



Implementation of Sustainable Development Goals Through the Equimarginal Principle and Circular Economy

Sürdürülebilir Kalkınma Hedefleri'nin Marjinal Hakkaniyet Prensibi ve Sirküler Ekonomi ile Gerçekleştirilmesi

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ABSTRACT

Limiting global warming to 1.5° Celsius is the goal set by the Intergovernmental Panel on Climate Change for avoiding catastrophic and irreversible consequences. Time is running out quickly for humanity to reach this 1.5° Celsius goal and efficiently mitigate and adapt to the negative impacts of climate change. Climate stabilization policies and actions will determine global economic, social, political, and ecological health in the next decade. This paper analyzes the economic and environmental consequences of public policy choices related to Sustainable Development Goal (SDG) 13, Climate Action. The analysis examines how SDG 13 could be implemented more rapidly and effectively through the Equimarginal Principle and based on the principle of Common But Differentiated Responsibilities and Respective Capabilities (CBDR-RC). The paper also discusses how transitioning to a circular economy could play a significant role in achieving the SDG 13 and the objectives of the Paris Agreement.

Keywords: Sustainable development goals, Climate change, Equimarginal principle, Circular economy

JEL Classification: Q01, Q54, Q56, Q58

ÖZ

Hükümetlerarası İklim Değişikliği Paneli, geri dönüşü olmayan felakete yol açmaması için, küresel ısınmayı 1,5° Santigrad ile sınırlı tutmak hedefini belirlemiştir. 1,5° Santigrad hedefine erişmek, iklim değişikliğinin olumsuz etkilerini en aza indirebilmek ve adaptasyonu sağlayabilmek için, insanlığın fazla bir zamanı kalmamıştır. Önümüzdeki on yılın küresel ekonomik, sosyal, siyasal ve ekolojik koşullarını, devletlerin bugünkü iklim politikaları ve uygulamaları şekillendirecektir. Bu makale, Birleşmiş Milletler Sürdürülebilir Kalkınma Hedefleri içinde yer alan İklim Politika ve Uygulamalarına (Hedef 13) yönelik adımların ekonomik ve



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çevresel sonuçlarını irdelemektedir. Makale, marjinal hakkaniyet adlı ekonomi prensibi ve uluslararası iklim anlaşmalarında benimsenmiş olan ülkelerin Ortak Fakat Farklılandırılmış Sorumlulukları ve Göreceli Kapasiteleri Prensipleri çerçevesinde, Hedef 13'e daha etkili ve hızlı bir biçimde ulaşılabilirliğini öngörmektedir. Makale ayrıca, sirküler ekonomiye geçişin, Hedef 13 ve Paris İklim Anlaşması'nın

gayelerine erişilebilmesinde nasıl etkili bir rol oynayacağını tartışmaktadır.

Anahtar kelimeler: Sürdürülebilir kalkınma hedefleri, İklim değişikliği, Marjinal hakkaniyet prensibi, Sirküler ekonomi

JEL Sınıflaması: Q01, Q54, Q56, Q58

1. Introduction: Where are We?¹

According to the Intergovernmental Panel on Climate Change (IPCC), human activities have caused approximately 1.0° Celsius (C) of global warming above pre-industrial levels. The IPCC's latest report informed policymakers that global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate (IPCC, 2018). The IPCC warned policymakers that global warming beyond 1.5°C would increase the frequency and intensity of climate impacts. The World Meteorological Organization Secretary-General Petteri Taalas underscores: "There is no sign of a slowdown, let alone a decline, in greenhouse gases concentration in the atmosphere despite all the commitments under the Paris Agreement on Climate Change. We need to translate the commitments into action and increase the level of ambition for the sake of the future welfare of the mankind" (WMO, 2019).

The United Nations Framework Convention on Climate Change (UNFCCC or UN Climate Change) also urged that greenhouse gas (GHG) emissions and global warming are still increasing despite current efforts. The UN Climate Change's The Talanoa Dialogue's Synthesis Report explains the devastating impacts that atmospheric changes are already having, citing 11,000 extreme weather events between 1997 and 2016 that have resulted in around 524,000 deaths and trillions of dollars in damage (UN Climate Change, 2018; Mead, 2018). The World Health Organization (WHO) describes in its special report on climate change and health that climate change drivers cause 7 million deaths from outdoor and indoor air pollution annually. If the mitigation commitments in the Paris Agreement are achieved, millions of lives could be saved through reduced air pollution by the middle of the century (WHO, 2018).

The world has not made any significant progress on the Sustainable Development Goals (SDGs). According to the UN Environment Programme

¹ Author borrows "Where are We?", "Where do We Want to Go?" and "How Do We Get There?" question phrases in the sub-titles from the United Nations Climate Change's Talanoa Dialogue's Synthesis Report (UN Climate Change, 2018).

(UNEP)'s *Emission Gap Report 2019*, global GHG emissions have increased by 1.5% per year in the last decade. In 2018, the total emissions reached the 55.3 gigatons of CO₂ equivalent. The report finds that "even if all unconditional Nationally Determined Contributions (NDCs) under the Paris Agreement are implemented, we are still on course for a 3.2°C temperature rise." In order to get in line with the Paris Agreement, emissions must be cut 7.6% per year from 2020 to 2030 for the 1.5°C goal and 2.7% per year for the 2°C goal (UNEP, 2019)².

Inger Andersen, UNEP's executive director, alerted policymakers: "Our collective failure to act early and hard on climate change means we now must deliver deep cuts to emissions - over 7% each year, if we break it down evenly over the next decade...If we don't do this, the 1.5°C goal will be out of reach before 2030" (McGrath, 2019). Helen Clark, the former New Zealand prime minister who led the UN Development Program from 2009-2017, said the foot-dragging on the SDGs - due to be met by 2030 - "has gone under the radar." Dr. Jeffrey Sachs, a US economics professor who advised governments and the UN on the SDGs, said "nothing" had happened at the global level in the past three years (Rowling, 2019).

This paper explores the economic and environmental consequences of public policy choices related to Sustainable Development Goal (SDG) 13, Climate Action. In the following sections, an analysis will be presented on how the SDG 13 can be implemented more rapidly and effectively by countries through the environmental economics rule, the Equimarginal Principle, and based on the recognition of the needs and unique circumstances of developing countries under the principle of Equity and Common But Differentiated Responsibilities and Respective Capabilities (CBDR-RC). In the final section of the paper, a discussion is offered on how the transition to a circular economy could play a crucial role in achieving the SDG 13 and the objectives of the Paris Agreement.

² In parallel to the *Emissions Gap Report*, the negative projections on fossil fuel production are shared in the *Production Gap Report*: "Governments are planning to produce about 50% more fossil fuels by 2030 than would be consistent with a 2°C pathway and 120% more than would be consistent with a 1.5°C pathway. This global production gap is even larger than the already significant global emissions gap, due to minimal policy attention on curbing fossil fuel production." (SEI, IISD, ODI, Climate Analytics, CICERO, and UNEP; 2019).

2. Implementation of SDG 13 (Climate Action): Where Do We Want to Go?

The 2030 Agenda has established 17 Sustainable Development Goals (SDGs) and 169 global targets, relating to development outcomes and means of implementation for the period 2015–2030. These goals are designed to be integrated and indivisible. They balance the social, economic, and environmental dimensions of sustainable development (UN Water, 2018; Earth Negotiations Bulletin, 2018a). The 2030 Agenda underscores rising inequalities, natural resource depletion, environmental degradation, and climate change among the most significant challenges of our time (UN Water, 2018).

Figure 1. Sustainable Development Goals



Source: UN Sustainable Development Goals (<http://www.sdg.org/>).

The High-level Political Forum (HLPF) is the central UN platform on sustainable development. The HLPF has a pivotal role in the follow-up and review of the SDGs at the global level (UN Sustainable Development Goals Knowledge Platform, 2019a). The 2030 Agenda for Sustainable Development specifies that member states should “conduct regular and inclusive reviews of progress at the national and sub-national levels” (Paragraph 79). The voluntary national reviews (VNRs), which are country-led and country-driven, intends to assist the sharing of successes, challenges, and lessons learned, to speed up the implementation of the 2030 Agenda. From 2016 to 2019, 142 countries conducted a review, and some

of them carried out more than one review. (UN Sustainable Development Goals Knowledge Platform, 2019b).

SDG 13 focuses on climate change and how to combat global warming. At the HLPF 2019 session, delegates of member states discussed progress and challenges related to the SDG 13, as one of a sub-set of SDGs that received particular focus during the session. Participants discussed national initiatives to speed up climate action, the linkages between the SDG 13 and other SDGs, and the importance of climate finance for developing countries, among other issues (Wagner, 2019).

Unfortunately, no substantial progress can be mentioned for SDG 13. As highlighted in the 2019 Sustainable Development Goals Report, "...far more ambitious plans and unprecedented changes in all aspects of society are required" to limit global warming to 1.5°C and avoid catastrophic consequences and irreversible changes (UN, 2019). The report warns that access to finance and the strengthening of resilience and adaptive capacity require scaling up at a much faster pace, especially among the least developed countries and small island developing states. That demands rapid and far-reaching transitions in energy, land, and urban infrastructure and industrial systems.

To date, 189 countries have ratified the Paris Agreement. Parties to the agreement are expected to prepare, communicate, and maintain successive Nationally Determined Contributions (NDCs that include climate targets, policies, and actions). 186 Parties (185 countries plus the European Union) have communicated their first NDCs to the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat, and two parties have released their second NDCs (UN Climate Change, 2020). The review of the submitted NDCs in the 2019 Sustainable Development Goals Report calls the parties to be far more ambitious in preparing their new NDCs, which are due in 2020, to achieve the 2030 Agenda and the Paris Agreement objectives (UN, 2019).

3. How Do We Get There?

Far more ambitious and consistent climate actions by all member states to the 2030 Agenda and parties to the Paris Agreement are required for reaching the climate stabilization target of keeping the average global temperature rise this century well below 2°C and as close as possible to 1.5°C above pre-industrial levels.

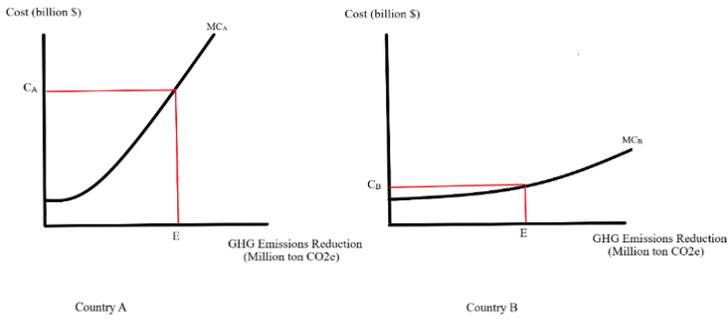
Developed and developing countries' climate policies and actions must complement a global collective action which should be based on equity, efficiency, cost-effectiveness, enforceability, incentives for innovation, and ethics³. These six criteria would bring the desperately needed trust and confidence among all countries as a foundation for a well-functioning global climate change regime.

The discipline of Environmental Economics offers a valuable principle, the Equimarginal Principle, which could be used as a basis for a successful global collective action. Through using this principle, greenhouse gas emissions could be reduced more cost-effectively and equitably. The Equimarginal Principle would help to allocate mitigation and adaptation costs to developed and developing countries fairly and reasonably.

The application of the Equimarginal Principle to greenhouse gas emissions reduction rests on basic logic. Developed and developing countries have different marginal abatement costs depending on their levels of institutional, financial, and technological capabilities. If it is desired to reduce aggregate greenhouse gas emissions (GHG) at the least possible cost or, alternatively, with the most significant reduction in emissions for a given cost, then GHG emissions must be reduced by considering countries' respective capabilities. According to the principle, GHG emission targets should be distributed among countries in such a way as to equalize their marginal abatement costs. This principle will be instrumental in achieving maximum emissions reductions.

³ I developed this idea based on economic and environmental evaluation of policies by Barry Field and Martha K. Field (2016).

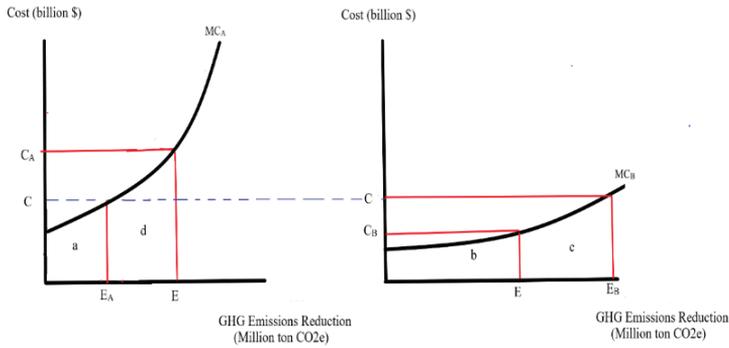
Figure 2. Marginal Abatement Cost for Developing and Developed Countries



Note: Author's own drawing.

Figure 2 shows marginal abatement costs for a developing country (Country A) and a developed country (Country B). The curve of marginal abatement cost for developing Country A (MC_A) rises very rapidly, whereas the curve of marginal abatement cost for developed Country B (MC_B) rises very moderately, indicating their respective institutional, financial, and technological capabilities to reduce GHG emissions. For the E gigaton carbon dioxide equivalent (CO_2e) emission reduction, Country A's abatement cost (C_A) will be much higher than Country B's abatement cost (C_B). Obviously, a carbon policy based on the same emission reduction responsibilities among countries would not be either equitable or ethical. In addition, the abatement costs of these two countries for achieving E gigaton CO_2e emissions reduction, C_A+C_B , would be higher than necessary, making this carbon policy less cost-effective.

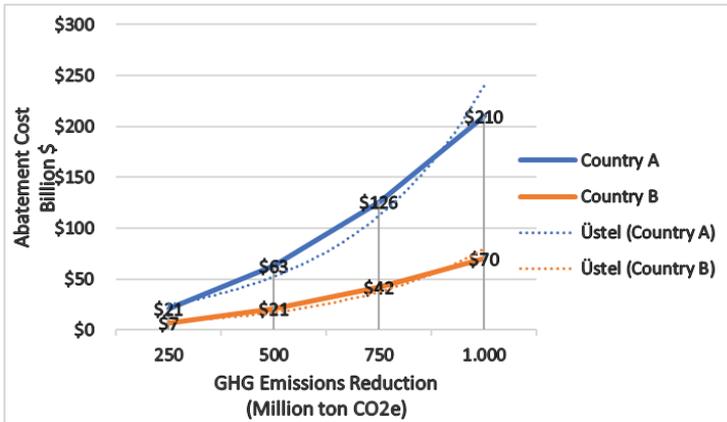
Figure 3. The Equimarginal Principle



Note: Author's own drawing.

By using the Equimarginal Principle, the aggregate emissions reductions could be achieved in a more cost-effective and equitable way by these two countries. Their GHG emission targets should be reallocated by equalizing their marginal abatement costs. Based on their respective capabilities, Country A and Country B should have differentiated responsibilities in reaching the aggregate GHG emissions reduction target. As shown in Figure 3, Country A's emission target can be lowered from E to E_A which would decrease its marginal abatement cost from C_A to C . Country B's emission target can be raised from E to E_B with a tolerable increase in its marginal abatement cost from C_B to C . The total abatement cost ($a+b+c$ in geometrical terms) of achieving the aggregate emissions reduction (E_A, E_B) would be less than the original total cost ($a+d+b$).

Figure 4. Application of the Equimarginal Principle



Note: Author's own drawing.

Figure 4 indicates the application of the Equimarginal Principle based on the real-world carbon price⁴. Let's assume that the developing Country A and the developed Country B are assigned to reduce aggregate GHG emissions of 1,000 million tons CO₂e. If this task is taken through equal emission cuts, meaning that Country A reduces 500 million tons CO₂e and Country B also reduces 500 million tons CO₂e, their marginal abatement costs will be \$84 billion (\$63 billion for Country A + \$21 billion for Country B). However, if this task is conducted based on the Equimarginal Principle by equalizing their marginal abatement costs, the total cost will be much lower. According to the principle, Country A could reduce its GHG emissions by 250 million tons CO₂e with a marginal abatement cost of \$21 billion, and Country B could decrease its GHG emissions by 750 million tons CO₂e with a marginal abatement cost of \$42 billion. In this way, the marginal abatement costs of reducing the aggregate GHG emissions by 1,000 million tons CO₂e will be \$63 billion (\$21 billion for Country A + \$42 billion for Country B), which is \$21 billion less than the original cost. Therefore, a carbon policy based on the Equimarginal Principle would be more cost-effective.

⁴ As a carbon price, I use the European Emission Allowance (EUA) price at the European Energy Exchange (EEX). In order to eliminate any COVID-19 pandemic-induced market distortion, I use November 1, 2019 carbon price. On that date, EUA price was €25.40 per ton CO₂e and €1 was equal to \$1.1. In order to make calculations simpler, I rounded the numbers and used the EUA price as \$28 per ton CO₂e.

3.1. Evaluation of a Global Carbon Policy Based on the Equimarginal Principle

A global carbon policy based on the Equimarginal Principle would acknowledge the needs and unique circumstances of developing countries under the principles of Equity, and Common But Differentiated Responsibilities and Respective Capabilities (CBDR-RC), which have been the Global South's core policy standpoint during the international climate change negotiations.

The environment ministers of Brazil, South Africa, India and China (BASIC) issued a joint statement after the 28th BASIC Ministerial Meeting on Climate Change, held in Brasília and São Paulo, Brazil, between August 14 and 16, 2019 stating their negotiating position for the 25th session of the Conference of the Parties (COP25) to the UNFCCC in Madrid in December 2019. The ministers emphasized the "significant gaps" in pre-2020 climate efforts in mitigation as well as in adaptation and support to developing countries. They urged developed countries to "undertake ambitious actions" to reduce GHG emissions and meet their financial commitments, including by mobilizing USD 100 billion annually by 2020. They further asked developed countries to provide adequate means of implementation to developing countries to enable them to achieve their climate goals related to adaptation, mitigation and transparency (Government of India Press Information Bureau, 2019).

Despite the high expectations, the COP25 was a massive disappointment and concluded with only weak commitments to the drastic cuts in GHG emissions. The reasons for the failure are the mistrust between major developing countries such as Brazil and India and developed countries; and the disconnect between the demands of people and science, and negotiators from some major developing and developed countries. No agreement was reached related to increasing ambition to curb GHG emissions further and ensuring the integrity of international carbon trading under Article 6 of the Paris Agreement. Discussions on Article 6 have been forwarded to the June 2020 subsidiary bodies meeting. Additional issues left unresolved include common time frames, long-term finance,

transparency issues for the Paris Agreement, report of the Adaptation Committee, and report of the Consultative Group of Experts (Earth Negotiations Bulletin, 2018b; Wuppertal Institute, 2019). Lack of momentum and progress in the COP25 in Madrid could also risk the COP26 in Glasgow in November 2020, in which countries are expected to release their more ambitious NDCs for limiting global warming.

A comprehensive global carbon policy and its successful implementation requires the full participation of all developed and developing countries and must not be trapped by the free-rider problem and tragedy of the commons issues. A global carbon policy based on the Equimarginal Principle could ensure such a commitment from all countries. Such a global carbon policy would not only be cost-effective but also would meet the other five criteria of a successful environmental policy: equity, efficiency, enforceability, incentives for innovation, and ethics.

Equity: Equity or fairness is a fundamental criterion for any environmental policy, let alone global carbon policy. "Equity is, first and foremost, a matter of morality and the concerns about how the benefits and costs of environmental improvements ought to be distributed among members of [international] society" (Field and Field, 2016). It is also crucial from the perspective of policy effectiveness, because international environmental policies may not be supported as strongly by countries if the policies are thought to be inequitable. That is especially true for a global carbon policy or a climate regime. Intense climate justice debates have led to many deadlocks during international climate negotiations in the recent decade. The Equimarginal Principle could help the international community to address this concern since it recognizes that countries should have differentiated responsibilities based on their respective institutional, financial, and technological capabilities.

Efficiency: Efficiency is another essential criterion for a successful global carbon policy. It ensures the net benefit of each country is maximized. It is crucial to guarantee that there would be no imbalance between equity and efficiency.

Otherwise, that could prevent total participation and commitment to climate policy. The Equimarginal Principle would help the responsible intergovernmental body such as UNFCCC or HLPF maximize participation and commitment levels and eliminate the free-rider problem, and so boost efficiency.

Enforceability: Policy enforceability is another crucial criterion for international carbon policy. If the policy is not enforced fully, it cannot achieve its target: climate stabilization. A robust monitoring, reporting, and verification system is a must for full enforcement of global climate policy. It is highly likely that a fair and cost-effective climate policy based on the Equimarginal Principle would be enforced with relative ease by UNFCCC or HLPF or a new intergovernmental body that could be founded to manage and coordinate global actions for the interlinked objectives of the 2030 Agenda and Paris Agreement.

Incentives for Innovation: Any environmental policy must provide a strong incentive for its stakeholders to develop innovative ways of reducing their impacts on the environment. That is especially true for a global carbon policy that targets climate stabilization. Limiting global warming to 1.5°C cannot be achieved without innovation and technology that will lead to zero-carbon and circular economies. Reducing marginal abatement costs sits at the core of the Equimarginal Principle. Technological improvements in renewable energy, and research and development (R&D) programs on carbon sequestration, among others, will shift the marginal abatement cost function downward. Developing and implementing zero-carbon technologies is pivotal for decreasing countries' marginal abatement costs.

Ethics: A successful environmental policy should factor in moral considerations. It is not a secret that industrialized countries, especially the most economically developed ones, are primarily responsible for the atmospheric buildup of CO₂. Global carbon policy should acknowledge the historical responsibilities of developed countries and ensure climate justice. After all, poor people in the least developed countries are the ones who are suffering most from the negative impacts of climate change today even though they have emitted minimal greenhouse gases. The Equimarginal Principle recognizes the burden-sharing of

climate stabilization among developed and developing countries by equalizing their marginal abatement costs. Financial and technological transfers to developing countries will determine the effectiveness of global climate policy.

3.2. Circular Economy

The circular economy could play an essential role in achieving the Sustainable Development Goals and the objectives of the Paris Agreement. In a technical paper released by the United Nations Framework Convention on Climate Change (UNFCCC), the circular economy is defined as “an alternative to a traditional linear economy (make, use and dispose) in which resources are kept for as long as possible by extracting the maximum value from them while in use, then recovering and regenerating products and materials at the end of each service life” (UNFCCC, 2018). Minimizing waste and resource use can not only bring significant economic benefits but can also contribute to innovation, growth and job creation. Also, it is estimated that circular economy measures could reduce 33% of CO₂ emissions embedded in products and could decrease the current emission gap by half (UNFCCC, 2018).

The UN Economic and Social Council (ECOSOC) President Inga Rhonda King called the current economy a linear one of “take-make-consume and throw away” at the opening of a joint meeting of the UN General Assembly (UNGA) Second Committee (Economic and Financial) and ECOSOC on October 10, 2018. The title of the joint meeting was “Circular Economy for the SDGs: from Concept to Practice” (UN ECOSOC, 2018). Ambassador King said a circular economy would redefine “what we perceive as waste,” with new business paradigms and product designs in order to “give another life to what we once believed was waste.” During this joint meeting, Jamil Ahmad of the UN Environment Programme mentioned that about 90 billion tons of material resources were used in 2017, which is about three times more than their use in 1970, and human beings are utilizing natural resources 1.7 times faster than ecosystems can revitalize⁵ (Risse, 2018). Participants underscored the significance of

⁵ The coverage of the joint meeting is accessible at this UN website: <https://www.un.org/press/en/2018/gaef3497.doc.htm>.

shifting mindsets and of making partnerships with the business community, governments, civil society, and other actors in developed and developing countries to drive the changes necessary for transitioning towards a circular economy.

The Ellen MacArthur Foundation, whose mission is to accelerate the transition to a circular economy, has played a vital role in raising awareness related to the circular economy through its publications. According to the Foundation's recent position paper titled "Completing the Picture: How the Circular Economy Tackles Climate Change," a circular economic model through designing out waste, keeping materials in use, and regenerating farmland can reduce GHG emissions by 9.3 billion tons. This amount is equivalent to eliminating current emissions from all forms of transport globally (Ellen MacArthur Foundation, 2019).

The Circle Economy is another influential institution that has specialized in the circular economy. According to the Circle Economy's recent report, "The Circularity Gap Report 2019;" of the 92.8 billion tons of biomass, fossil fuels, metals and minerals that enter the global economy annually, only 9% are re-used. The report calculates that 62% of global GHG emissions, excluding those from land use and forestry, are discharged during extraction, processing and manufacturing of goods compared to 38% of GHG emissions from the delivery and consumption of products and services. Still, the global usage of materials continues to accelerate and could double by 2050 without action. The Circle Economy CEO, Harald Fiedl, emphasized that "a significant world can only be a circular world," and stressed the promise of resource efficiency, circular business models and recycling to reduce emissions. Fiedl added that a systematic approach to these strategies "would tip the balance in the battle against global warming." The report suggests three circular strategies: optimizing the utility of products by maximizing their use and extending their lifetime; enhancing recycling, using waste as a resource; and promoting circular design that reduces material consumption and uses lower-carbon alternatives (Circle Economy, 2019; Wahlén, 2019).

From 5-7 June 2017, in Helsinki, Finland, the World Circular Economy Forum 2017 (WCEF2017) brought together approximately 1,500 experts and

policymakers in the circular economy field from over 100 countries. The forum intended to indicate how the circular economy offers unique opportunities to generate prosperity and advocate well-being. The Forum also aimed to demonstrate that the circular economy is an essential engine for achieving Sustainable Development Goals⁶ (Wagner, 2017).

The essential role of the circular economy in implementing the Paris Agreement and SDGs was also highlighted at the first Climate and SDGs Synergy Conference, formally known as the "Global Conference on Strengthening Synergies between the Paris Agreement and the 2030 Agenda for Sustainable Development," which was held in Copenhagen, Denmark between April 1 and April 3, 2019. The UN Department of Economic and Social Affairs (DESA) and the UNFCCC published a summary report of this first Climate and SDGs Synergy Conference. The summary report, "Maximizing Co-benefits by Linking Implementation of the Sustainable Development Goals and Climate Action," highlights the positive impact of the circular economic model in implementing various SDGs. Some takeaways from the conference are summarized in the report: "Accelerated energy transition (SDG 7), sustainable industrialization (SDG 9), sustainable food production systems and resilient agricultural practices (SDG 2), responsible consumption and production (SDG 12), and sustainable management of forests and other terrestrial ecosystems (SDG 15) and oceans (SDG 14) can contribute to low-emission pathways (SDG 13), as well as the creation of decent work and quality jobs (SDG 8) and long-term progress in eradicating poverty (SDG 1)" (UN Department of Economic and Social Affairs (DESA) and UN Climate Change, 2019; Kosolapova, 2019).

4. Conclusion

A comprehensive global carbon policy and its successful implementation require full commitment and ambition of all developed and developing countries. A global carbon policy based on the Equimarginal Principle could ensure the urgently

⁶ For interesting reviews about the linkage between the circular economy and SDGs, please see Neal Millar, Eoin McLaughlin and Tobias Börger (2019); Sue Lin Ngan; Bing Shen How, Sin Yong Teng, Michael Angelo B. Promentilla, Puan Yatim, Ah Choy Er and Hon Loong Lam, (2019); and Mark Esposito, Terence Tse, and Khaled Soufani (2018).

needed aspiration from all countries. As discussed in this article, as an economic rule, the Equimarginal Principle would not only make the global carbon policy cost-effective, but would also help the carbon policy meet the other five criteria of a successful environmental policy: equity, efficiency, enforceability, incentives for innovation, and ethics. Therefore, it would lead to a successful implementation of Sustainable Development Goal (SDG) 13 and the Paris Agreement without facing the free-rider problem and tragedy of the commons issues.

In addition to the Equimarginal Principle, this analysis has also emphasized the importance of the circular economy in successfully implementing the SDG 13 and the objectives of the Paris Agreement. Transitioning from today's linear economy (make, use and dispose) to the circular economy in which natural resources are maintained for as long as possible by extracting the maximum value from them while in use, then recovering and restoring products and materials at the end of each service life would dramatically mitigate global GHG emissions and significantly contribute to the climate adaptation (UNFCCC, 2018). This is the reason why the European Union, international organizations like the United Nations and the Organization for Economic Cooperation and Development (OECD) as well as scientific communities emphasize that the circular economy would be a significant engine for achieving the SDGs and the Paris Agreement (European Commission, 2019; UN ECOSOC, 2018; OECD, 2019).

This paper has delved into the economic and environmental consequences of public policy choices related to the Sustainable Development Goal (SDG) 13: Climate Action. The analysis has explored how the SDG 13 could be implemented more rapidly and effectively through the Equimarginal Principle and based on the recognition of the needs and unique circumstances of developing countries under the principles of Equity and Common But Differentiated Responsibilities and Respective Capabilities (CBDR-RC). The paper has also discussed how transitioning to a circular economy could play a significant role in achieving the SDG 13 and the objectives of the Paris Agreement. It is suggested that future studies explore further the Equimarginal Principle in the implementation of the SDG 13 with the support of the empirical data from the Global South and the Global North.

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