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## Promoting Sustainable Development


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# Intellectual Property Rights and Sustainable Trade

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## 1.INTRODUCTION

Sustainable trade, or trade sustainability, refers to the practice of conducting international trade in a way that generates economic, social and environmental benefits. This concept is consistent with the principles of sustainable development, which seek to balance economic growth, social equity, and environmental protection. In other words, sustainable trade ensures that trade activities contribute to economic growth and development, reduce poverty and inequality, promote fair labor practices, and conserve and use environmental resources responsibly. Sustainable trade is also crucial for achieving long-term global development goals, such as those outlined in the United Nations' Sustainable Development Goals (SDGs).

Key components of trade sustainability include environmental sustainability, social sustainability, economic sustainability, and governance and regulation. The goal of environmental sustainability is to reduce carbon emissions and other trade-related pollutants while promoting the use of sustainable resources and renewable energy. It is essential to ensure that trade practices do not lead to deforestation, biodiversity loss or other forms of environmental degradation. The term "social sustainability" is defined as the capacity of a system to ensure the continued well-being of its constituent elements, both present and future. The implementation of fair labor practices, including the assurance of decent working conditions and remuneration commensurate with the value of the work performed, is of paramount importance. Furthermore, the advancement of human rights and the prevention of exploitation within global supply chains is a crucial aspect to consider. It is essential to provide assistance to local communities and to take measures to avert the adverse social consequences of trade, such as involuntary displacement or the disruption of livelihoods. The objective of economic sustainability is to guarantee that trade practices contribute to long-term

economic stability and growth. The advancement of equitable trade relationships between developed and developing countries, the encouragement of economic diversification and the mitigation of reliance on unsustainable industries represent key objectives in this regard. Finally, it is of the utmost importance that policies and regulations that encourage sustainable trade practices be implemented. In addition, there is a need to advance transparency and accountability within the context of international trade agreements and to promote international collaboration with respect to the environmental and social implications of trade.

As trade represents a significant driver of global economic activity, the perpetuation of unsustainable trade practices has the potential to result in considerable environmental degradation, social inequities, and economic imbalances. The implementation of sustainable trade practices is essential for ensuring the availability of resources for future generations. In response to mounting pressure from consumers and investors, businesses are increasingly compelled to adopt sustainable trade strategies in order to meet the demands of the market. Nevertheless, the coordination of the interests of a heterogeneous group of stakeholders, including governmental entities, commercial enterprises, and civil society organizations, can present a considerable challenge. The implementation of sustainable trade practices is further complicated by the fact that different countries have varying regulations and standards. The capacity of developing countries to prioritize sustainability over immediate economic gains may be constrained by institutional factors.

The objective of this paper is to examine the potential influence of institutional constraints on sustainable trade, with a particular focus on the role of intellectual property rights (IPRs). The remainder of this paper is organized as follows. Section 2 presents a discussion of the potential positive and negative impacts of IPRs on sustainable trade, with illustrative examples drawn from real-life contexts. Section 3 presents a straightforward numerical illustration of the potential correlation. Section 4 provides a concluding summary of the paper's key findings.

## 2.THE IMPACTS OF IPRS ON SUSTAINABLE TRADE

Over the past two decades, there have been notable advancements in the strength and enforcement of patent laws on a global scale. This is largely attributable to the demands of technologically advanced nations for more robust protection in their export markets (Maskus, 2012). A principal factor is the 1995 Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) at the World Trade Organization, which necessitated substantial alterations to the minimum standards for the protection of intellectual property rights (IPRs). Prior to this, many developing, emerging, and transition economies had only a limited history of protecting IPRs, and were therefore required to implement them gradually. Furthermore, the United States and the European Union (EU) have stipulated that developing countries with which they are negotiating regional trade agreements (RTAs) must implement heightened standards for patents and copyrights. Furthermore, numerous high-income countries have also enacted more rigorous legislation, frequently as a consequence of similar RTAs or as a result of their accession to the EU. Collectively, these changes have resulted in a significant increase in the level of protection across the globe between 1995 and the present (Maskus and Yang, 2018).

Numerous researchers have investigated the impact of patent laws on imports, yielding inconclusive results (Maskus and Penubarti,1995; Smith 1999, 2001; Liu and Lin, 2005; Awokuse and Yin, 2010). In a noteworthy analysis, Ivus (2010) found that the patent reforms required by TRIPS in 18 developing nations with larger mandated policy changes significantly increased their imports of high-technology products in comparison with countries that adopted smaller changes. Similarly, Delgado et al. (2013) identified a similar result. The vast majority of this literature examines the consequences of domestic patent reforms on merchandise imports, proposing that such reforms should influence the demand for imported goods and technologies. Moreover, other researchers consider the possibility that strengthening PRs could ultimately enhance export capacity in countries that absorb and deploy foreign technical information (Yang and Maskus, 2009; He and Maskus 2012; Branstetter et al., 2006, Maskus and Yang, 2018).

Despite the impact of patent reforms on trade discussed above, IPRs can play a pivotal role in promoting sustainable trade practices. This is achieved by cultivating innovation, safeguarding investments, and fostering the development of environmentally conscious technologies. The following are the principal ways in which IPRs may contribute to sustainable trade:

1.Encouraging Innovation: IPRs confer exclusive rights upon inventors, thereby providing an incentive for the development of new technologies and solutions that can address environmental challenges. To illustrate, the patenting of green technologies may result in innovations pertaining to renewable energy, waste management, and sustainable agriculture.

2.Facilitating Technology Transfer: IPRs can facilitate the transfer of sustainable technologies between countries. Licensing agreements permit companies to disseminate their innovations while maintaining control over their intellectual property, thereby facilitating global access to sustainable solutions.

3.Supporting Economic Growth: The protection of IPRs serves to foster a robust economic environment wherein businesses can flourish. This economic stability is of paramount importance for sustainable development, as it provides the foundation for investments in green technologies and sustainable practices.

4.Promoting Fair Trade Practices: IPRs guarantee that creators and innovators are fairly remunerated for their work, which can mitigate economic disparities and advance social equity. This is consistent with the overarching objectives of sustainable development.

5.Enhancing Brand Reputation: Companies that invest in sustainable innovations and safeguard them through IPRs can enhance their brand reputation. This can foster increased consumer trust and loyalty, further accelerating the adoption of sustainable practices.

In light of the aforementioned conceptual theories, what strategies might IPRs adopt in order to exert a positive influence on sustainable trade? Below are a series of illustrative examples that demonstrate the role of IPRs in fostering sustainable trade.

1.Tesla's Open Patents: In 2014, Tesla announced its intention to permit the utilization of its patents pertaining to electric vehicle technology by other corporate entities. This initiative was designed to facilitate the accelerated development and adoption of sustainable transportation solutions by disseminating innovations that reduce

greenhouse gas emissions.[1]

2.The Solar Impulse Foundation: The foundation has identified and promoted in excess of 1,000 environmentally beneficial and economically viable solutions to environmental degradation. By securing patents for these technologies, the foundation ensures that innovators can benefit economically while contributing to environmental sustainability.[2]

3.Fairtrade Certification: Products bearing the Fairtrade certification guarantee that producers are remunerated equitably and operate in a secure work environment. Furthermore, this certification encourages the implementation of sustainable agricultural practices. IPRs serve to safeguard the integrity of the Fairtrade mark, thereby guaranteeing that only products that genuinely adhere to the Fairtrade standards may utilize the label.[3]

4.ABS Recycling in Moldova: ABS Recycling inaugurated the inaugural recycling center in Moldova, utilizing cutting-edge waste management software. By protecting their technology through IPRs, they can maintain a competitive edge while promoting sustainable waste management practices.[4]

While IPRs are designed to protect and incentivize innovation, they can also create challenges and opportunities for achieving sustainable trade practices. To illustrate, exclusive patent rights may render the process of learning through imitation more costly, which in turn may have a detrimental impact on sustainable trade practices. The potential obstacles may include the following:

1.Access to Technology: The implementation of stringent IPRs has the potential to restrict access to vital technologies, particularly in developing countries. To illustrate, the patenting of green technologies can render them costly and inaccessible to less affluent nations, thereby impeding their capacity to adopt sustainable practices.

2.The Stifling of Innovation: The excessive enforcement of IPRs can impede innovation. The intricate nature of the IPRs landscape may prove challenging for smaller companies or individual inventors, potentially leading to a reduction in sustainable technology innovations.

3.Monopolies: IPRs can result in the formation of monopolies, whereby a single entity assumes control of a substantial proportion of the market. Such practices may result in higher prices and reduced access to sustainable products and technologies.

4.Trade Barriers: IPRs can act as trade barriers, impeding the importation and exportation of goods incorporating patented technologies. This may result in a deceleration of the global dissemination of sustainable innovations.

5.Resource Allocation: It is possible that companies may prioritize the protection of their intellectual property over investing in further research and development. Such a scenario has the potential to redirect resources away from the development of novel sustainable technologies.

The following examples serve to illustrate the ways in which IPRs may impede sustainable trade in our real life.

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1.https://www.tesla.com/zh_tw/blog/all-our-patent-are-belong-you
2.https://solarimpulse.com/
3.https://www.fairtradecertified.org/what-we-do/what-we-certify/
4.https://www.wipo.int/web/ip-advantage/w/stories/abs-recycling-the-pioneer-of-waste-management-in-moldova

1. Biopiracy and Traditional Knowledge: The Neem tree, used for centuries in India for its medicinal properties, was patented by a U.S. company in the 1990s. This was seen as an example of biopiracy, where traditional knowledge was appropriated without fair compensation to the local communities. This patent was eventually revoked, but it highlighted the tension between IPRs and the protection of indigenous resources, affecting the social and environmental sustainability of trade.[5]
2. Access to Life-Saving Medicines: The patent protection granted to pharmaceutical companies on antiretroviral drugs used to treat HIV/AIDS has resulted in the high cost and limited accessibility of these medicines in developing countries. This has given rise to concerns regarding the social sustainability of trade in life-saving medicines, as it has the potential to impede equitable access to essential drugs, thereby exacerbating global health inequalities. In an effort to address these concerns, initiatives such as the UN's Medicines Patent Pool have been established with the aim of facilitating the sharing of patents in order to improve access to essential medicines.[6]
3. Monsanto's Seed Patents: Monsanto (now part of Bayer) has enforced strict IPR on its genetically modified (GM) seeds, requiring farmers to purchase new seeds each season rather than saving seeds from previous harvests. This has raised concerns about economic sustainability, as small-scale farmers in developing countries may struggle to afford the seeds and associated royalties. The dependence on patented seeds can also lead to reduced biodiversity, affecting environmental sustainability.[7]

The aforementioned examples illustrate the complex subtleties and potential challenges associated with the implementation of IPRs in the context of sustainable trade. It is of the utmost importance to achieve a balance between the protection of IPRs and the necessity for the widest possible access to sustainable technologies if global sustainability goals are to be achieved.

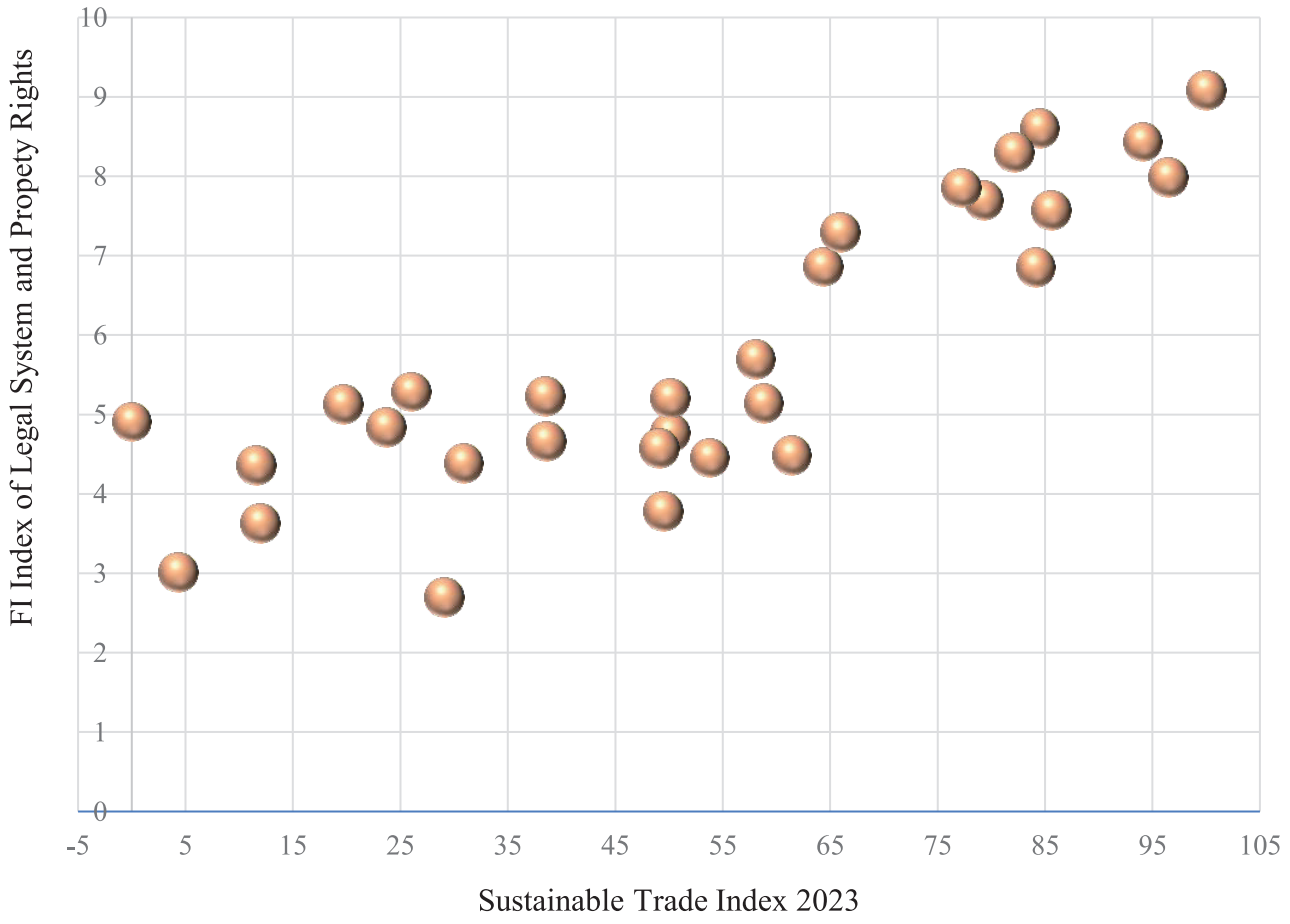
## 3.A NUMERICAL EXAMPLE

In 2022, the Hinrich Foundation and the IMD World Competitiveness Center collaborated to develop the Sustainable Trade Index (STI), a joint initiative designed to facilitate discourse among policymakers, business executives, and civil society leaders engaged in efforts to advance sustainable and mutually beneficial global trade. The STI, which ranges from zero to 100, assesses the preparedness and capability of 30 major economies to engage in international trade in a manner that aligns with long-term economic growth, environmental conservation, and societal advancement objectives. It accomplishes this via 71 indicators (pieces of data) from a multitude of sources, which are subsequently organized into three pillars: economic, societal, and environmental.[8]

On the other hand, the index published in Economic Freedom of the World by the Fraser Institute is a measure of the extent to which the policies and institutions of countries are supportive

5.https://www.mondaq.com/india/patent/1286020/the-neem-patent-case
6.https://www.statnews.com/2019/07/23/patent-reform-protect-access-lifesaving-drugs/
7.https://www.theguardian.com/environment/2013/feb/12/monsanto-sues-farmers-seed-patents
8.https://www.imd.org/centers/wcc/world-competitiveness-center/rankings/sustainable-trade-index/

**Figure 1. The relationship between IPRs and sustainable trade**




of economic freedom. A total of 45 data points are utilized to construct a summary index. The degree of economic freedom is gauged across five key domains: (1) the size of government, (2) the legal system and property rights, (3) the stability of currency, (4) the freedom to engage in international trade, and (5) the extent of regulation. We use the index of legal systems and property rights (LSPR), which ranges from zero to 10, to capture the scope of effective IPRs protection. A total of 165 jurisdictions are included in the index. The data are available on an annual basis from 2000 to 2021 and for years ending in zero or five from 1970 onwards.[9]

Figure 1 illustrates the correlation between the LSPR in 2021 and the STI in 2023 for 30 major economies, collectively representing 63% of the global population and 69% of global gross domestic product (GDP). The figure reveals a positive correlation between the level of IPRs protection and the sustainability of trade. Furthermore, the positive slope is even more pronounced in the group of countries with an LSPR exceeding 7.[9]

## 4.CONCLUSIONS

It is often challenging for developing countries to reconcile the need for IPRs protection with the importance of technology transfer and

9.https://www.fraserinstitute.org/studies/economic-freedom-of-the-world-2023-annual-report

access to cost-effective, sustainable innovations. Inflexible IPRs regimes can impede the ability of developing countries to adopt sustainable practices and technologies that are critical for their development. Flexible IPRs enforcement policies, such as compulsory licensing or technology transfer agreements, can help achieve a balance between IPRs protection and the promotion of sustainable trade practices. Promoting open-source models or patent pools for sustainable technologies can facilitate access to essential innovations and accelerate the adoption of sustainable practices. Moreover, global agreements and collaborations can facilitate the alignment of IPRs with sustainability goals, ensuring that trade practices are both innovative and sustainable. In conclusion, while IPRs can drive innovation and support sustainable trade, they can also create barriers that need to be carefully managed to ensure that global trade sustainability goals are met.

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# Leveraging Trade to Enforce Environmental Commitments: The EU's Assertive Approach to Sustainable Development

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Sustainable development is at the heart of the European Union's policy to ensure that Europe's economic growth does not negatively impact the environment, and its objectives and priorities have been incorporated into a number of ambitious initiatives. In passing the European Green Deal, the EU has sought to meet its obligations under the Paris Agreement on Climate Change and other multilateral environmental agreements (MEAs) by making climate neutrality by 2050 a binding goal for Member States, with an emissions reduction of 55% by 2030. Recognizing the green transition as the "defining objective of our time," it has also more recently established a Carbon Border Adjustment Mechanism (CBAM) to prevent its own climate policies from being undermined by carbon leakage, while passing regulations on deforestation-free products and rules on sustainable corporate governance.

But trade remains central to Europe's economic prosperity and competitiveness, and its status as the world's largest trader of manufactured and agricultural goods and services, as well as the premier target of inbound and outbound investment, has also made it one of the biggest offenders of environmental degradation associated with the exploitation of natural resources as well as emissions from deforestation and trade-related transport. As a result, and in an effort to counteract this environmental impact, the EU has become a pioneer in linking trade liberalization with sustainable development, primarily through the use of trade agreements which leverage access to its market on such issues as environmental protection and the fight against climate change.[1]

1. See Martins, M. (2021), Thesis, "Trade and Sustainable Development chapters in EU Free Trade Agreements: Challenging the exclusion of sanctions as a tool of inducing compliance with environmental standards in the context of international trade," p. 6 ("the European Union attempts to reconcile its position of power and influence as the world's largest trading bloc with an ever-growing aspiration to exercise environmental policy leadership on a global scale").

In fact, since 2009, all EU Free Trade Agreements (FTAs) have included a dedicated trade and sustainable development (TSD) chapter which contains legally binding commitments on environmental governance that are intended to work hand-in-hand with the various autonomous initiatives adopted by the EU under the European Green Deal. In recent years, however, the lack of enforcement surrounding these TSD provisions has attracted increasing criticism, and the EU's "carrot-based" approach to leveraging trade in order to encourage harmonization with international environmental standards has given way to a more "stick-based" approach designed to compel compliance.

## "The EU's First Generation" Trade Agreements

Defined by the European Commission as "meeting the needs of the present while ensuring future generations can meet their own needs,"[2] the pursuit of sustainable development in EU trade policy is required by law. Specifically, Article 11 of the Treaty on the Functioning of the European Union (TFEU) mandates that "[e]nvironmental protection requirements…be integrated into the definition and implementation of the Union's policies and activities," while Articles 3(5) and 21 of the Treaty on European Union (TEU) require that the EU contribute to "the sustainable development of the Earth" and develop "international measures to preserve and improve the quality of the environment and the sustainable management of global natural resources."[3] While the environmental provisions of the European Community agreements, which attempted to implement these mandates, were voluntary and cooperative in nature, they were later strengthened into fully-fledged, legally binding commitments with the signing of the EU-South Korea FTA in 2009.[4]

As a general rule, the environmental components of all subsequent FTAs - the EU currently has 42 FTAs in place with 74 partners-have been comprised of three pillars: (i) binding commitments on the effective implementation of those MEAs which the parties have ratified; (ii) mechanisms for public involvement in the implementation of these commitments; and (iii) a dispute settlement mechanism in which independent arbitrators make public findings of fact concerning compliance. With respect to the first pillar, these commitments have largely involved climate change mitigation, biodiversity preservation, sustainable energy management, and the sustainable management of natural resources, while also requiring that the parties effectively enforce their domestic environmental laws and not deviate from these laws in order to encourage trade or investment.

As for the second and third pillars, the EU has created both a monitoring committee and a consultative domestic advisory group (DAG) comprised of civil society organizations tasked with overseeing the implementation of the TSD chapters and monitoring adherence to TSD commitments, while complaints involving alleged violations may be subject to government-to-government consultations and, if necessary, a determination by a panel of independent experts. Some of the more recent FTAs also provide for the receipt of submissions by DAGs and other organizations to a Single Entry Point (SEP) established under the leadership of the Chief Trade Enforcement

2.See European Commission (2022), Sustainable development, available at https://policy.trade.ec.europa.eu/ development -and-sustainability/sustainable-development_en.

3.See Treaty on the Functioning of the European Union, available at https://eur-lex.europa.eu/ LexUriServ/LexUriServ.do?uri=CELEX:12012E/TXT:en:PDF; see also Treaty on European Union, available at https://eur-lex.europa.eu/resource.html?uri=cellar:2bf140bf-a3f8-4ab2-b506-fd71826e6da6.0023. 02/DOC_ 1& format=PDF.

4.The EU-South Korea FTA was the EU's first trade agreement with an Asian country, and the first to include a dedicated TSD chapter. See EU-South Korea Free Trade Agreement, available at https://trade.ec.europa.eu/ access-to-markets/en/content/eu-south-korea-free-trade-agreement.

Officer (CTEO), at which time the Commission will review the allegations and consider the best course of action.[5] In this respect, the procedures for the enforcement of environmental protection standards under most existing EU FTAs are limited to amicable consultations.

Apart from the aspirational nature of many of these TSD obligations as well as the difficulty of quantifying the damage arising out of an environmental violation, some have argued that the lack of a universally accepted definition of sustainability and its status as a developing legal principle render enforceability inherently problematic. But this position is in the minority, and there is a growing consensus that this "peculiar" policy dialogue-based model of enforcement is clearly inadequate.[6] Although it requires the violating party to provide information on the measures taken to ensure compliance, obligations under the TSD chapter are not subject to the formal state-to-state dispute settlement (SSDS) mechanism and there is no possibility of sanctions for continued non-compliance, which effectively renders the commitments largely political in nature. In addition to the lack of any redress, others have pointed out that the exclusion of sustainable development provisions from the SSDS mechanism in itself suggests that they are not as important as the other provisions of the agreement.[7]

In fact, in the decade or so since the first FTA with an TSD chapter entered into force, only one case has ever been brought alleging a violation of a party's obligations, though it did not involve environmental issues. And while the panel in EU v. South Korea ultimately concluded that Korea would have to adjust its labor laws and practices to comply with the freedom of association principles under applicable ILO Conventions, concerns over the effectiveness of the enforcement mechanism remained.[8] Echoed in more recent agreements that the EU has signed with the four Mercosur nations - Argentina, Brazil, Paraguay and Uruguay - these concerns subsequently led to calls for the EU to reform its trade policy regime.

## A More Assertive Approach to Enforcement

The EU's efforts toward a more assertive approach to sustainable development - one which has since been extended to the CBAM and other recent initiatives - can be traced back to the publication of a February 2018 non-paper, which set forth a 15-point action plan to "revamp" the enforcement and implementation of the TSD chapters.[9] Grouped under four broad headings, which included "working together; enabling civil society... to play their role in implementation; delivering; and transparency and communication," this non-paper suggested that the Commission be "more assertive in making full use of the existing range of tools and mechanisms available," though it stopped short of recommending a sanction-based model due to "the absence of consensus." It also expressed concern that the introduction of economic sanctions would "narrow down the scope of the TSD chapter" as well as skepticism that "a breach of...environmental standards can be

5. See European Commission (2020), Single Entry Point, available at https://trade.ec.europa.eu/ access-to-markets /en/content/single-entry-point-0; see also European Commission (2023), Operating guidelines for the Single Entry Point and complaints mechanism for the enforcement of EU trade agreements and arrangements, available at https: //trade.ec.europa.eu/access-to-markets/en/form-assets/operational_guidelines.pdf.
6. See Ceretelli, C. (2022), "EU – New Zealand FTA: Towards a new approach in the enforcement of trade and sustainable development obligations," Blog of the European Journal of International Law.
7. See Martins, M. (2021), "Trade and Sustainable Development chapters in EU Free Trade Agreements," p. 27.
8. See European Commission (2021), "Panel of experts confirms the Republic of Korea is in breach of labour commitments under our trade agreement," Press Release.
9. See Non-paper of the Commission services (2018), "Feedback and way forward on improving the implementation and enforcement of Trade and Sustainable Development chapters in EU Free Trade Agreements."

translated into economic compensation."[10]

Then, with the announcement of the European Green Deal in November 2019, the Commission adopted a more expansive understanding of the ways in which FTAs could support Europe's ecological transition by serving as a "platform to engage with trading partners on climate and environmental action." It also proposed making compliance with the Paris Agreement "an essential element for all future trade agreements," while promoting "trade and investment in green goods and services" as well as "climate-friendly public procurement."[11] But it was not until the results of the review conducted by the Commission on the proposals set forth in its 15-point action plan came out in June 2022 that the EU's TSD provisions underwent a significant paradigm shift.

On June 22, 2022, following a one-year consultation process involving the European Parliament, the Council, and various stakeholders, the Commission outlined six policy priorities for "a green and just economic growth," which included implementing country-specific enforcement priorities, mainstreaming sustainability beyond the TSD chapter, and strengthening collective monitoring and civil engagement. Notably, it also proposed "further align[ing] TSD enforcement with general state-to-state dispute settlement" and imposing "trade sanctions as a matter of last resort, in instances of serious violation of core TSD commitments."[12] In doing so, the EU made it clear that it is now willing to impose import tariffs and other economic sanctions in response to a material violation of the "core principles" laid out in the Paris Agreement, thereby bringing its approach more in line with that of the U.S. and Canada as well as regional trade agreements like the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP).[13]

## Conclusion

Although the EU's new approach to sustainable development, including its adoption of a sanction-based enforcement mechanism, has already been incorporated into at least one agreement - the EU-New Zealand FTA which entered into force on May 1, 2024[14] -the effectiveness of this mechanism remains unclear since no dispute settlement procedures have ever been used to enforce environmental obligations under any trade agreement signed to date. Given concerns over the costs of the European Green Deal, as well as uncertainty surrounding the outcome of the U.S. presidential election and Russia's war on Ukraine, it is also unclear how the enforcement of these obligations will be affected by the EU's increasing focus on economic security and competitiveness. That said, as reflected in the adoption of the CBAM, these reforms clearly show that the EU is now willing not just to encourage its trading partners to establish stronger environmental protection rules,

10. See id. at 3.
11. See 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 (2019), The European Green Deal, p. 21.
12. See 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 (2022), The Power of Trade Partnerships: together for green and just economic growth, p. 11.
13. See CPTPP, Article 20.7.5 ("[e]ach Party shall provide appropriate sanctions or remedies for violations of its environmental laws for the effective enforcement of those laws. Those sanctions or remedies may include a right to bring an action directly against the violator to seek damages or injunctive relief, or a right to seek governmental action").
14. The EU-New Zealand FTA allows the EU to impose tariffs on goods with a value proportional to a violation of New Zealand's obligations under the Paris Agreement. See EU-New Zealand Free Trade Agreement, Chapter 19, available at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202400866#page=397. While neither allow for the possibility of sanctions, the EU-Chile Advanced Framework Agreement and the EU and Kenya Economic Partnership Agreement have also incorporated the EU's more assertive approach to the enforcement of environmental violations. See Jütten, M. (2023), "Trade and sustainable development in EU free trade agreements," European Parliamentary Research Service, pp. 7-8.

but to condition continued access to its market on compliance with its own increasingly ambitious sustainability agenda.

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# APEC Mining Issues and Sustainability

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## 1.Introduction

In recent years, the situation of global climate change has worsened. Due to the long-term rise in Earth's overall temperature, it has had profound and potentially permanent effects on our world. The cause of global warming is the emission of greenhouse gases such as carbon dioxide and methane into the atmosphere due to human activities. As these gases accumulate in the atmosphere, the Earth gradually warms like a greenhouse.

Strengthening energy transition is a key measure to mitigate the impacts of climate change. This process involves shifting from a high-carbon emission energy system that relies on fossil fuels such as coal, oil, and natural gas, to cleaner, renewable energy sources like solar, wind, and hydropower. By enhancing efforts in these areas, the energy transition will help significantly reduce global greenhouse gas emissions, alleviate the effects of climate change, and simultaneously create more economic opportunities while promoting sustainable development.

Critical minerals play an indispensable role in the energy transition, as many clean energy technologies rely on these minerals to improve efficiency and performance. As the world pushes to reduce carbon emissions and shift toward renewable energy, the demand for critical minerals has significantly increased.

## 2.2024 APEC High-Level Dialogue on Mining [1]

Peru hosted the APEC High-Level Dialogue on Mining on September 11, 2024, in Lima. The agenda focused on three major topics: "The Role of Minerals in the Energy Transition and Investment Prospects," "Mining Innovation," and "Enhancing Inclusivity and Addressing the Challenges of Artisanal and Small-Scale Mining." Peru's Minister of Energy and Mines emphasized that the key objective of the meeting was to serve as a platform for economies to share experiences and best practices in the mining industry, enabling them to jointly explore how to maximize the benefits of mining activities while minimizing their impact on the environment and society.

APEC economies, in discussing the role of minerals in the energy transition and investment prospects, agreed on the need to attract and strengthen future investments in their mining sectors, particularly in the adoption of critical minerals. Critical minerals play an indispensable role in the energy transition, as many clean energy technologies rely on these minerals to enhance efficiency and performance. As the world moves to reduce carbon emissions and transition to

1.https://www.apec.org/meeting-papers/sectoral-ministerial-meetings/mining/2024-high-level-dialogue-on-mining

renewable energy, the demand for critical minerals has significantly increased. By establishing an industrial ecosystem across multiple economies, these resources can be better managed.

Economies shared key points that should be emphasized in mining innovation, such as the importance of innovation and knowledge sharing. Innovation relates to how companies collaborate and how government policies are handled. New, innovative policies are needed to drive the production of minerals required for the future. These policies include how to minimize waste, maximize output, and accelerate the commissioning of new mines. Additionally, strengthening technologies related to renewable energy development could reduce carbon emissions in production, enhancing sustainability and reducing pollution. The mining sector in the Asia-Pacific region should contribute to a fair energy transition and help mitigate climate change.

## 3. Directions for Taiwan to Focus on in APEC Mining Issues.

The global supply chain has faced disruptions due to the COVID-19 pandemic, and in recent years, rapid geopolitical changes have highlighted the importance of supply chain stability for national and economic security. Critical minerals play a vital role in this supply chain. In response to the risks of supply chain disruptions for these critical minerals, economies have begun to assess the vulnerabilities and import dependencies of their domestic critical industries. APEC economies are also placing significant emphasis on the stability of critical mineral supplies to enhance the resilience of their own supply chains.

Taiwan's semiconductor, information and communication technology products, and electric vehicle components rely on critical minerals as raw materials. However, we lack critical mineral resources, making the supply of these minerals dependent on imports. To diversify the sources of critical mineral supply, Taiwan is not only working to disperse its import sources but also continuously strengthening its domestic metal mining capabilities. As part of this effort, geological surveys are being conducted in the northeastern waters to accurately understand the types and extent of metal mineral deposits in Taiwan's maritime area.

In the future, Taiwan can collaborate with APEC economies to achieve goals such as international cooperation and enhancing the self-sufficiency in metal minerals. Therefore, working with APEC economies to develop sustainable practices that strengthen the resilience of critical mineral supply chains will become an important focus for Taiwan in addressing mining issues.


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