⁷

Such an approach, predominant in the *acquis*, with its primary focus on dogmatic and systemic links, is based on a scenario whereby State aid and other EU policies, at least partially overlapping and serving different objectives, require the use of collision rules.³⁸ In other words, the interaction is negative in nature, resulting in an obligation of non-interference. In contrast, the framework elucidated in Section 2 boasts a clearly defined, explicitly stated positive focus on fulfilling the objectives of non-State aid environmental policies.³⁹ These rules bear a distinct *ratio legis* in support of the implementation of eco-friendly technologies, whilst the typical State aid-related objectives, linked with maintaining a level playing field, function primarily as safeguards.⁴⁰ The analysis of a framework characterised by such a set of

³⁵ Case C-390/06 *Nuova Agricast Srl v. Ministero delle Attività Produttive*, EU:C:2008:224, para. 50.

³⁶ Case T-57/11 *Castelnou Energia v. Commission*, EU:T:2014:1021, paras. 181–182; Case C-594/18 P *Austria v. Commission*, EU:C:2020:742, para. 44.

³⁷ Joined Cases T-228/99 and T-233/99 *Westdeutsche Landesbank Girozentrale and Land Nordrhein-Westfalen v. Commission of the European Communities*, EU:T:2003:57, paras. 195–196.

³⁸ See sources quoted on in H. Kassim, B. Lyons, *The New Political Economy of EU State Aid Policy*, 13(1) *Journal of Industry, Competition and Trade* 1 (2013), pp. 13–14.

³⁹ Communication from the Commission, Temporary Crisis and Transition Framework for State Aid measures to support the economy following the aggression against Ukraine by Russia [2022] OJ C 131, recital 30; Communication from the Commission, *Guidelines on State aid for climate, environmental protection and energy 2022* [2022] OJ C 80, recitals 1–4; Commission Regulation (EU) No. 2023/1315 of 23 June 2023 amending Regulation (EU) No. 651/2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty and Regulation (EU) No. 2022/2473 declaring certain categories of aid to undertakings active in the production, processing and marketing of fishery and aquaculture products compatible with the internal market in application of Articles 107 and 108 of the Treaty [2023] OJ L 167, recital 4.

⁴⁰ The issue of the objectives of State aid control is extensive and beyond the scope of this paper. The one mentioned in the main body of the text is generally accepted as the broadest description. See generally J.L. Piernas López, *The Concept of State Aid Under EU Law: From Internal Market to Competition and Beyond*, Oxford University Press, Oxford: 2015, pp. 45–66.

objectives necessitates, in the author's view, a distinct perspective with an emphasis on finistic efficiency – determined by the interaction between various rulesets dictated by different regulatory philosophies, rather than a dogmatic examination of systemic links.

In this context, at a certain level of generality, the choice of a policy approach or regulatory philosophy for promoting “green” technologies can be characterised as a choice between an incentive-based approach and an obligation-based model (sometimes referred to as a command and control model or direct regulation).⁴¹ However, in reality, a comprehensive policy aimed at advancing a specific goal extends beyond a dichotomous choice between these two approaches; it involves a mix of these models (that reaches beyond the scope of State aid alone).⁴² In Joseph Raz's words, these are “obligations backed by incentives”.⁴³ The author deliberately employs these two contrasting models in their somewhat simplified form as a point of reference to provide a clear perspective and more visible yardsticks.⁴⁴

Incentive regulation is defined as a means of achieving policy goals by granting some discretion to undertakings.⁴⁵ A positive effect is granted when the undertaking's conduct is in line with the authorities' expectations (for example, preferential taxation, financial grants, etc.). If regulators' information about all the important aspects of a given economic activity were as good as that of professional market players, they would be capable of determining, for example, what level of additional burdens is acceptable for businesses, and they could simply create obligations mandating specific behaviour.⁴⁶ However, economic history (especially the failure of command economies) attests that such parity in information does not exist. Conversely, an incentive-based system offers a workaround for these limitations, relying on the expertise of professional market players who understand how to optimise their actions to seize available opportunities.⁴⁷ In the case under discussion, this condition is fulfilled in principle, as the framework applies to a diverse array of technologies with a wide range of company-specific rollout scenarios.

⁴¹ P. Agrell, *Incentive Regulation of Networks: Concepts, Definitions and Models*, 54(1) *Reflète et perspectives de la vie économique* 103 (2015), pp. 104–105.

⁴² This realisation builds upon the seminal work of R.H. Coase, *The Problem of Social Cost*, 3 *Journal of Law and Economics* 1 (1960).

⁴³ J. Raz, *The Concept of a Legal System*, Oxford University Press, Oxford: 1980.

⁴⁴ For more detail, see P. Lehmann, *Justifying a Policy Mix for Pollution Control: A Review of Economic Literature*, 26(1) *Journal of Economic Surveys* 71 (2012) and sources quoted therein.

⁴⁵ Agrell, *supra* note 41, p. 107; I. Vogelsang, *Incentive Regulation and Competition in Public Utility Markets: A 20-Year Perspective*, 22(1) *Journal of Regulatory Economics* 5 (2002), p. 6.

⁴⁶ D. Sappington, *Designing Incentive Regulation*, 9(3) *Review of Industrial Organization* 245 (1994), p. 247.

⁴⁷ *Ibidem*.

Moreover, the effectiveness of an incentive-based system relies on the opposing interests pursued by undertakings: the financial interests of shareholders, consumers prioritising their own welfare and the policy objectives of authorities. If these interests were to naturally align, incentives to follow a specific course of action might become redundant.⁴⁸ This condition in the case in question is also *prima facie* fulfilled, as the implementation of environmentally friendly technologies is generally considered too costly to be unequivocally economically viable.

The opposing obligation-based, or command and control model has been dominant in environmental regulation ever since these issues shifted from being mere “nice-to-have” additional activities pursued as part of corporate social responsibility.⁴⁹ This model can take a variety of forms, the most common of which involves environmental standards imposing uniform requirements (command) and the State apparatus being responsible for enforcement (control).⁵⁰ Empirical research indicates that this method can yield significant results when the rules are effectively enforced.⁵¹ Moreover, the system provides a restraint on arbitrariness, ensuring greater legal certainty.⁵² However, it is often perceived by businesses as excessively burdensome.⁵³ Throughout history businesses have consistently, and often successfully, resisted regulations introducing new standards due to the associated additional costs.⁵⁴ These costs – so the argument goes – might subsequently be passed on to consumers, resulting in higher prices. Market participants argue the need to reduce profit margins due to increased operating expenses, particularly when demand cannot support substantial price hikes, posing potential challenges to economic sustainability. This argument also highlights the fact that higher costs may undermine competitiveness against foreign enterprises.⁵⁵ From a purely economic standpoint, this group of arguments is generally defensible.

⁴⁸ *Ibidem*.

⁴⁹ M. Ryznar, K.E. Woody, *A Framework on Mandating Versus Incentivizing Corporate Social Responsibility*, 98 *Marquette Law Review* 1667 (2015), p. 1670.

⁵⁰ N. Gunningham, *Environment Law, Regulation and Governance: Shifting Architectures*, 21(2) *Journal of Environmental Law* 179 (2009), p. 182.

⁵¹ See e.g. S. Cohen, *EPA: A Qualified Success*, in: S. Kamieniecki, R. O’Brien, M. Clarke (eds.), *Controversies in Environmental Policy*, State University of New York Press, Albany: 1986, p. 174; S. Almeida Neves, A. Cardoso Marques, M. Patrício, *Determinants of CO2 Emissions in European Union Countries: Does Environmental Regulation Reduce Environmental Pollution?*, 68 *Economic Analysis and Policy* 114 (2020).

⁵² Gunningham, *supra* note 50, p. 184.

⁵³ S. Leipold, *Transforming Ecological Modernization “From Within” or Perpetuating It? The Circular Economy as EU Environmental Policy Narrative*, 30(6) *Environmental Politics* 1045 (2021), p. 1053.

⁵⁴ See e.g. Brulle, *supra* note 1.

⁵⁵ See generally A. Dechezleprêtre, M. Sato, *The Impacts of Environmental Regulations on Competitiveness*, 11(2) *Review of Environmental Economics and Policy* 183 (2017) and sources quoted therein.

Arguably, the most notable drawback of an obligation-based model becomes apparent when the issues it seeks to address surpass isolated point-source problems.⁵⁶ A point-source problem exists when, for example, a specific industrial process causes excessive pollution and can be solved by mandating filters. However, in heterogeneous industries, numerous businesses interconnect in production and logistic chains, each producing distinct negative externalities through their respective processes.⁵⁷ The effectiveness of the obligation model hinges on the authorities having sufficient information about where and how these negative effects are generated. In reality, this task is often insurmountable, at least in its entirety, as it inevitably involves cases that are highly specific to the company and situation.⁵⁸

When comparing the respective strengths and drawbacks of incentive-based versus obligation-based models, the former provides more flexibility. In our context, it allows for funding solutions that are innovative and untested, though it does not guarantee that entities will actually take advantage of the incentive on offer. On the other hand, the obligation-based solution, whilst simpler and potentially more directly effective, tends to have lacunae and may be overly burdensome. The important conclusion, in the author's opinion, to be drawn from this synoptic comparison is that their relationship resembles the well-known trope of the "carrot and the stick" and that one alone would never be effective.⁵⁹

Aside from the general recommendation that this factor should be considered when creating an optimum policy mix—which is obvious and beyond the scope of this paper—in limiting the analysis to the State aid framework, it can be said that it has a role in each of these regulatory components: incentives and obligations. It can potentially enhance both by mitigating the costs of costly environmental norms and creating financial incentives for the rollout of new "green" technologies. Whilst the above is *prima facie* apparent, the potential second-order consequences are not equally obvious. These transcend simple causal relationships defining the desired effect, and delve into unintended repercussions originating from interactions within the particular configuration of rulesets inherent to policy philosophies. In the author's opinion, these consequences stem from two factors that are inherently embedded in the nature of State aid designed to promote the deployment of new "green" technologies.

The first of these factors relates to the current interpretive standard pertaining to, or rather the very concept of the incentive effect in State aid cases. The incentive effect, a longstanding element within the EU State aid *acquis*, gained prominence

⁵⁶ C. Sunstein, *The Paradoxes of the Regulatory State*, 57 University of Chicago Law Review 407 (1990), p. 408.

⁵⁷ *Ibidem*.

⁵⁸ Gunningham, *supra* note 50, p. 184.

⁵⁹ *See Raz, supra* note 43.

following the 2012 State Aid Modernisation (SAM) initiative.⁶⁰ It now constitutes part of the common assessment principles applied to all aid measures evaluated under Art. 107(3)(c) TFEU.⁶¹

The incentive effect refers to the expectation that an undertaking will take actions resulting from State aid that it otherwise would not in the absence of such aid.⁶² When receiving aid, the beneficiary should be prompted to engage in activities that yield positive effects extending beyond its individual economic interests.⁶³ Achieving these broader positive outcomes, in alignment with the policy objectives behind the aid measure, thus leads to it being declared compatible under Art. 107(3)(c) TFEU.⁶⁴ If, conversely, the support covers activities that a company would have pursued anyway, it falls under the classification of operating aid – a subsidy intended to cover ongoing expenses not associated with any specific project.⁶⁵ In principle, such aid cannot be deemed compatible with the internal market under Art. 107(3) TFEU.⁶⁶ That is, at least in principle, aid would have an incentive effect if specific environmental standards prove too costly for businesses. For instance, when there is a legal obligation to adopt a certain standard but an absence of aid, the “what if” scenario refers to whether companies will comply or, for example, relocate. Similarly, when the State merely incentivises a desired course of action, it pertains to whether companies would undertake specific actions in the absence of aid. This problematic point will prominently reoccur throughout the subsequent analysis, emerging later as a salient factor in the framework’s potential risks.

The second factors previously mentioned, inherent to State aid and with the potential to impact its role in advancing the “green” EU agenda concerns the discretionary competence to grant it. The research on the theory of an incentive-based system and its efficacy is founded on the assumption of a straightforward causal link between companies’ actions and positive outcomes. In other words, if a business takes a specific action, a positive effect will inevitably follow.⁶⁷ Whereas the decision to grant State aid remains the sole discretionary competence of Member

⁶⁰ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, and the Committee of the Regions of 8 May 2012, *EU State Aid Modernisation*, COM(2012)209 final, para. 12.

⁶¹ K. Bacon (ed.), *European Union Law of State Aid*, Oxford University Press, Oxford: 2017, p. 100.

⁶² P. Nicolaides, *The Incentive Effect of State Aid: Its Meaning, Measurement, Pitfalls and Application*, 4 World Competition 579 (2009).

⁶³ E.g. Case T-162/06 *Kronoply GmbH & Co. KG v. Commission of the European Communities*, EU:T:2009:2, para. 43.

⁶⁴ Nicolaides, *supra* note 62, p. 580.

⁶⁵ E.g. Case C-86/89 *Italian Republic v. Commission of the European Communities*, EU:C:1990:373, para. 18.

⁶⁶ See e.g. Case T-348/04 *Société internationale de diffusion et d’édition SA (SIDE) v. Commission of the European Communities*, EU:T:2008:109, para. 99. There are some exceptions that, due to their very limited nature, are irrelevant to the discussed issue and thus will be omitted.

⁶⁷ Cf. Vogelsang, *supra* note 45, p. 6; Sappington, *supra* note 46, p. 247.

States, the CJEU explicitly stated in C-850/19 P *Holyšov* that there is no inherent “right to State aid”.⁶⁸ The support received by one undertaking does not establish any legal entitlement for other undertakings, even those in comparable situations, to receive similar assistance.⁶⁹

This factor alone should not be criticised, as it goes without saying that any alternative solution amounting to the ability to *de facto* force States to grant aid would have indisputably been overly intrusive. However, when this factor, together with the previously mentioned one, is placed on the wider canvas of the incentive-obligation policy mix aimed at promoting “green” technologies, it may synergise with other components and raise the following concerns. These concerns hold equal validity for predominantly obligation-based and incentive-based approaches, though with a different emphasis balance.

The first concern arises from granting a natural advantage to wealthier nations equipped with more substantial funds for aid measures. This concern is interlinked with another: onerous environmental norms or insufficient subsidisation might render the adoption of “green” technologies economically unviable. Consequently, the system might incentivise undertakings to relocate their operations to countries with more lenient norms. Somewhat conversely, a third concern is that if the amount of State aid is substantial, it may lead to the creation of industries reliant on continuous public funding – a third concern. These concerns underscore an underlying issue of how to ensure the economic viability of green technologies, each of which will be discussed in turn.

3. THE RISK OF DEEPENING DISPARITIES BETWEEN MEMBER STATES

The concern that the framework outlined above might deepen developmental disparities between Member States by favouring those with more substantial resources has been explicitly raised by Competition Commissioner Vestager in the TCTF context, and prior to that was also raised within the broader scope of EU environmental policy.⁷⁰ The argument ran that poorer States may struggle to allocate comparable funds to State aid for green technologies as wealthier ones, resulting in

⁶⁸ Case C-850/19 P *FVE Holyšov I s.r.o. and Others v. European Commission*, EU:C:2021:740, para. 142.

⁶⁹ Notably, a comparable situation emerged in joined cases C-73/22 P and C-77/22 P *Grupa Azoty S.A. and Others v. European Commission*, EU:C:2023:570, where plaintiffs incorrectly claimed that a system allowing State aid to be granted to prevent carbon leakage to other companies amounts to guarantees that such aid will be granted.

⁷⁰ *Remarks by Executive Vice-President Vestager on the proposal for a State aid Temporary Crisis and Transition Framework*, European Commission, 1 February 2023, available at: https://ec.europa.eu/commission/presscorner/detail/en/SPEECH_23_527 (accessed 30 August 2024).

economic disparities.⁷¹ This impact might not be immediate, considering that these technologies still need to mature. However, given the accelerating environmental degradation, these technologies are likely to gain prominence, providing early adopters with a significant head start. This mechanism could be further exacerbated, especially under an obligation-heavy system, creating a scenario where adaptation or abandoning the activity as unviable, or relocation to other countries becomes economically imperative. This, in turn, may subsequently lead to the carbon leakage discussed below.⁷²

While the above-mentioned concern is inherent in the entire State aid ruleset, not only that which is related to “green” technologies, the instruments available for State aid offer limited possibilities to address it. The only viable solution is to introduce more generous aid limits in assisted regions (NUTS categories b and c), specifically targeting underdeveloped areas.⁷³ Generally, these differentiated aid ceilings are derived from the EU imperative of promoting cohesion, which translates into simple quantitative aid criteria embedded in the GBER and in Regional Aid Guidelines (RAG) – the more a region lags behind the EU average, the more aid it is eligible to receive.⁷⁴ However, the effectiveness of this mechanism is contingent upon the same factor that prompts the inequality concern. Just because EU law permits more aid does not automatically mean that States will grant it.⁷⁵

In addition, it must be noted that irrespective of geographical preferences for regional aid, granting State aid directly under the Treaty always remains an option. Where wealthier Member States grant aid for rolling out some eco-friendly technology, such a measure will, in principle, fulfil the objectives of Art. 107(3)(c) TFEU, under which it falls.⁷⁶ In light of existing case law, there does not seem to be a possibility – because there is definitely no precedent – of an aid measure being

⁷¹ Gràcia, Lunneryd, Papaefthymiou, *supra* note 5, p. 99. Similar concerns aired earlier: J. Skovgaard, *EU Climate Policy After the Crisis*, 23(1) Environmental Politics 1 (2014).

⁷² See generally H. Naegele, A. Zaklan, *Does the EUETS Cause Carbon Leakage in European Manufacturing?*, 93 Journal of Environmental Economics and Management 125 (2019) and sources quoted therein.

⁷³ Communication from the Commission, *Guidelines on regional State Aid* [2021] OJ C 153/1 recitals 12–14, sections 7.2 and 7.3; Commission Regulation (EU) No. 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty (consolidated version) [2023] OJ L 167, Art. 2(27)(48)(55), defining regions eligible for more preferential conditions based on a regional aid map.

⁷⁴ See K. De Marez, A.-M. Pielmus, *Key Elements of the Revised Guidelines on Regional State Aid*, 21(2) European State Aid Law Quarterly 120 (2022), pp. 123–126.

⁷⁵ Cf. Joined Cases C-73/22 P and C-77/22 P *Grupa Azoty S.A. and Others v. European Commission*, para. 31.

⁷⁶ Authorisation for State aid pursuant to Articles 107 and 108 of the Treaty on the Functioning of the European Union [2022] OJ C 357/1; Authorisation for State aid pursuant to Articles 107 and 108 of the Treaty on the Functioning of the European Union – Cases where the Commission raises no objections [2021] OJ C 317/1.

declared incompatible with the internal market solely because it distorts competition and trade by deepening inequalities if it also serves the EU environmental goals.⁷⁷ It must be noted that the balancing test, where the pros and cons of the measure are weighed for the purpose of Art. 107(3)(c) TFEU, under which all such measures are assessed, does not require the competitive situation to be determined or a relevant market to be established.⁷⁸ There is also no need to identify competitors.⁷⁹ Thus, neither any known method of legal interpretation nor simple common sense would justify blocking an aid measure, because theoretically some unidentified individual from a poorer country who may or may not be a competitor may or may not receive comparable aid.

In practical terms, the only scenario where aid, clearly aligned with environmental objectives as outlined in the framework or granted directly under the Treaty, might be deemed incompatible with the internal market is when the measure exhibits egregious administrative flaws, for instance, involving overpayment, lacking proper oversight, and so forth. It must be, simply speaking, a blatant case of administrative incompetence, which cannot be completely ruled out from time to time, but in the grand scheme of things is merely a negligible statistical fluke.⁸⁰ Therefore, for wealthier States, the option of granting aid directly under the Treaty and bypassing the GBER/RAG remains a viable choice.⁸¹

This section of the analysis can thus be concluded by stating that when it comes to State aid compatibility criteria in the light of the existing *acquis*, the concern that the discussed framework, especially the TCTF and the CEEAG, may deepen developmental disparities between Member States cannot be satisfactorily addressed. This factor not only casts a shadow on the concerns discussed below, but must also be recognised as an inherent limitation of what State aid can practically achieve.

⁷⁷ The balancing test in the *acquis*, pitting distortion of competition and trade against environmental goals, suggests the opposite. See e.g. Case T-176/01 *Ferriere Nord SpA v. European Commission*, EU:T:2004:336, paras. 134, 151; Case T-671/14 *Bayerische Motoren Werke AG v. European Commission*, EU:T:2017:599, para. 109.

⁷⁸ E.g. Case T-55/99 *Confederación Española de Transporte de Mercancías (CETM) v. Commission of the European Communities*, EU:T:2000:223, para. 102; Case T-58/13 *Club Hotel Loutraki AE and Others v. European Commission*, EU:T:2015:1, paras. 88–89.

⁷⁹ E.g. Case T-14/96 *Bretagne Angleterre Irlande (BAI) v. Commission of the European Communities*, EU:T:1999:12, para. 78.

⁸⁰ See rare examples State aid – Hungary – State aid SA.48556 (2019/C) – Regional investment aid to Samsung SDI – Invitation to submit comments pursuant to Article 108(2) of the Treaty on the Functioning of the European Union [2022] OJ C 82/21; Commission Decision of 26 July 2022, No. 2023/1683, on the measure SA.26494 2012/C (ex 2012/NN) implemented by France in favour of the operator of La Rochelle airport and certain airlines operating at that airport [2023] OJ L 217/5.

⁸¹ This has happened before. See e.g. Authorisation for State aid pursuant to Articles 107 and 108 of the Treaty on the Functioning of the European Union [2014] OJ C 280/1; Authorisation for State aid pursuant to Articles 107 and 108 of the Treaty on the Functioning of the European Union [2016] OJ C 258/1; Authorisation for State aid pursuant to Articles 107 and 108 of the Treaty on the Functioning of the European Union [2017] OJ C 20/1.

Simultaneously, it underscores the need to supplement State aid tools with other legal instruments, specifically EU funds – which is a separate issue in itself. Only through this supplementation can the underlying issue of disparities in available subsidisation funds across Member States be effectively addressed. Even though the issue of the usage of EU funds lies beyond the scope of this paper, the fact that it naturally emerges as a logical conclusion goes to show, firstly, that State aid should not be seen in isolation from other instruments of EU law, and secondly, that it underscores how State aid, by itself, has certain inherent limitations.⁸²

4. THE INSUFFICIENT PREVENTION OF CARBON LEAKAGE

Another concern associated with the framework is the creation of conditions conducive to carbon leakage. Carbon leakage refers to the situation that may occur if, due to the costs related to climate policies, businesses were to transfer production to other countries with laxer emission constraints.⁸³ Although semantically the term refers to a specific category of emissions, the concept is understood more broadly as an umbrella term to describe pollution increasing as a result of offshoring to avoid costly environmental norms.⁸⁴

It can be said that obligation-based solutions, in principle, tend to stimulate offshoring and carbon leakage (for those companies that are operationally capable of relocating), whereas incentive-based systems are neutral in this regard.⁸⁵ EU State aid law, or rather, State aid-adjacent laws, contain relatively limited but nevertheless somewhat viable incentive-based tools to mitigate this phenomenon, which can serve as a general template. Directive 2003/87/EC allows Member States to adopt measures “in favour of sectors or subsectors which are exposed to a genuine risk of carbon leakage due to significant indirect costs that are actually incurred from greenhouse gas emission costs passed on in electricity prices.”⁸⁶ These measures are

⁸² In a similar vein, not in the State aid context, but the broader EU environmental policy context, see M. Pianta, M. Lucchese, *Rethinking the European Green Deal: An Industrial Policy for a Just Transition in Europe*, 52(4) *Review of Radical Political Economics* 633 (2020).

⁸³ The definition used by the EC is available at: *Carbon leakage*, European Commission, available at: https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/free-allocation/carbon-leakage_en (accessed 30 August 2024).

⁸⁴ The trend itself is not new, as the costs of operating within the EU can be as much as 10–30 times higher than in developing countries (C. Schröder, *Industrielle Arbeitskosten im internationalen Vergleich*, 43(3) *IW-Trends – Vierteljahresschrift zur Empirischen Wirtschaftsforschung* 39 (2016)). Carbon leakage must thus be seen in the broader context of companies relocating to cheaper countries.

⁸⁵ All consequences not linked with the decrease of competitiveness or atrophying of sectors will be omitted as being outside the scope of this paper.

⁸⁶ Directive (EU) 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, Directive 2003/87/EC of the European Parliament and of the Council of

designed to offset operational expenses elevated by environmental norms, with the intention of maintaining operations at the unchanged competitive level without the need to relocate.⁸⁷

Considering the relatively stringent European environmental standards and the inherent characteristics of the State aid *instrumentarium* outlined in Section 2, one may question whether State aid is indeed the correct tool to prevent offshoring that leads to carbon leakage. From an economic perspective, this question can be answered by analysing the unique circumstances of particular undertakings – calculating the costs of relocating to specific countries and assessing the potential saving impact on their pre-existing logistics chains.⁸⁸ If the assessment indicates that such a move would be economically sound, then the signal for the regulator should be that there is a risk of carbon leakage. Then a company should be eligible to receive aid, and granting it should prevent offshoring by offsetting the cost hike associated with rolling out more eco-friendly technology.⁸⁹

However, the mere theoretical possibility of relocation does not ensure that it will actually occur. This assertion underscores the new framework's primary challenge in preventing carbon leakage, and more broadly, the incentive effect in State aid law. Dogmatically speaking, in the light of the existing *acquis*, a measure will have an incentive effect if an undertaking would have behaved differently in the absence of aid, in other words, the business would choose not to remain in the EU without aid.⁹⁰ Yet, this remains unverifiable.

This problem is generally recognised. State aid cases where compatibility relies heavily on the incentive effect require the active participation of undertakings, in addition to the State and the EC. *De facto*, it is the beneficiary, not the State, who should prove that they will behave in expected ways as a result of receiving aid.⁹¹

13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC [2003] OJ L 275/32.

⁸⁷ However, even leaving environmental compliance costs unchanged may still lead to relocation of companies in search of savings in other areas.

⁸⁸ See generally P. Capik, M. Dej (eds.), *Relocation of Economic Activity: Contemporary Theory and Practice in Local, Regional and Global Perspectives*, Springer, Cham: 2019.

⁸⁹ Cf. Directive (EU) 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, 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 L 275, Annex II, which adopted an exhaustive catalogue of polluting undertakings in risk of carbon leakage.

⁹⁰ Point explicitly stated in *e.g.* Authorisation for State aid pursuant to Articles 107 and 108 of the Treaty on the Functioning of the European Union – Cases where the Commission raises no objections – SA.109500 [2024] OJ C 729/1, para. 61

⁹¹ See *e.g.* Commission Decision of 23 September 2009, No. 2010/54, on the aid which Poland is planning to implement for Dell Products (Poland) Sp. z o.o. C 46/08 [2010] OJ L 132/93, para. 175.

Being aware that the yardstick to assess whether aid has indeed changed undertakings' course would be its typical model of behaviour, the company may be inclined to, for example, pre-emptively alter their business plan or take any actions to convey a signal that certain aid would prevent carbon leakage.⁹²

From a practical standpoint, relying on the business plan presented by the beneficiary is the most straightforward method of assessing the incentive effect, making it a tempting approach. However, a significant issue arises because it links State aid compatibility to the existence of future, and therefore uncertain, events. It is highly problematic to *ex ante* assess such a business plan and determine with a satisfactory degree of certainty the likelihood of planned actions.⁹³ In the dynamically evolving economic landscape (largely sector-dependent, but compounded by the current uncertainty), the need to revise a business plan may become imperative.⁹⁴ Such a revision may equally lead a company to take actions previously deemed unfeasible in the absence of aid, as well as to consider previously normal activities unviable without public support.⁹⁵

In light of the above, it must also be pointed out that the incentive effect of State aid cannot be narrowed down to dichotomous possible outcomes, implying that the undertaking will “always” or “never” engage in a particular activity.⁹⁶ The only scenario where such a straightforward assessment can be applied is when other entities, for purely commercial reasons, already engage in the activity intended to be funded by State aid. In this context, if the potential beneficiary claims an inability to carry out the activity without aid, as the EC has stated on multiple occasions, this points more to operational inefficiencies rather than a market failure.⁹⁷

Setting aside the relatively uncommon scenario where a similar activity is already carried out commercially – even more uncommon in the case of new technolo-

⁹² Nicolaidis, *supra* note 62, pp. 584–585.

⁹³ L. Evans, H. Nyssens, *Economics in State Aid: Soon as Routine as Dentistry?*, in: A.M. Mateus, T. Moreira (eds.), *Competition Law and Economics: Advances in Competition Policy Enforcement in the EU and North America*, Edward Elgar Publishing, Cheltenham: 2010, pp. 372 et seq.

⁹⁴ Nicolaidis, *supra* note 62, p. 585.

⁹⁵ Evans, Nyssens, *supra* note 93, pp. 373–374.

⁹⁶ See e.g. Commission Decision of 6 July 2010, No. 2011/4, on State aid C 34/08 which Germany is planning to implement in favour of Deutsche Solar AG [2011] OJ L 7/40; Commission Decision of 3 August 2011, No. 2012/466, on the aid SA. 26980 (C 34/09) which Portugal is planning to grant to Petrolgal [2012] OJ L 220/1; Commission Decision of 1 October 2014, No. 2015/1072, on the measures implemented by Germany in favour of Propapier PM2 GmbH – State aid SA.23827 (2013/C) [2015] OJ L 179/54.

⁹⁷ Interpretation used in e.g. Commission Decision of 9 November 2005, No. 2006/513, on the State Aid which the Federal Republic of Germany has implemented for the introduction of digital terrestrial television (DVB-T) in Berlin-Brandenburg [2007] OJ L 200/14; State aid – Germany – State aid C 34/2006 (ex N 29/2005) – Introduction of digital terrestrial television (DVB-T) in North Rhine-Westphalia – Invitation to submit comments pursuant to Article 88(2) of the EC Treaty [2007] OJ C 204/9; Commission Decision of 24 January 2007, No. 2007/374, on State aid C 52/2005 implemented by the Italian Republic for the subsidised purchase of digital decoders [2007] OJ L 147/1.

gies – the issue of how the aid’s incentive effect may be impacted by the beneficiary’s business risk perception is also pertinent. Whilst there is a vast body of research on business risk perception, the key takeaway for this discussion is that risk perception is highly subjective.⁹⁸ It is impossible to quantify through hard metrics, making it highly problematic to assess definitively what risk could and should be deemed acceptable for a well-run business. A conservative, risk-averse business plan with a strong emphasis on risk mitigation may be seen as proof positive for the incentive effect for almost any type of State aid. A prospective beneficiary who is cautious about risks could argue that State aid is necessary because – in this instance – the rollout of new, immature eco-friendly technology would be associated with excessive risk.⁹⁹ However, an overly cautious risk perception by undertakings that leads to them receiving aid may, somewhat paradoxically, result in funding projects that are unviable. This is because such an assessment bias artificially lowers the threshold for the incentive effect and aid necessity.¹⁰⁰

This part of the analysis leads to the conclusion that the incentive effect, relying on “what if” scenarios, is inherently susceptible to abuse. Receiving aid to prevent carbon leakage when such a risk never existed is nothing but abuse. However, one could argue that, despite its apparent wastefulness, this situation might be viewed as a necessary cost of achieving urgent environmental objectives. This argument stems from the notion that the environmental goals, pushing companies to adopt cleaner technologies, would still be achieved regardless of the risk of carbon leakage. Paradoxically, from the standpoint of these “green” objectives, the incentive effect becomes irrelevant. In this context, the entire rationale behind introducing the incentive effect as part of the common assessment principle for all measures falling under Art. 107(3)(c) TFEU, as elucidated in the SAM Communication to prevent support for activities that companies would have undertaken anyway, seems unworkable in this context.

5. THE RISKS FROM SUPPORTING ECONOMICALLY UNVIABLE TECHNOLOGIES

The third concern linked to utilising State aid to promote the adoption of “green” technologies arises from their experimental nature, lack of maturity and potential economic unviability. Of course, there is an overriding environmental goal in light of which the cost of the new technologies is simply a price worth paying. Nevertheless,

⁹⁸ G.C. Harcourt, P.H. Karmel, R.H. Wallace, *Economic Activity*, Cambridge University Press, New York: 1967, p. 151.

⁹⁹ Nicolaidis, *supra* note 62, p. 585.

¹⁰⁰ *Ibidem.*; Evans, Nyssens, *supra* note 93, pp. 371–372.

with this approach, a significant nuance is being lost: there is a difference between supporting technological progress and supporting technologies that are inherently unviable. Beyond the ideological conflict with the tenets of a market economy, in this context the framework may thus contribute to a risk of negative incentive, that is, not replacing technologies with better and more viable ones if even non-viable but eco-friendly technologies are still eligible for subsidies, which may ultimately lead to the development of subsidy dependence for whole sectors.¹⁰¹ In keeping with the optics of policy mix, including incentive and obligation, it can be said that the relations outlined below will be similar under both of these models, but the magnitude will differ. These similarities and differences are further explored below.

The interpretation of the aid compatibility criteria set out in the common assessment criteria for all measures assessed under Art. 107(3)(c) TFEU is the “culprit” of the concern explored here.¹⁰² In conducting a balancing test that weighs the pros and cons of a measure, the evaluation focusses on whether the aid measure facilitates the implementation of a particular technology or investment. This involves scrutinising whether the allocated funds are adequate for completing a given project and whether it aligns with the goals set out in Art. 107 TFEU.¹⁰³ This assessment, in principle (although there are exceptions, mainly related to infrastructure construction), does not delve into much detail regarding the prospect of continuing economically viable operations through the use of funded projects or technology.¹⁰⁴

Moreover, the very reason why State aid instruments are employed is the fact that economic viability is questionable, that there is a market failure.¹⁰⁵ At a certain

¹⁰¹ See generally T. Ergen, L. Schmitz, *The Sunshine Problem: Climate Change and Managed Decline in the European Union*, 23(6) MPIfG Discussion Paper 1 (2023).

¹⁰² Cf. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, and the Committee of the Regions of 8 May 2012 *EU State Aid Modernisation*, COM(2012)209 final, para. 18(a); Communication from the Commission, *Temporary Crisis and Transition Framework for State Aid measures to support the economy following the aggression against Ukraine by Russia* [2022] OJ C 131, paras. 78, 81, 83 and 85; Communication from the Commission, *Guidelines on State aid for climate, environmental protection and energy 2022* [2022] OJ C 80, section 3. and subsequently fleshed out in the listed categories of aid; Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty (consolidated version) [2023] OJ L 167, section 7.

¹⁰³ Bacon, *supra* note 61, p. 100; Werner, Verouden, *supra* note 27, pp. 201–208 and cases quoted therein.

¹⁰⁴ Such a requirement is conspicuously absent in the Communication from the Commission, *Temporary Crisis and Transition Framework for State Aid measures to support the economy following the aggression against Ukraine by Russia* [2022] OJ C 131, sections 2.5.–2.8., and the Commission Regulation (EU) No. 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty (consolidated version) [2023] OJ L 167, section 7 (cf. Art. 39(9)(e)), whilst only hinted at in the Communication from the Commission, *Guidelines on State aid for climate, environmental protection and energy 2022* [2022] OJ C 80, paras. 23–25, 52–54, 71–73.

¹⁰⁵ See Communication from the Commission, *Temporary Crisis and Transition Framework for State Aid measures to support the economy following the aggression against Ukraine by Russia* [2022] OJ C 131/1, paras. 77p, 78o and 79m; Communication from the Commission, *Guidelines on State aid for climate, environmental*

level of generality and in the State aid context, this term describes a situation where market forces alone fail to deliver the desired results as envisioned by policymakers.¹⁰⁶ From a welfare creation standpoint, this involves either a situation where a certain product or its associated negative externalities are too pronounced, or when there is an inadequacy in its availability or the positive externalities it generates. In any case, such circumstances lead to an efficiency loss.¹⁰⁷

Concerning the discussed aid, the European Commission states that market failure arises from negative externalities – such as pollution – not being adequately priced. Consequently, polluters lack a business incentive to eliminate it since the costs are economically manageable.¹⁰⁸ Positive externalities, as per the Commission’s perspective, manifest insufficiently because part of the benefits from an investment accrue to market participants other than the investor, potentially leading to underinvestment. The EC further elaborates that this situation typically arises in markets where there is information disparity between two sides. For instance, external financial investors may lack information about the likely returns and risks of a project. Additionally, market failures, referred to as coordination failures, may impede the development or effective design of a project due to diverging interests and incentives among investors, known as split incentives. Factors such as the costs of contracting, liability insurance arrangements, uncertainty about the collaborative outcome and network effects (e.g. an uninterrupted supply of electricity) contribute to these coordination failures. Such issues can emerge in relationships, such as between a building owner and a tenant concerning energy-efficient solutions.¹⁰⁹

In attempting to identify the root cause in the Commission’s diagnosis of sources of market failures, it can be said that the common denominator for all these subsets of scenarios is the inadequate flow of information. When read together with aid compatibility criteria, especially those set out in the TCTF, the CEEAG and the GBER, it rather clearly implies (but only implies) that if State aid were to help kick off a certain activity, such as a new “green” technology, other professional market players would discover its viability, and it would pick up on its own merits.¹¹⁰ In

protection and energy 2022 [2022] OJ C 80, paras. 10, 34; Commission Regulation (EU) No. 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty (consolidated version) [2023] OJ L 167, Arts. 36(4), 36a(10), 36b(3), 38(3), 43 and 47(7).

¹⁰⁶ Werner, Verouden, *supra* note 27, p. 30.

¹⁰⁷ *Ibidem*.

¹⁰⁸ Communication from the Commission, *Guidelines on State aid for climate, environmental protection and energy 2022* [2022] OJ C 80, para. 34.

¹⁰⁹ *Ibidem*. Whilst the CEEAG serves as an illustrative example, the EC adopts this understanding of market failures across the whole spectrum of State aid. See Werner, Verouden, *supra* note 27, pp. 30–31.

¹¹⁰ See e.g. Communication from the Commission, *Temporary Crisis and Transition Framework for State Aid measures to support the economy following the aggression against Ukraine by Russia* [2022] OJ C 131, paras. 77p, 78o and 79m; Communication from the Commission, *Guidelines on State aid for climate, environmental*

the author's opinion, this is a crucial factor regarding the interpretation of market failure: its implicit reliance on the assumption that a given activity will ultimately be economically self-sustainable.

The problem with anchoring the understanding of market failure on this assumption is that it tends to obscure the fact that if something is not adequately provided by market forces alone, it does not amount to a market failure by itself.¹¹¹ In this case, the Commission itself clearly acknowledges in the TCTF, the CEEAG and the GBER that many "green" technologies are expensive due to their immaturity and experimental nature, among other factors.¹¹² In some instances, the limited adoption is a result of market forces rather than a manifestation of market failure. Therefore, if certain activities prove economically unviable, it does not necessarily indicate a "bottleneck" stemming from coordination or asymmetry issues that State aid could resolve. In this context, the common assessment principle of Art. 107(3) (c) TFEU aid negatively synergises with this circumstance, as the assessment mostly concludes when a technology is rolled out, and it leaves potentially dysfunctional markets unaddressed.¹¹³

It must also be noted that one must not associate economic viability with a simple black-and-white scenario where an activity either is profitable or generates losses. Firstly, the cost structure is unique to each undertaking, with numerous factors influencing its financial performance beyond the costs associated with "green" technologies.¹¹⁴ Consequently, the feasibility of rolling out a specific eco-friendly technology may vary in a company-specific context, which in turn also determines the existence of an incentive effect.

This issue has already emerged in the context of carbon leakage, which, after all, occurs due to the detrimental impact of environmental standards on costs and ultimately on competitiveness. It then stands to reason that if a technology is not

protection and energy 2022 [2022] OJ C 80, paras. 36–38; Commission Regulation (EU) No. 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty (consolidated version) [2023] OJ L 167, Arts. 36(10), 36a(10) and especially 39(9)(e).

¹¹¹ Werner, Verouden, *supra* note 27, p. 30.

¹¹² See R. Rodrigues, R. Pietzcker, P. Fragkos, J. Price, W. McDowall, P. Siskos, T. Fotiou, G. Luderer, P. Capros, *Narrative-Driven Alternative Roads to Achieve Mid-Century CO₂ Net Neutrality in Europe*, 239(A) Energy 1 (2022). Cf. R. Leoncini, A. Marzucchi, S. Montresor, F. Rentochini, "Better Late Than Never": *The Interplay Between Green Technology and Age For Firm Growth*, 52(4) Small Business Economics 891 (2019) and sources referred to on p. 891, which notably did not focus on immature technologies.

¹¹³ Cf. Commission Regulation (EU) No. 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty (consolidated version) [2023] OJ L 167, Art. 39(9)(e).

¹¹⁴ See generally S. Baumgärtner, M.F. Quaas, *Ecological-Economic Viability as a Criterion of Strong Sustainability Under Uncertainty*, 68(7) Ecological Economics 2008 (2009).

just costly, but also economically unviable, the loss of competitiveness will be more acute (resulting in a higher risk of offshoring).¹¹⁵

However, within the well-established *acquis* for State aid assessment, there is no requirement to determine the relevant market, assess competitive situations or identify competitors.¹¹⁶ As a result, any negative effect on the beneficiary's competitiveness remains unidentified. It is also noteworthy that the assessment of the aid measure's impact on trade and competition focusses on how the beneficiary, armed with the advantage it is granted, may disrupt the generally understood competitive process.¹¹⁷ This stands in contrast to the situation here, where the concern lies in how it might diminish the competitiveness of the beneficiary.

The factors mentioned above significantly complicate an unequivocal assessment of the extent to which certain new "green" technologies are economically viable. Nevertheless, it is methodologically possible and, in the author's opinion, necessary to make a generalised (not case-specific) assessment of which technologies may negatively affect competitiveness (due to their costs), or even to identify those that are inherently economically unviable. This is because the absence of such an assessment may result in negative outcomes, which, though not *terra incognita* in economics, have not received sufficient attention in the domain of the discussed State aid: The first possible outcome entails more undertakings being unable to maintain their competitive position, serving as a cautionary note for other enterprises against adopting these technologies.¹¹⁸ The second potential negative outcome pertains to the risk that a given technology will be abandoned once the subsidies dry out, whilst the third potential negative outcome refers to the possibility of situations relocating offshore – in other words, carbon leakage.

Examining these potential outcomes through the lens of the incentive-obligation policy mix adopted in this paper, it can be asserted that they cannot be ruled out in both models; however, there may be a different emphasis on accents. Obligation-based models will tend to more strongly stimulate offshoring, whilst in incentive-based solutions businesses utilising new but costly technologies may

¹¹⁵ Cf. Ergen, Schmitz, *supra* note 101; Pianta, Lucchese, *supra* note 82.

¹¹⁶ E.g. Case T-14/96 *Bretagne Angleterre Irlande (BAI) v. Commission of the European Communities*, para. 78; T-55/99 *CETM*, para. 102; Case T-58/13 *Club Hotel Loutraki AE and Others v. European Commission*, paras. 88–89.

¹¹⁷ E.g. Joined Cases T-81/07, T-82/07 and T-83/07 *Jan Rudolf Maas and Others v. Commission of the European Communities*, EU:T:2009:237, para. 71; Joined Cases T-226/09 and T-230/09 *British Telecommunications plc (T-226/09) and BT Pension Scheme Trustees Ltd (T-230/09) v. European Commission*, EU:T:2013:466, para. 168.

¹¹⁸ This would also directly falsify the claim that market failure occurred due to insufficient information flow (as indicated in Communication from the Commission, *Guidelines on State aid for climate, environmental protection and energy 2022* [2022] OJ C 80, para. 34).

gain superior bargaining power over the authorities.¹¹⁹ This could lead to continued subsidisation by credibly threatening to shift their business away or abandon these technologies.¹²⁰

The fact that these outcomes could potentially occur – clearly stated during legislative work on the framework – underscores a fundamental flaw in the system’s architecture. There is a notable regulatory emphasis on the rollout of new technologies, which, despite being convincingly defended by the urgency to address rapidly deteriorating climate conditions, lacks sufficient emphasis on the role of research and development activities.¹²¹ Although outcomes in R&D are never guaranteed, much like any creative works, efforts should be directed towards further maturing “green” technologies and making them commercially viable. It is noteworthy that despite the amendment of the R&D guidelines in 2022, no preferential compatibility assessment has been established to align research and development aid with technologies supported under the discussed ruleset.¹²² This adds weight to the accusations of EU greenwashing.

CONCLUSIONS

The analysis presented in this paper unveils another dimension of a seemingly unsolvable conundrum within the framework of enforcing rules to combat environmental deterioration. Currently, no-one can reasonably deny the need to make efforts to reverse climate change, which would take precedence over economic considerations; at the same time, however, only a robust economy can provide enough funds for the government to finance these environmental efforts.

Under these circumstances, it becomes evident that State aid law, given its discretionary nature, is inherently suboptimal in promoting a “green” agenda. One may not need to look further for examples of greenwashing. Irrespective of how lenient the compatibility criteria may be – and thus how eco-friendly they will

¹¹⁹ See M. Ricketts, A. Peacock, *Bargaining and the Regulatory System*, 6(1) International Review of Law and Economics 3 (1986).

¹²⁰ A similar mechanism revealed itself in the State aid context concerning Art. 107(3)(c) TFEU aid for opening new air routes from unprofitable regional airports. Research conducted in Spain indicates that carriers were inclined to discontinue routes when aid dried up, even if these routes were not operating at a loss. The prospect of obtaining subsidies elsewhere prompted this behaviour, allowing carriers to essentially coerce authorities into providing aid by threatening relocation. See D. Ramos-Pérez, *State Aid to Airlines in Spain: An Assessment of Regional and Local Government Support from 1996 to 2014*, 49 Transport Policy 137 (2014), p. 147.

¹²¹ See P. Söderholm, *The Green Economy Transition: The Challenges of Technological Change for Sustainability*, 3(6) Sustainable Earth 1 (2020), pp. 4–5.

¹²² See Communication from the Commission, *Framework for State aid for research and development and innovation 2022* [2022] OJ C 414/1.

outwardly look – the system will consistently fall short of its goals if only a limited number of authorities decide to utilise them, or if it is predominantly adopted by the wealthiest Member States. This assertion gains support when examining the proportion of aid granted under the CEEAG and the “green” segment of the TCTF across Member States. The issue here is an insufficient incentive – in relation to budgetary constraints – to allocate more funds, especially to immature and thus economically questionable technologies.

In contrast, opting for the simpler, more cost-effective approach of emphasising obligations through environmental norms may seem convenient regulation-wise. However, this strategy could lead to reduced competitiveness and increased offshoring, ultimately resulting in a diminished pool of funds available for “green” policies.

In light of the inherent limitations of State aid law, the conclusion of this paper, serving as both a summary and an opening for new avenues of inquiry, is that solutions must be sought in two intertwined areas: Firstly, a seemingly straightforward solution to address the immaturity and high costs of “green” technologies would be to place a greater emphasis on research and development aid to make them more economically viable. However, relying solely on the tools of State aid law poses challenges, as it depends on whether a Member State has the funds and the willingness to allocate them. Therefore, if the aim is to evenly distribute funding for the rollout of “green” technologies among Member States without deepening disparities, State aid law proves inadequately suited to the task. The second area, where solutions should be simultaneously sought, refers to the need to place more emphasis on European funds.