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Master Thesis

Frame Analysis of the Roles of Forests in SDG 15.1-related Policies

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Vienna, October 2022

Affidavit

I hereby declare that I have authored this master thesis independently, and that I have not used any assistance other than that which is permitted. The work contained herein is my own except where explicitly stated otherwise. All ideas taken in wording or in basic content from unpublished sources or from published literature are duly identified and cited, and the precise references included.

I further declare that this master thesis has not been submitted, in whole or in part, in the same or a similar form, to any other educational institution as part of the requirements for an academic degree.

I hereby confirm that I am familiar with the standards of Scientific Integrity and with the guidelines of Good Scientific Practice, and that this work fully complies with these standards and guidelines.

Vienna, October 2022 Karen Mae Dacug MAGTIBAY

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Abstract

Various studies and frameworks are analyzing synergies and trade-offs among the Sustainable Development Goals (SDGs) and their targets. However, there are not enough studies on the overlaps and fragmented areas, as well as the underlying frames on forest-related policies in SDG 15.1. With this, our study aims to map SDG 15.1-related policies that Austria has committed to implement and to reconstruct how the roles of forests are framed in the policies. We employ frame analysis to uncover these frames and explore their contested areas and frame dominance. The results of the study show that the policies recognize the roles of forests (1) as providers of various forest ecosystem services; (2) as affected by threats; and, (3) for sustainable management. Though the analysis presents synergies among the reconstructed frames, they also exhibit trade-offs, overlaps, and fragmented areas. These results entail that the frames on the roles of forests are perceived in numerous ways that they that they become ambiguous and incoherent within the policies. We have also uncovered that the dominant and downplayed frames differ within the policies and across the policy domains of forests, biodiversity, and climate change. These results depict what frames are given more attention in SDG 15.1-related policies that contribute to the presence of trade-offs and fragmented areas. In the case of Austria, the country has focused on the contribution of forests for climate change adaptation and mitigation albeit the policies primarily promote the need for sustainable forest management. Given the non-legally binding nature of SDGs, Austria has more leeway on how it will utilize these policies to achieve their objectives. Nevertheless, understanding the underlying frames is a good starting point for Austria in making sense of the roles of forests, and thus guide the country to ensure synergies and positive divergent view points for achieving SDG 15.1.

Keywords: *Sustainable Development Goals, Sustainable Forest Management, Austria, Frame Analysis, Fragmentation*

Kurzfassung

In verschiedenen Studien und Rahmenwerken werden Synergien und Zielkonflikte zwischen den Zielen für nachhaltige Entwicklung (SDGs) und ihren Vorgaben analysiert. Studien über Überschneidungen und fragmentierten Rahmenbedingungen für waldbezogene Politiken zum SDG 15.1 fehlen. Unsere Studie zielt daher darauf ab, SDG 15.1-bezogene Politiken, zu deren Umsetzung sich Österreich verpflichtet hat, zu kartieren und zu rekonstruieren, wie die Rolle der Wälder in diesen Politiken gerahmt ist. Mittels einer Rahmenanalyse werden diese Rahmen daher rekonstruiert und dabei umstrittenen Bereiche und die Dominanz dieser Rahmen untersucht. Die Ergebnisse der Studie zeigen, dass Wäldern folgende Rolle zugestanden wird: (1) Anbieter verschiedener Waldökosystemleistungen, (2) von Bedrohungen betroffen und zuständig (3) für eine nachhaltige Bewirtschaftung. Obwohl die Analyse Synergien zwischen den rekonstruierten Rahmen aufzeigt, kommen auch Überschneidungen und fragmentierte Bereiche zu Tage. Diese Ergebnisse haben zur Folge, dass mittels dieser Rahmungen die Rolle der Wälder auf vielfältige Weise wahrgenommen wird, sodass sie mehrdeutig und inkohärent werden. Wir haben auch herausgefunden, dass sich die dominanten aber heruntergespielten Rahmungen innerhalb der Politiken und zwischen den Politikbereichen (Waldpolitik, Politik der biologische Vielfalt und Politik des Klimawandels) unterscheiden. Diese Ergebnisse zeigen, welche Rahmungen in SDG 15.1-bezogenen Politiken mehr Beachtung finden, was zum Vorhandensein von Kompromissen und fragmentierten Bereichen beiträgt. Im Fall von Österreich hat sich das Land auf den Beitrag der Wälder zur Anpassung an den Klimawandel und zur Abschwächung des Klimawandels konzentriert, obwohl die Politik in erster Linie die Notwendigkeit einer nachhaltigen Waldbewirtschaftung fördert. Nachdem die SDGs nicht rechtsverbindlicher Natur sind, besteht ein weiter Spielraum in Bezug darauf wie Österreich diese Politiken zur Erreichung seiner Ziele einsetzen will. Nichtsdestotrotz ist das Verständnis der zugrundeliegenden Rahmenbedingungen ein guter Ausgangspunkt für Österreich, um die Rolle der Wälder zu verstehen und so Synergien und positive divergierende Standpunkte zur Erreichung von SDG 15.1 zu gewährleisten.

Schlüsselbegriffe: *Ziele für nachhaltige Entwicklung, Nachhaltige Waldbewirtschaftung, Österreich, Rahmenanalyse, Fragmentierung*

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1. Introduction

Before the 19th century began, i.e., the Holocene stage, any environmental changes were purely natural to serve the human population (Rockström et al., 2009). The Earth's environment was in a secure state. The ecosystem processes were steady, from geological to climatological conditions (Grusin, 2015). Access to natural resources was readily available and sustained the needs of human beings. As we entered the Anthropocene epoch, humans have become more dependent on Earth's resources (Crutzen, 2002). Industrialization and development have also transpired. The population has increased, leading to the demand for food and other necessities for survival. Human activities have significantly affected the flows in the ecosystem. These include expansion of agricultural land (Scholz, 2004); changes in land use (Rockström et al., 2009); extreme use of water resources (Pullin et al., 2009); desertification, and urban development (United Nations [UN], 2019); and deforestation and unsustainable use of forests (Eikermann, 2015). According to the Food and Agriculture Organization (FAO) (2011), anthropogenic factors are the leading causes of negative environmental impacts. Resources have become less available, and non-renewable sources, particularly fossil fuels, have led to their exhaustion. Human-induced activities have also resulted in soil erosion, salinization of irrigated lands, the spread of waterborne diseases, water resource depletion, and pollution (ibid, p. 93). Further, biodiversity loss, climate variability, and change have unfolded as early as the 1990s (FAO, 2011).

Based on Rockström et al. (2009), climate variability, change, and biodiversity loss have already reached their limit. The UN (2019) has considered species extinction as the most vital effect of human activities. In 2019, the risk of species extinction was at a value of 0.73 globally from 0.82 in 1993 (ibid, p. 26) — the risk assessment measures provided by the Red List Index where zero meant that all species are extinct. Though species extinction is a usual occurrence, as Rockström et al. (2009) pointed out, and at the stage that we are in, we are witnessing "species becoming extinct at a rate that [has not seen] since the last global mass-extinction event" (p. 473). Agriculture and deforestation alone have accounted for 13-15 billion tons of carbon dioxide emission per year (FAO, 2011). Deforestation emits twenty-five percent of the total carbon dioxide. Other Greenhouse

Gases (GHGs) like methane (50%) and nitrous oxide (75%) come either from animal waste, fertilizer application, and rice production (ibid, p. 118). These data have augmented the natural causes of global climate change, i.e., the rising air and sea surface temperatures, receding glaciers, shifting climate regimes, increasing frequency, and intensity of extreme events, and sea level rises (FAO et al., 2018, as cited in Intergovernmental Panel on Climate Change [IPCC], 2014).

The adverse effects of human interventions on the environment have caused severe environmental concerns leading to social and economic challenges. Hunger and extreme poverty have been two of the most pressing concerns in the world. Gratzer and Keeton (2017) state, based on Grebmer et. al. (2016 and Suresh and Johnson (2015), that 800 million people and 1.2 billion people have experienced hunger and poverty, respectively. These circumstances are more evident in mountainous regions all over the world, developing and developed countries alike (Romeo et al., 2015). Environmental challenges such as soil degradation and biodiversity loss have affected our capacity for food production (FAO et al., 2018). Since some countries cannot supply their people with essential goods and services (Rees, 1992), some people depend on their environment, for instance, forests, for survival (Eikermann, 2015). Forests provide numerous ecosystem services, e.g., food, water, timber, livelihoods, shelter, medicines, and fuel, among other things, to people. In developing countries, where most poor rural households live in the forests (Gratzer & Keeton, 2017), they have opted to live there because of easy access to fresh water and fertile soil for food production (Eikermann, 2015). These services are not all renewable; hence, they can deplete without proper and sustainable use.

Consequently, the availability of these natural resources provides an opportunity to meet the demands for food (FAO, 2011). Food prices have increased, thus has impacted poor households. Eikermann (2015) also pointed out that when globalization and *mercantilism* started, they brought about intensified forest exploitation that followed the challenges of protecting the resources inside the forests and, thus, affected the environment and people both negatively and positively. Further, since not everyone has equal access to resources and there have been different and the same functions, e.g., of forests, this stems from whether the purpose of a natural resource is for the environment,

socio-political, and economic perspectives, otherwise from global or local standpoints (ibid, p. 21).

Against this backdrop, 189 nations adopted the Millennium Development Goals (MDGs) in 2000 to address the above-mentioned global challenges (Griggs et al., 2014; UN, 2015a). However, the MDGs failed to meet some of their targets during their time of implementation (Griggs et al., 2014). For that reason and following the Rio Declaration on Environment and Development (UN, 1992b) and the Rio+20 UN Conference on Sustainable Development (UN, 2012) when people became more cognizant and grasped the urgency of dealing with the negative environmental impacts (FAO, 2011), the UN and its 193 member states adopted a resolution *Transforming our World: The 2030 Agenda for Sustainable Development* in the year 2015 to continue what the MDGs failed to deliver (UN, 2015b). The Agenda 2030 "recognize that eradicating poverty in all its forms and dimensions, including extreme poverty, is the greatest global challenge and an indispensable requirement for sustainable development" (UN, 2015b, p. 1). With this, the UN designed 17 Sustainable Development Goals (SDGs) and 169 targets to serve as a framework that countries committed to achieving by 2030 (ibid, p. 6).

The development of the Agenda 2030, specifically its goals and targets, is accordant with various existing intergovernmental commitments (Kim, 2016). In retrospect, the prevailing international legal instruments already encompassed the targets of the Agenda 2030, thus making the goals sine qua non as a "synthesizing framework"—for which Kim (2016) believed—to "address the fragmentation of international laws" (pp. 16-17). Countries have seen the necessity of the SDGs as a framework with integrated nature (UN, 2015b); hence they have adopted the "functionalist thinking that underpins the UN system" (Hey, 2005, p. 8)[1]. In this sense, Bernstein (2017) attested that though Agenda 2030 was supposed to address the *siloization* in international agreements, the nature of the SDGs as interdependent did not shy away from a silo approach. For example, similar to the SDGs, international legal instruments have distinct goals. While some of these goals have contributed to the achievement of others, some are conflicting

[1] We understand that this functionalism occurs when "cooperation between international institutions, …, did not need to extend beyond coordination and different interests could be articulated in different international forums" (Hey, 2005, p. 8).

(Kim, 2016). Ironically, Agenda 2030 has absorbed the fragmented nature of international laws (ibid, pp. 16-17). The SDGs are palpably products of inexplicit interdependent goals and fragmented international agreements (Underdal & Kim, 2017).

The SDGs are also not legally binding, even though they follow international laws (Biermann et al., 2017). The missing legality of the SDGs means that countries can choose whether to align the goals with their national policies. To the same degree, countries can have their way of achieving the targets. Ergo, implementing the Agenda 2030 is at the liberty of the national legal system of the 193 member states. Withal, Vijge et al. (2020) emphasized that the countries had much room to maneuver their national policies consistent with the "broadly framed" Agenda 2030 (p. 254).

Akin to other member states that signed up to the Agenda 2030, Austria, our key country in our study, has committed to implement the SDGs as an "internationally binding framework" (Organisation for Economic Co-operation and Development [OECD], 2020, p. 7) albeit the Agenda's non-legally binding nature and despite the challenges in analyzing the interactions among the Goals. The Austrian Council of Ministers has included the SDGs in its activities since 2016. OECD (2020) stated that Austria's strategy in implementing the Agenda 2030 was multi-sectoral, which meant its implementation involved all actors—from the Federal States to civil societies. This strategy has continued based on Austria's Government Programme 2020-2024. Their Federal Ministries have developed their respective strategies to execute their plans and actions toward achieving and addressing the Agenda's challenges. At the international level, Austria has realized its commitment to the Agenda through international instruments and partnerships with other countries as an element of their bilateral and multilateral development cooperation. Cooperation is one of the powerful strategies of Austria in implementing the SDGs as part of their Austrian Development Policy 2019-2021, which is a Three-Year Programme that tackles five angles. One of these includes the main concern in our study, i.e., "the protection and preservation of the environment" (ibid, p. 22), which is generally cross-cutting within the several goals of the Agenda and specifically in Goal 15 or "Life on Land."

1.1 Austria's Life on Land: Why commit?

With its many forests and mountains, Austria is a highly forested country (47.6% of its territory), owns considerable freshwater resources (4.5% renewable), and has agricultural management in place (32.2% of the country's total land area) as of the year 2017 (FAO, n.d.). These data show that Austria has offered several ecosystem services to people (Conservation on Biological Diversity [CBD], n.d.). However, anthropological factors have influenced the diversity of forest areas in Austria on par with many other countries. Management, conservation, restoration, and protection of the resources from forests to wetlands are some of the challenges that the country has faced. Thus, Austria has committed itself to implementing the SDG 15 "Life on Land" which aims to:

> Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss. (UN, 2015b, p. 24)

Even before its conceptualization, earlier conventions such as the CBD, together with its Aichi Biodiversity Targets and Nagoya Protocol, the UN Convention to Combat Desertification, and the Convention on International Trade in Endangered Species (CITES) have embodied the SDG 15 (Sayer et al., 2019, p. 486). Noteworthily, the European Union (EU) has considered three aspects of the SDG 15: "ecosystem status, which looks into the status of rivers, groundwater, and forests; land degradation, which refers to artificial land cover and soil erosion; and, biodiversity which covers the common bird index and the sufficiency of terrestrial sites designated under the EU Habitats Directive" (EU, 2017, p. 295). In this fashion, SDG 15 entails the integration of various sectors for its realization.

As mentioned before, since 2016, Austria has included the SDGs, in particular, SDG 15.1, in their policies (OECD, 2016). The country has also undertaken the national implementation (Körfgen et al., 2018) of the first target of SDG 15. In general, SDG 15.1 centers on the sustainable management of forests and conserving terrestrial and

freshwater ecosystems (Hazarika & Jandl, 2019; UN, 2015b). Specifically, target 15.1 states that:

> By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements. (UN, 2015b, p. 24)

The Agenda 2030 encompasses several fields or domains (OECD, 2016)— as with SDG 15.1, which involves terrestrial and freshwater ecosystems—hence it requires coordination among stakeholders to circumvent overlapping and ineffective policies (FAO et al., 2018). Besides, the UN (2015b) has recognized that integrating SDG 15.1 into the countries' policy objectives requires "interconnections and many cross-cutting elements" (p. 6). As a result, like other countries, Austria's implementation of SDG 15.1 demands coherence of policies (Jovanović & Ilić, 2017).

According to the OECD (2016), coherence in various fields of studies is necessary to generate synergies and reduce trade-offs in implementing policies from sectoral to international levels. Distinctively, coherent policy objectives are vital in understanding how to conserve, restore, and sustainably use the world's terrestrial and freshwater ecosystems (Bridgewater et al., 2015). We reiterate that policymakers have usually practiced a silo approach in designing policies (Zhou et al., 2017) despite the need for coherency. This approach has usually led to weak policy implementation (Hazarika & Jandl, 2019).

Aligning the Agenda 2030 to the countries' policies is not an exception to this silo approach (OECD, 2016). For instance, Austria's forest policies involve various sectors. However, the decision-making and policymakers of these sectors do not mostly jointly formulate the policies (Hazarika & Jandl, 2019). The OECD has been pushing for an integrated approach to ensure the coherence of policies related to the three pillars of

sustainable development (ibid, p. 63). As previously mentioned, Austria is now focusing on cooperation efforts to achieve the Agenda 2030 (OECD, 2020).

Concerning this, Austria has committed itself to implementing SDG 15.1 by adapting international policies to the said Goal. The country has also associated its "national and [transnational] policies" on forests and biodiversity with SDG 15 (Hazarika & Jandl, 2019, p. 4). Further, the Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW) (2015) saw the importance of achieving the three pillars of sustainable development. Even before the Agenda 2030 came out, Austria signed up to various international commitments to provide for frameworks of essence that could also contribute to the global Agenda (ibid, pp. 101, 145). These efforts have supplemented the country's current national and regional policies on SDG 15 (Hazarika & Jandl, 2019). Also, SDG 15.1 is integrated and indivisible, global in nature, and universally applicable (UN, 2015b), allowing Austria to align its national policies to the targets of the Goal.

However, several studies (Kroll et al., 2019; J. Liu et al., 2018; S. Liu et al., 2019; Nilsson et al., 2018; Pradhan et al., 2017; Zimm et al., 2018) showed the presence not just of synergies, but also trade-offs among the international arrangements/policy documents/legal agreement texts related to the conservation and sustainable use of forests. These situations have posed a tremendous challenge in integrating the sectors involved in SDG 15.1-related international agreements/policy documents/legal agreement texts. In addition, after long years of conceptualizing the Agenda 2030, it has been subjected to several negotiations that made the "wording [of the Goals and targets] at times overly complex" (Breuer et al., 2019, p. 4). This situation has led to policy incoherency that countries need to solve during policymaking and implementation (ibid, p. 1).

Similarly, policy reform is not enough to realize the achievement of SDG 15 (Sayer et al., 2019). Integrating policies among various sectors is a better way to implement SDG 15. Meanwhile, Le Blanc (2015) and Stafford-Smith et al. (2017) recognized the essence of integration to manifest synergies and address trade-offs in SDG 15. Without coherent

policies and integrated practice, addressing the challenges of SDG 15 has remained fragmented. As the International Council of Science (ICSU) and International Social Science Council (ISSC) (2015) pointed out, identifying the common ground among the SDG-related international agreements/policy documents/legal agreement texts was a way to keep clear of fragmentation[2]. When countries expressed commitments to achieve the Goals, they also acknowledged the significance of aligning their policies—with much freedom (Kim, 2016)—to their targets and objectives. However, this commitment is easier said than done, considering the several sectors and actors involved.

Nevertheless, there has been no explicit mapping of SDG 15.1-related international arrangements/policy documents/legal agreement texts on forest ecosystems that Austria has committed to achieving and how these can create synergies and trade-offs in policymaking. This is important to know, as the country supposedly needs to report on implementing SDG 15.1 in line with international commitments.

1.2 Limitations of the Study

While SDG 15.1 also encompasses inland water/freshwater/wetlands, drylands, and mountains, our study only focused on forests. We only wanted to provide a starting point for future research and possible avenues for further discussions that could improve the studies and bases for arguments regarding Agenda 2030. It would have been far too complex to include all other conventions and international arrangements/policy documents/legal agreement texts into this study and therefore we opted to limit the analysis showcasing the example for forests. It can then be replicated more easily for those other topics addressed in SDG 15.1.

[2] *Fragmentation*, as defined by Biermann et al. (2009), is "a patchwork of international institutions that are different in their character (organizations, regimes, and implicit norms, their constituencies (public and private), their spatial scope (from bilateral to global), and their subject matter (from specific policy fields to universal concerns)" (p. 16). This concept will be explored more on the next chapters.

1.3 Research Objectives and Questions

Following the challenges in implementing Agenda 2030, we used SDG 15.1 in the Austrian context to identify the areas of fragmentation and synergies, trade-offs, conflicts, and overlaps with regards to forest-related agreements. Understanding these critical concepts provided us with an idea of why countries like Austria signed up to implement the Global Agenda, when some authors have considered that SDG-related international arrangements/policy documents/legal agreement texts are showing trade-offs (Sayer et al., 2019), overlapping and conflicting (Breuer et al., 2019; Kroll et al., 2019) and leading to fragmentation (Klingebiel et al., 2016; Nilsson et al., 2018). Similarly, there are not enough studies on the underlying frames on the roles of forests that SDG 15.1-related international arrangements/policy documents/legal agreement texts addressed. Framing these roles was necessary to uncover since they depicted the different problem perceptions of policymakers on forests and knowing these various perceptions could be a starting point to provide different solutions that might ensure the synergies and positive divergent viewpoints.

Also, the following were the aims of the study:

a. Map international forest-related commitments/policy documents/legal agreement texts to which Austria committed itself to implement SDG 15.1;
b. Reconstruct policy frames for forests from mapped international commitments/policy documents/legal agreement texts to which Austria committed itself to implement SDG 15.1; and,
c. Identify synergies and trade-offs and areas of fragmentation between frames to study conflicts and overlaps in the international commitments/policy documents/legal agreement texts to which Austria committed itself to implement SDG 15.1.

With this, the study entailed the following research questions:

a. What are the international forest-related commitments/policy documents/legal agreement texts to which Austria committed itself to implement SDG 15.1?
b. How are the roles of forests framed in SDG 15.1-related international commitments/policy documents/legal agreement texts to which Austria committed itself to implement?
c. What are the synergies, trade-offs as well as areas of fragmentation concerning the frames identified? How are these frames overlapping or showing areas of contention?

Building on the literature on the governance of the Agenda 2030, we assumed that the international commitments, policy documents, and legal agreement texts related to SDGs are fragmented (Kim, 2016). However, not enough studies have addressed this challenge and studies on the synergies, trade-offs, conflicts, and overlaps among the SDG 15.1-related international commitments/policy documents/legal agreement texts are limited. Countries have faced trade-offs while aiming to provide for balanced interests and priorities (Nilsson et al., 2016) that may help them execute the Agenda 2030 and realize its Goals without exhausting their resources during implementation. Above all, studies on fragmentation have focused on the institutions rather than the international commitments/policy documents/legal agreement texts.

In this setting, our study provided an opportunity to accommodate what was missing in the study of fragmentation of international commitments/policy documents/legal agreement texts, not just in Austria but also in the member states committed to implementing the Agenda 2030.

2. State of the Art on Fragmentation

2.1 The Notion of Fragmentation

Global governance architecture works in an international setting that concerns various issue areas[3] in a policy domain (Biermann et. al., (2009) as cited in Aldy and Stavins (2007). The notion behind global governance architecture determines whether the issues at hand show synergies and trade-offs with other areas in the same policy domain (Rajamani, 2006).

The study of Biermann et al. (2009) focused on institutional fragmentation, wherein they attested that there were different types and degrees. First, they assumed that all forms of global governance architectures might exhibit fragmentation, i.e., countries that were party to a specific international commitment had distinguished features or guidelines to achieve their objectives. Second, they considered fragmentation as purely objective, i.e., fragmentation inferred or drew on a conclusion. Third, they assumed that fragmentation reckoned with the scale of an issue area. It entails that a fragmented global governance structure is more eminent when it involves a vaster scale. Ergo fragmentation is:

> A patchwork of international institutions that are different in their character (organizations, regimes, and implicit norms, their constituencies (public and private), their spatial scope (from bilateral to global), and their subject matter (from specific policy fields to universal concerns). (Biermann et al., 2009, p. 16)

Congruent with the concept of fragmented global governance architecture, Biermann et al. (2009) identified three degrees of fragmentation (Table 1), namely *synergistic, cooperative*, and *conflictive*. It is important to remember that these degrees of

[3] Issue areas examine an outright and well-defined concept (Biermann et al., 2009), e.g., forest conservation whereas policy domains delve into a broader concept of the ecosystem (Biermann et al., 2009), for instance, forests.

fragmentation are equivocal and moot (ibid, p. 19). Also, Biermann et al. (2009) categorized the degrees of fragmentation in three criteria: institutional integration or overlaps in decision-making processes, presence of norm conflicts, and relationships among the actors involved (Table 1).

Table 1

Typology of fragmentation of governance architectures (Biermann et al., 2009, p. 19)

	Synergistic	*Cooperative*	*Conflictive*
Institutional integration	One core institution, with other institutions being closely integrated	Core institutions with other institutions that are loosely integrated	Different, largely unrelated institutions
Norm conflicts	Core norms of institutions are integrated	Core norms are not conflicting	Core norms conflict
Actor constellations	All relevant actors support the same institutions	Some actors remain outside main institutions, but maintain cooperation	Major actors support different institutions

Biermann and colleagues (2009) described that synergistic fragmentation encompasses nearly every one of the countries that encapsulate effectual policies and thorough guidelines for primarily structured institutional arrangements in an issue area. It provides a common framework that directs and connects all other frameworks from different institutions. While cooperative fragmentation involves distinct institutions that differ in their decision-making processes, multivocal norms, and principles; and excludes some countries that are essential to the issue area (ibid, p. 20). The last type of fragmentation is conflictive fragmentation, which presents an issue area involving institutions with various ways of deciding, divergent norms and principles, and conflicting views (ibid, pp. 20-21). These three types of fragmentation do not coincide; however, they are present at some point in a similar global governance architecture and may vary subsequently (ibid, pp. 20, 21). Biermann et al. (2009) noted that fragmentation in this sense comprehends the underlying attributes and ramifications of a fragmented global governance architecture and centers not just on the synergistic aspects of an institution

but on the entire institutional context. The fragmentation of global governance architecture entails an all-encompassing understanding of institutional workings. Biermann et al. (2009) indicated that parallel policies and regimes that went about the same area of concern have more fragmentation.

Alternatively, Zürn & Fraude (2013) related their typology of fragmentation to coordination, which they argued was more applicable in addressing institutional fragmentation than those provided by Biermann et al. (2009). Considering the three models of coordination: *authoritative coordination through hierarchical institutions; coordination through cooperation in loosely coupled networks; and decentralized coordination through market competition*, Zürn & Fraude (2013) argued that their typology of coordination (Table 2) was discernible as a typology of institutional fragmentation.

Table 2

Typology of coordination of fragmented institutions (Zürn & Fraude, 2013, p. 127)

Biermann et al.'s (2009) Typology of Fragmentation	**Zürn & Fraude's (2013) Typology of Coordination**
Synergistic	With a core (hierarchical) institution that integrates all other institutions
Cooperative	With loosely coupled institutions that interact cooperatively
Conflictive	With institutions offering different kinds of regulation to states

2.2 Fragmentation in overlaps

Rosendal (2001) recognized the growing concerns about the effectiveness of the increasing number of international agreements, specifically concerning the environment. There have been no "explicit measures" to address the overlaps in international agreements (ibid, p. 95). As Young (1996) defined and, as mentioned by Rosendal (2001), "overlap [might] result from covert activity, as a strategic move by some of the negotiating parties. [The activity] could be the case if, as a way of circumventing the effect of one

regime, new ones [might] combat and undermine the first" (p. 114). On this note, Rosendal (2001) acknowledged that there are several circumstances in which overlaps may occur; thus, she differentiated the concept of norms and rules to distinguish the types of overlaps better. According to her, norms are the all-encompassing "objectives and principles of a regime" (ibid, p. 97). At the same time, rules are synonymous with regulations that concerned parties are obliged to implement (ibid, p. 97). Rosendal (2001) identified two types of overlaps using these notions of norms and rules: *the overlap between regimes with compatible or diverging norms and the overlap between regimes with compatible or diverging rules*. These overlaps between regimes may occur in four kinds of situations (named Types I-IV) as seen in Figure 1.

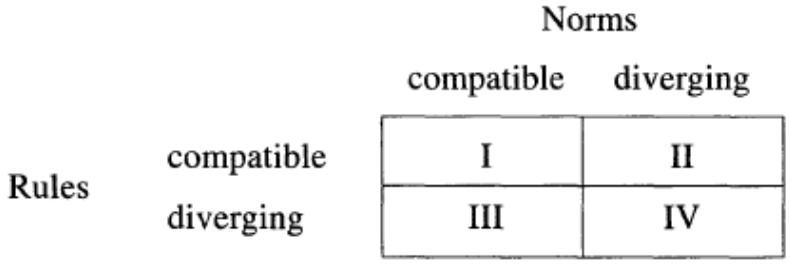

Figure 1. *Types of overlaps between regimes (Rosendal, 2001, p. 98)*

Rosendal (2001) described the four situations in which there are overlapping between regimes. First, there are notable synergies in Type I. However, synergism is unlikely to happen if institutions cannot coordinate. Likewise, it is rare to witness a Type I situation since overlaps here require more institutional responsibilities (Rosendal, 2001). On the one hand, Type II situations show compatible rules and diverging norms between regimes (ibid, p. 98). Though there are synergisms, Type II may still express a situation where rules are insufficient because of the absence of stipulations during the precursory formulation of regulations that result in diverging norms (ibid, p. 99). Type III situations may arise when norms are compatible between regimes. Even so, Type III may cause more difficulties in implementation, given that the rules are not congruent (ibid, p. 99). Lastly, Type IV overlap between regimes shows both diverging norms and rules. Rosendal (2001) explained that a Type IV situation has a more significant occurrence of conflict—among the other three types—especially with multilateral agreements. Further, Type IV

and Type III may materialize because of a lack of coordination (ibid, p. 99) and the absence of coherence and integration between agreements.

Building on the fourth type of overlaps between regimes, Rosendal (2001) made further examinations to identify the extent of conflicts in a situation with diverging norms and rules. Similar to the typology of overlaps between regimes, Rosendal (2001) categorized the diverging overlaps into Types I-IV, differentiating the *diverging norms related to core and secondary aspects of regimes and the diverging rules concerning programs and regulations* (Figure 2). In this context, Type IV of diverging overlaps between regimes may produce more conflicts, whereas Types I-III may evoke synergies (Rosendal, 2001). Regardless, diverging overlaps between regimes may still be a matter of discussion because core and secondary norms are hard to discern between one another, particularly for Types I and II, as further problems may occur in the long run (ibid, p. 101). Similarly, Rosendal (2001) conveyed that rules might go from programmatic to regulatory that pose more challenging situations to international regimes, e.g., Types II-IV.

Table 3 also shows Rosendal's (2001) interpretations of core and secondary aspects of norms and regulatory and programmatic rules of regimes.

		Norms (diverging)	
		secondary	core
Rules (diverging)	programmatic	I	II
	regulatory	III	IV

Figure 2. *Types of diverging overlaps between regimes (Rosendal, 2001, p. 101)*

Further, Rosendal (2001) stressed that regimes focus on a distinct issue area; hence, there is a need to identify the extent of conflicts in regimes. Norms and conflicts may forgo success in international cooperation. She also concluded that diverging core

norms and regulatory rules cause more conflicts, compared with secondary norms and programmatic rules, that may prevent the effective implementation of institutions.

In this context, Type IV of diverging overlaps between regimes may produce more conflicts, whereas Types I-III may evoke synergies (Rosendal, 2001). Regardless, diverging overlaps between regimes may still be a matter of discussion because core and secondary norms are hard to discern between one another, particularly for Types I and II, as further problems may occur in the long run (ibid, p. 101). Similarly, Rosendal (2001) conveyed that rules might go from programmatic to regulatory that pose more challenging situations to international regimes, e.g., Types II-IV.

Table 3

Characteristics of core and secondary aspects of norms and regulatory and programmatic rules (Rosendal, 2001, p. 100)

Diverging Norms		**Diverging Rules**	
Secondary	**Core**	**Programmatic**	**Regulatory**
Perceptions of the scope of a problem and its causes, e.g., scientific uncertainty	Fundamental principles of regimes and their focus, e.g., political discord	Ways to improve knowledge about a specific problem, e.g., the need for coordination	Strict compliance with the objectives of regimes, e.g., rights and obligations of international agreements

With the above discussions on fragmentation and overlaps, it is essential to note that those studies have focused more on the institutions that formulated the international commitments. Though their studies are not directly applicable to use for answering our research questions, they lent us an avenue to understand and assess the fragmentation and overlaps in the SDG 15.1-related international commitments/policy documents/legal agreement texts.

2.3 Study of Interactions: Synergies and Trade-offs

The Agenda 2030 is indivisible and integrated (UN, 2015b). With all the various topics that the Agenda 2030 addresses, it still promotes interactions in which the countries inclusively underpin the three pillars of sustainability (Nilsson et al., 2017).

There are positive and negative interactions. On the one hand, positive interactions show that countries efficiently and effectively achieve the Goals while creating synergies (Nilsson et al., 2018). *Synergies* are interactions or situations where progress in one goal favors or contributes to the progress of other goals (Breuer et al., 2019; Pradhan et al., 2017). Likewise, Luukkanen et al. (2012) described synergies as “win-win strategies” (p. 338). On the other hand, negative interactions lead to trade-offs (Nilsson et al., 2018). *Trade-offs* occur when an interaction or situation in one goal hinders or leads to adverse effects in another goal (Breuer et al., 2019; Pradhan et al., 2017).

Further, Rodriguez Fernández-Blanco et al. (2019) considered the framework developed by Biermann et al. (2009) to come up with three kinds of institutional interactions, i.e., synergistic, neutral, and conflicting. Rodríguez Fernández-Blanco et. al (2019) also mentioned that they found synergistic interactions through the identification of (a) a shared objective; (b) a citation of one element in the text of the other; or (c) a step towards the same overarching objective (pp. 192-193). Meanwhile, a neutral interaction occurs when (a) the strategies of two institutions seem impossible to achieve, that one imparts nothing to another; (b) the link between two institutions is off course because the wording is vague or focuses on a different matter; and (c) the text of one institution is unlike the other (ibid, pp. 192-193). Lastly, conflicting interactions show that the goal of one institution hinders the other or weakens it (ibid, pp. 192-193).

Another study that illustrates the widely used framework for SDG interactions to identify the synergies and trade-offs in Agenda 2030 is that of Nilsson et al. (2016). According to them, there are seven types of interactions (Table 4) ranging from positive to negative. Further, they considered four questions when using their framework, to wit:

1. Is the interaction reversible or not?
2. Does the interaction go in both directions?
3. Does an action on one goal have a large or small impact on another?
4. How certain or uncertain is the interaction: is there evidence that it will definitely happen, or is it only possible? (Nilsson et al., 2016, p. 321)

Table 4

Interactions classified on a 7-point ordinal scale showing the nature of interaction and the extent to which the relationship is positive or negative (Nilsson et al., 2016, p. 321)

Interaction	Name	Explanation	Example
+3	Indivisible	Inextricably linked to the achievement of another goal.	Ending all forms of discrimination against women and girls is indivisible from ensuring women's full and effective participation and equal opportunities for leadership.
+2	Reinforcing	Aids the achievement of another goal.	Providing access to electricity reinforces water-pumping and irrigation systems. Strengthening the capacity to adapt to climate-related hazards reduces losses caused by disasters.
+1	Enabling	Creates conditions that further another goal.	Providing electricity access in rural homes enables education, because it makes it possible to do homework at night with electric lighting.
0	Consistent	No significant positive or negative interactions.	Ensuring education for all does not interact significantly with infrastructure development or conservation of ocean ecosystems.
–1	Constraining	Limits options on another goal.	Improved water efficiency can constrain agricultural irrigation. Reducing climate change can constrain the options for energy access.
–2	Counteracting	Clashes with another goal.	Boosting consumption for growth can counteract waste reduction and climate mitigation.
–3	Cancelling	Makes it impossible to reach another goal.	Fully ensuring public transparency and democratic accountability cannot be combined with national-security goals. Full protection of natural reserves excludes public access for recreation.

The framework developed by Nilsson et al. (2016) is relevant for assessing the interactions between the Goals of the Agenda 2030.

2.4 Coherence, Coordination, and Integration

The indivisible and cross-cutting nature of SDG 15.1 makes it prone to fragmentation, with "words with similar meanings [that] crowd around each other" (Cejudo & Michel, 2017, p. 749), especially with the creation of several international agreements to address more significant and complicated problems. Coneval (2013) mentioned, as cited in Cejudo and Michel (2017), that complex problem shows redundancies in their objectives and expected beneficiaries; thus, this situation results in fragmented government action. Further, they realized that to expand our understanding of fragmentation, they conceptualized and differentiated the terms coordination, coherence, and integration, which are related but seen with similar meanings and used alternately (ibid, p. 748). Against this backdrop, Cejudo and Michel (2017) identified the differences and levels among the three concepts (Table 5).

The concept of *coordination* entails that "members of organizations define tasks, allocate responsibilities, and share information to be more efficient when implementing the policies and programs they select to solve public problems" (Cejudo & Michel, 2017, p. 752). Coordination focuses on organizations with clearly expressed objectives and explicit functions that help determine possible synergies and conflicts (ibid, pp. 752, 754). Additionally, Cejudo and Michel (2017) defined three scales of coordination—from lowest to highest. The scales show how organizations' functions and information exchange are apparent (ibid, p. 753). On the other hand, *coherence* is "[a] process where policymakers design a set of policies in a way that, if properly implemented, they [might] achieve a larger goal[4]" (Cejudo & Michel, 2016, 2017, p. 755). Similar to coordination, Cejudo & Michel (2017) categorized coherence into three scales that focus on the structures of policies in an issue area (p. 756). *Integration*, meanwhile, is "the process of making strategic and administrative decisions aimed at solving a complex problem" (Cejudo & Michel, 2017, p. 758). This concept of integration shows that the policies' objectives incorporate not just a specific goal but also those beyond them (ibid, p. 758). The focus of integration is the policymakers who design policies that attend to complex problems, as also shown in its three scales (ibid, p. 750).

[4] Appeared in Cejudo & Michel (2016) in Spanish but used in Cejudo & Michel (2017, p. 755) in English

Table 5

Levels of coordination, coherence, and integration (Cejudo & Michel, 2017, p. 750) (copied verbatim)

	Policy Coherence	Coordination	Policy Integration
Object	Design of each policy within a policy area	Organizations	Decision-making processes on a set of agencies and policies
Scale	Level 1: policies simultaneously operate without getting in each other's' way, but without contributing in a clear and differentiated manner to solve the same complex problem	Level 1: regular exchange of information between members' organizations for achieving their own goals more efficiently	Level 1: capacity of decision-making body is limited to modify operational and design aspects of the programs and agencies of the overall strategy
	Level 2: policies complement each other, and could contribute to address the complex problem	Level 2: formal information exchange with which members' organizations make decisions regarding their own resources, and work individually, to contribute to a shared goal	Level 2: capacity of decision-making body to redefine the design, modify the operation, and reallocate the responsibilities and resources that the agencies and programs already have
	Level 3: policies complement each other to address complex problem, and they would be enough to do it comprehensively	Level 3: formal information exchange with which members' organizations make joint decisions regarding the existent resources for achieving a shared goal	Level 3: capacity of decision-making body to use and modify the existing programs and agencies, and also to create new ones of eliminate them
Questions	• Do these policies overlap? • Do these policies reinforce each other? • Do these policies serve the same overarching goal? • Are these policies enough to achieve the larger goal (that of the policy domain)?	• Is there a shared goal among organizations? • Do organizations establish rules and define responsibilities for coordination? • Do organizations share information?	• Is there a mandate to address a complex problem and a causal theory for doing so that involves several organizations and policies? • Is there a decision-making body responsible for addressing a complex problem? • Does the decision-making body have the authority for modifying the programs, agencies, financial and human resources in order to contribute to solve the complex problem? • Does the decision-making body have the necessary information to guide its decision about the programs, agencies, financial and human resources for contributing to solve complex problem?

In similar studies, Zhou et al. (2017) discussed that coherence, especially in the SDGs, requires a grasp on how the interactions among the Goals interact to provide workable solutions for trade-offs because of contradicting measures. Comparably, “[coherence] as an attribute of policy that systematically reduces conflicts and promotes synergies *between and within* [emphasis added] different policy areas to achieve the outcomes associated with jointly agreed policy objectives” (Nilsson et al., 2012, p. 396), is helpful in understanding the areas of fragmentation in SDG 15.1-related international commitments/policy documents/legal agreement texts.

3. Theoretical Framework: Frame Theory

Several authors have illustrated the concept of frames and their analysis as an approach to addressing complex problems and "[exploring] an actor's multiple understandings and their implications for the process of policymaking" (Beland Lindahl, 2008, p. 68). One author who started this work was Erving Goffman (1986 [1974]) wherein he mentioned that frames are "basic elements" or "principles of organization which govern events" (p. 21). According to Pan et. al. (2019), Goffman expressed that frames are "frameworks or schemata of interpretation" (p. 3). Further, Perri 6 (2005) mentioned that Goffman ascertained that a frame is a tool to "organize experience" and that the elements and organizations are coherent and integrated in nature (p. 94). Frames are also products of social development and are possible as keys in which Goffman identified five: (a) the make-believe; (b) the contest; (c) the ceremonial; (d) the technical redoing; and (e) the re-grounding in which another motive is substituted (Perri 6, 2005, p. 94). These keyed frames are likewise possible for re-keying through interchanging their themes as long as they dissociate from the mainframe (Perri 6, 2006).

Authors have rarely used Goffman's concept of frames in the study of fragmentation of international commitments since his concept conveys that instead of political structures, social institutions and their environment affect the creation of frames (Beland Lindahl, 2008; Perri 6, 2006). Goffman's concept is a good starting point for our research since it gives us an idea of how to recreate frames for SDG 15.1-related international commitments /policy documents/legal agreement texts.

Frames, meanwhile, according to Schön & Rein (1994), are "policy positions as resting on underlying structures of belief, perception, and appreciation" (p. 23). It is easy to think of a frame as a "less visible foundation… that lies beneath the more visible surface of language or behavior, determining its boundaries and giving it coherence" (Rein & Schön, 1996, p. 88). This concept illustrates how frames are assumptions about what the policy says (Rein & Schön, 1996).

Rein & Schön (1996) likewise saw frames in four ways: with an underlying structure, with a boundary, with a schema of interpretation, and with strong and generic narratives (pp. 88-89). Ergo, frames depict a distinct idea that is enrapt and does not conform through time. In this way, one can recognize the explication of these ideas to "organize experiences and guide action" and determine what and how to adjust or restore these actions (ibid, p. 89). Rein & Schön (1996) also argued that frames are "not self-evident" (p. 90). This argument conveys that constructing frames requires a reckoning of multivocal beliefs and perceptions from certain evidence (ibid, p. 90). Disagreements in policies have led to policy discourses, and controversies wherein Rein & Schön (1996) distinguished two concepts: *rhetorical frames* and *action frames. The former are* frames from a demonstrated theory proposed by "frame sponsors or critics in a policy debate" while the latter are frames from "patterns of actions" presented by policy designers and implementors (ibid, pp. 90-91). These constructions of the two frames differ depending on the gathered evidence (ibid, p. 90).

The action frames have three levels (Schön & Rein, 1994). These are policy frames, institutional frames, and metacultural frames. In brief, a *policy frame* is a frame to "construct the problem of a specific policy situation"; an *institutional action frame* is a frame where "institutional actors derive the policy frames"; and *metacultural frames* are institutional action frames that consider the "culturally shared systems of belief" (Schön & Rein, 1994, pp. 33-34) .

Rein & Schön's (1996) and Schön & Rein's (1994) concept of frames as generic narratives sets the stage for our study of fragmentation of SDG 15.1-related international commitments/policy documents/legal agreement texts since their notion of a narrative is general, like restoring a "fragmented whole object" (ibid, p. 89).

Another concept of a frame we need to point out is that of Verloo (2005), as shown in Dombos (2012). Verloo (2005) used frames as an approach in policy analysis, where one can reconstruct a fragmented idea into a "structured and meaningful problem" (p. 20). Like Schön & Rein (1994), the solution for this structuring is clear or tacit (Verloo, 2005). It is also worth mentioning that many authors have regarded frames in their studies; hence

various interpretations of frames have arisen (Dombos, 2012). The differing interpretations have led to the expansion and reduction of the context of frames, wherein Dombos (2012) also argued that the authors' interpretations depend on three questions. The first one is the question of *generality,* in which one uses frames at three levels: macro[5], meso[6], and micro[7]. These levels correspond to Schön & Rein's (1994) three levels of action frames, as previously mentioned. Next is the question of *intentionality,* through which authors depend on the "results of practices involving the strategic deployments of certain arguments" (Dombos, 2012, p. 5). These arguments affect the decision-making that occurs in societal discourses (ibid, p. 5). Last is the question of *normativity,* wherein some authors either consider a "separation of cognitive and normative aspects and reserve the concept of frames to the former" or "the inherent inseparability of the two" (Dombos, 2012, p. 5).

With the questions of generality, intentionality, and normativity, Dombos (2012) provided three frame categories: issue frames, metaframes, and document frames. On the one hand, *issue frames* are "abstract synthetic constructs" that are not associated with texts (ibid, pp. 5-6). On the other hand, *document frames* show "how a particular document or actor constructs the issue at hand" (Dombos, 2012, p. 6). It is necessary to point out that document frames may be associated with one or more issue frames (ibid, p.6). For this reason, document frames can cause "fragmented or hybrid versions" of issue frames (ibid, p. 6). *Metaframes*, meanwhile, are frames that consider "a higher level of generality that stretch over different policy issues and can be operationalized as the normative aspects of issue frames" (ibid, p. 6). On this account, Dombos (2012) claimed that constructing issue frames was the first step in frame analysis. This step is necessary for our study since, in connection with our identified problem, i.e., fragmentation in SDG 15.1-related international commitments/policy documents/legal agreement texts, we perceive that they already contain our issue frames (Dombos, 2012), which encompass the question of how the roles of forests are framed. This belief supports that the frames are "components that build up a policy document" or that we can find frame elements by looking at the "genre" of policy documents (Dombos, 2012, p. 6).

[5] For whole society, see Dombos (2012) and Schön & Rein (1994)
[6] For type of actors or policy domain, see Dombos (2012) and Schön & Rein (1994)
[7] For individual actors, see Dombos (2012) and Schön & Rein (1994)

Another account of frame analysis is that of Dewulf et al. (2011) in their study of collaborative water governance. For them, the notion of frames epitomizes "constructing the meaning of issues" (ibid, p. 52). In a nutshell, they have built upon the claims of other authors[8] that there are complex problem domains associated with governance arrangements due to several actors. The domains have become "fragmented and under-organized," attributable to numerous actors who are trying to provide solutions to a particular problem but without success (Dewulf et al., 2011, p. 51). This failure in addressing the problem is associated with the "lack of cooperation" from other actors (ibid, p. 51). When these actors contrastingly frame the problems, it can likely result in an oversight (Dewulf et al., 2011, as mentioned by Schön & Rein, 1994). Going back to the work of Biermann et al. (2009), they stated that "the larger the scale [of a perceived problem], the higher the degree of fragmentation [was] likely to be" (p. 18). This statement somehow supports the study of Dewulf et al. (2011) that fragmentation occurs when various actors are involved in solving complex problems.

Akin to our study, when policymakers frame the roles of forests in contradicting ways, policies may cause ambiguities that can create misinterpretations and weak grips on those roles, and hence can eventually lead to controversies analogously to the presumptive occurrence of fragmentation in the policies (Schön & Rein, 1994). Relatedly, frame analysis is an approach to uncovering "contesting or overlapping frames" that is essential to our study of fragmentation (Sanderink, 2020, p. 1). Framing the various roles of forests determines synergies and trade-offs among the international agreements (Rein & Schön, 1993; Schön & Rein, 1994) and allows us to discern if they are overlapping.

[8] Ansell & Gash, 2008; Huxham, 2000; Kicker et al., 1997; and Mandell, 2001

4. Conceptual Framework

Our study used the frame concept of Rein & Schön (1996) and Schön & Rein (1994), wherein we wished to reconstruct frames to address the problem of fragmentation. As previously discussed, their notion of frames depicts that there is evidence, though not apparent, that presents itself through one's interpretations of "belief, perception, and appreciation" (ibid, p. 23). We surmised that our international commitments/policy documents/legal agreement texts encapsulated the interpretations of policymakers or relevant actors about the roles of forests. We assumed that the actors had already framed those roles depending on their interests and views during policymaking. To explain further, we looked at those frames as generic narratives, like a "fragmented object that should be returned to its original shape" through improving coordination, giving coherence, and recognizing the opportunity for integration (Rein & Schön; 1996 and Schön & Rein; 1994, pp. 89-90). Rein & Schön's (1996) and Schön & Rein's (1994) conceptualization of frames is the most appropriate in the present study since we wanted to focus on action frames that show how strategies are formulated and implemented. We also used Van Gorp's (2001) similar argument that frames act to address "fragmentary information" and restore them into a "structured and meaningful whole" (p. 5).

Table 6

Guiding questions in tracing framing as adopted from Elomina & Pülzl (2021)

	Questions	Expected Results
International Commitments/ Policy Documents/ Legal Agreement Texts	What are the roles of forests in SDG 15.1-related policies?	Quotations that show the roles of forests
Code, Parent Code, and Frame Assignments	What are the codes, parent codes, and frames?	Grouped quotations of the roles of forests

We also adopted the guiding questions (Table 6) of Elomina & Pülzl (2021) in their study of framing the EU forest policies to assist us in constructing frames. We applied the framing concept by analyzing the various roles of forests through qualitative content analysis of our chosen SDG 15.1-related international commitments/policy

documents/legal agreement texts. The guiding questions provided in Table 6 additionally assisted us in evaluating or analyzing the synergies/trade-offs/overlaps/areas of fragmentation in our documents and related frames.

5. Methodology

For this study, we used qualitative content analysis with Atlas.ti program. According to Hsieh & Shannon (2005), the qualitative content analysis used texts that could be in "verbal, print, or electronic form and might have been obtained from narrative responses, open-ended survey questions, interviews, focus groups, observations, or print media such as articles, books, or manuals" (p. 1278, as cited in Kondracki et al., 2002). To answer our research questions, we used international commitments/policy documents/legal agreement texts as materials for analysis. We often used the term documents when referring to our materials for conciseness.

The first step in our methodology was policy document selection. This step would answer our first research question to map SDG 15.1-related international commitments/policy documents/legal agreement texts that Austria committed itself to implement. Once we mapped these documents, we employed qualitative analysis through coding inductively the roles of forests. The codes created were categorized into parent codes and then into frames, which encompassed our second research question. The frames were then analyzed on how they created synergies or trade-offs, including overlaps and areas of fragmentation that eventually answered our final research question. We also included the analysis of frame dominance by discerning the number of times the reconstructed frames appeared within the policies and across the policy domains of forest, biodiversity, and climate change.

5.1 Policy Document Selection

Upon review of related literature, twenty-eight (28) international commitments/policy documents/legal agreement texts (Table 7) that are related to SDG 15.1 were selected and compiled for this study. The documents used were adopted based on the study of Ohler (2017) on global forest governance. Ohler's compilation of documents was a good starting point in our research since they are related to forests, and her study was to determine forest-related issue areas that are fragmented and overlapping. However, we only selected documents from Ohler's list that Austria

committed itself to implement and, thus, were relevant to our study. Further, we compiled other forest-related policies/agreements—not mentioned by Ohler—which were also part of SDG 15.1. The selection of these documents was based on relevant literature on SDG 15.1 in Austria and specifically patterned through a snowball method (Visseren-Hamakers, 2015, p. 137). Noteworthily, all our documents were categorized into three i.e., forest-focused, biodiversity-focused, and climate change-focused policies.

Table 7

List of SDG 15-related international commitments/policy documents/legal agreement texts that Austria committed itself to implement

Forest-Focused Policies
• Agenda 21, Chapter 11: Combating Deforestation • Intergovernmental Forum on Forests (IFF) Proposals for Action • Intergovernmental Panel on Forests (IPF) Proposals for Action • International Arrangement on Forests • United Nations Forest Instrument • United Nations Forest Principles • Alpine Convention
Biodiversity-Focused Policies
• Agenda 21, Chapter 15: Conservation of Biological Diversity • Convention on Biological Diversity (CBD) • CBD COP II/9 Decision: Forests and Biological Diversity • CBD COP VI/2 Decision: Biological Diversity of Inland Waters • CBD COP VI/4 Decision: Biological Diversity of Dry and Sub-Humid Lands • CBD COP VI/13 Decision: Sustainable Use • CBD COP VI/22 Decision: Forest Biological Diversity • CBD COP VI/26 Decision: Strategic Plan for the Convention on Biological Diversity • CBD COP X/2 Decision: The Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets • Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) • Convention on the Conservation of European Wildlife and Natural Habitats
Climate Change-Focused Policies/Forest-Relevant Policies
• Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) • UNFCCC Decision 1/COP 13: Bali Action Plan

- UNFCCC Decision 1/COP 16: The Cancun Agreements: Outcome of the Work of the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention
- UNFCCC Decision 2/COP 17: Outcome of the Work of the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention
- UNFCCC Decision 12/COP 17: Guidance on Systems for Providing Information on How Safeguards are Addressed and Respected and Modalities Relating to Forest Reference Emission Levels and Forest Reference Levels as referred to in Decision 1/COP 16
- UNFCCC Decision 1/COP 18: Agreed Outcome pursuant to the Bali Action Plan
- UNFCCC Decision 9/COP 19: Work Programme on Results-Based Finance to Progress the Full Implementation of the Activities referred to in Decision 1/COP 16, paragraph 70
- UNFCCC Decision 11/COP 19: Modalities for National Forest Monitoring Systems
- UNFCCC Decision 15/COP 19: Addressing the Drivers of Deforestation and Forest Degradation
- UNFCCC Decision 16/COP 21: Alternative Policy Approaches, such as Joint Mitigation and Adaptation Approaches for the Integral Sustainable Management of Forests

5.2 Coding and Qualitative Content Analysis

Content analysis, as described by Hsieh & Shannon (2005), is an approach of qualitative analysis that makes use of “language as communication with attention to the content or contextual meaning” (p. 1278). It is a step-by-step method of categorizing the content or meaning into codes and later into various themes and patterns (ibid, p. 1278).

One significant step in our analysis was open coding, where we assigned codes to texts. Codes are “keywords, phrases, mnemonics, or numbers” that correspond to a text’s specific passage, sentence, or paragraph (Gläser & Laudel, 2013, p. 20). In this context, we used the term ‘*quotations’* for where the codes were assigned; thus, our codes characterized a specific quotation in our materials.

It is important to note that content analysis is subject to interpretation. As Mayring (2014) pointed out, there are three basic kinds of interpretation: summary, explication, and structuring. Summary condenses the documents to provide the fundamental parts needed in a study. Explication, on the contrary, is to develop new content that aids in the further interpretation of the documents. Meanwhile, structuring is to categorize the documents

depending on identified criteria. Based on these, we used summarizing as a kind of interpretation or a way of *condensing* specific quotations in the materials to identify their main points, as Erlingsson & Brysiewicz (2017); Graneheim & Lundman (2004); Hsieh & Shannon (2005); and Mayring (2014) put it. As mentioned before, the documents in our study are international commitments/policy documents/legal agreement texts, which comprise broad and various information related not just to SDG 15 but also to other environmental areas. Hence, condensing the texts helped us to identify and recognize only the main point that could answer our research questions. Similarly, in analyzing a large volume of texts, relevant information must be summarized or "extracted" (Gläser & Laudel, 2013, p. 29) to come up with a systematized and defined database associated with the "theoretical considerations and empirical information" (ibid, p. 34). This step is in line with the objective of qualitative content analysis, which is to "systematically transform a large amount of text into a highly organized and concise summary of key results" (Erlingsson & Brysiewicz, 2017, p. 94).

For our study, we coded quotations from our 28 documents inductively. We interpreted these quotations as relevant for our research question of how the roles of forests were framed in the SDG 15.1-related international commitments/policy documents/legal agreement texts to which Austria is a party.

Once coding was completed, the quotations were consolidated and transformed into an analysis matrix for review. This step ensured that all quotations were assigned with a code corresponding to what they conveyed, i.e., the quotations directly answered our research questions. In addition, the codes and quotations were reviewed to re-assign, combine, or merge codes that were similar or close to what they were trying to impart. This situation was especially the case when one quotation was assigned to several codes because of its various ideas. For these instances, we looked further into the main point of the quotation and assigned which code rendered it immensely. In some quotations with distinct ideas, but the codes assigned to them could not be merged, we split them into several quotations with different codes. As an example, the quotation: "Natural forests also constitute a source of goods and services, and their conservation, sustainable management, and use should be promoted" (UN, 1992a, p. 483) was assigned to codes

such as *conservation, wood, and non-wood forest products, sustainable forest management,* and *sustainable utilization and production.* That one quotation was consolidated in our analysis matrix as four entries but with different codes.

We then categorized the codes into parent codes. The development of parent codes was the next step in our coding process. Similar to the work of (Erlingsson & Brysiewicz (2017), we formed our parent codes by grouping our codes depending on their idea or subject. This step was also necessary for reconstructing frames on the roles of forests since this enabled us to reconstruct frames more comprehensively.

6. Results

6.1 Forest Frames

Using the concept of framing by Rein & Schön (1996) and Schön & Rein (1994), we reconstructed ten frames on the roles of forests in SDG 15.1-related international commitments/policy documents/legal agreement texts relevant for Austria. Noteworthily, these frames are not all present in the policy documents. Some of them are not expressed in one policy domain but addressed in other policy domains, i.e., in this study includes forest, biodiversity, and climate change. The presence or absence of these frames in the documents entails that there are roles of forests that are not given primary importance. Hence, this may lead to negative interactions, overlaps, or areas of fragmentation. The reconstructed frames are illustrated in Figure 3. The distinction among the reconstructed frames

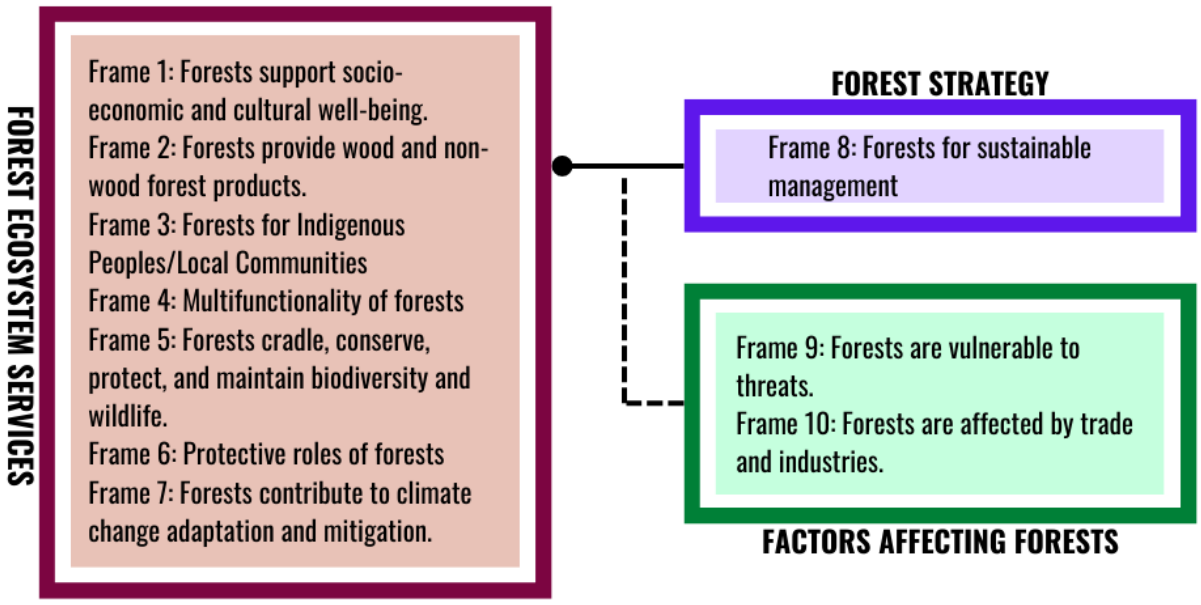

Figure 3. *The distinction among the reconstructed frames*

Table 8

Summary of 10 forest frames and their corresponding parent codes with sample quotations

Frames	Parent Codes	Sample Quotations
Frame 1: Forests support socio-economic and cultural well-being.	• Economic development • Ecotourism • Employment and income • Food security • Poverty reduction • Profitable forestry • Rural development • Socio-cultural	"Forests provide … livelihoods or jobs for hundreds of millions of people worldwide." (CBD COP Decision II/9. Forest and Biological Diversity, UNEP, 1995, p. 14) "IFF recognized that the demand for and supply of wood and non-wood products and services of forests will continue to form the basis for the contribution of forests to economic and social development, particularly for poverty eradication." (IFF Proposals for Action, ECOSOC, 2000, p. 33)
Frame 2: Forests provide wood and non-wood forest products.	• Alternative energy • Bioenergy • Carbon reservoirs and sinks • Carbon sequestration • Energy sources • Forest goods and services • Renewable products • Wood and non-wood forest products	"Private forests presently account for about half of world wood production and this share is expected to increase in the future." (IFF Proposals for Action, ECOSOC, 2000, p. 34) "The role of planted forests … as sustainable and environmentally sound sources of renewable energy and industrial raw material should be recognized, enhanced and promoted." (UN Forest Principles, UN, 1992a, p. 482)
Frame 3: Forests for Indigenous Peoples/Local Communities	• Indigenous Peoples/Local Communities	"IFF recognized the critical importance of the rights of indigenous and local communities to participate in the conservation and management of all types of forests and forest biological resources." (IFF Proposals for Action, ECOSOC, 2000, p. 23) "Recognizing that indigenous people and forest-dependent people who possess TRFK could play an important role in sustainable forest management" (IPF Proposals for Action, ECOSOC, 1997, p. 13)

Frames	Parent Codes	Sample Quotations
Frame 4: Multifunctionality of forests	• Multifunctional forestry	"Their [planted forests] contribution to the maintenance of ecological processes, to offsetting pressure on primary/old-growth forest and to providing regional employment and development with the adequate involvement of local inhabitants should be recognized and enhanced." (UN Forest Principles, UN, 1992a, p. 482) "Urged countries to engage in raising awareness of the ecological, social, cultural and economic roles that planted and natural forests might fulfil in the rehabilitation and sustainable management of forests in environmentally critical areas" (IFF Proposals for Action, ECOSOC, 2000, p. 36)
Frame 5: Forests cradle, conserve, protect, and maintain biodiversity and wildlife.	• Buffer zones and ecological corridor • Ecologically significant • Forest biodiversity conservation • High levels of adaptation • Source of biodiversity • Wildlife management	"The natural ecosystems of forests, … contain most of the Earth's biodiversity." (Agenda 21 Chapter 15: CBD, UN, 1992c, p. 149) "Promote sustainable use of forest resources to enhance the conservation of forest biological diversity" (CBD COP Decision VI/22. Forest Biological Diversity, UNEP, 2002, p. 238)
Frame 6: Protective roles of forests	• Ecological balance restoration and maintenance • Environmental contributions • Protection functions	"The objective is to preserve, reinforce and restore the role of forests, in particular their protective role, by improving the resistance of forest ecosystems mainly by applying natural forestry techniques and preventing any utilization detrimental to forests …" (Alpine Convention, EU, 1996, p. 33) "In addition, many benefits [of forests], such as watershed and soil protection, the mitigation of natural disasters … are important to society as a whole." (IFF Proposals for Action, ECOSOC, 2000, p. 30)

Frames	Parent Codes	Sample Quotations
Frame 7: Forests contribute to climate change adaptation and mitigation.	• Carbon stocks • Climate change • Forests emit GHGs • GHG sinks and reservoirs	"Recognizing the ... contribution of forests to addressing climate change" (UN Forest Instrument, UN, 2007, p. 3) "Assess how the conservation and sustainable use of forest biological diversity can contribute to the international work relating to climate change." (CBD COP Decision VI/22. Forest Biological Diversity, UNEP, 2002, p. 235)
Frame 8: Forests for sustainable management	• Sustainable forest management • Sustainable forest utilization and production	"Forest resources and forest lands should be sustainably managed to meet the social, economic, ecological, cultural and spiritual needs of present and future generations." (UN Forest Principles, UN, 1992a, p. 481) "The Forum expanded the scope of attention to the … sustainable management of forest cover in environmentally critical areas, sub-humid, arid and semi-arid areas in tropical and temperate regions, mountain ecosystems, wetlands, coastal systems in particular mangroves and small islands, as well as trees outside forests." (IFF Proposals for Action, ECOSOC, 2000, p. 35)
Frame 9: Forests are vulnerable to threats.	• Affected by desertification and drought • Anthropogenic factors • Forest fires • Natural threats • Pollutants • Threatened • Vulnerable to climate change	"Pollutants, particularly air-borne pollutants, including those responsible for acidic deposition, that are harmful to the health of forest ecosystems at the local, national, regional and global levels should be controlled." (UN Forest Principles, UN, 1992a, p. 485) "Recognizing that poverty and demographic pressure are among the root causes of deforestation and forest degradation" (IPF Proposals for Action, ECOSOC, 1997, p. 8)
Frame 10: Forests are affected by trade and industries.	• Imports of forest products • International trade • Market access	"Trade is essential to meet such needs [forest goods and services], and international economic and trade policies may have serious impacts on the efforts of these countries

Frames	Parent Codes	Sample Quotations
	• Trade impacts on forests	to expand and rehabilitate their forest cover." (IFF Proposals for Action, ECOSOC, 2000, p. 15) "The improved management of forests can increase the production of goods and services and, in particular, the yield of wood and non-wood forest products, thus helping to generate ... additional value through processing and trade of forest products…." (Agenda 21 Chapter 11 Combating Deforestation, UN, 1992c, p. 98)

Based on our results, we distinguished seven of the reconstructed frames as forest ecosystem services (Frames 1-7), one frame on the need for sustainable forest management (Frame 8), and two frames as factors that affect forests (Frames 9-10). Though we had this distinction, they are still interconnected. We made these distinctions since they are apparent in the documents in which they show the benefits that we can derive from forests. These benefits consist of the provisioning, regulating, and supporting functions of forests. Additionally, the documents present that these benefits are affected by threats and trade and industries. Hence, forests need to be sustainably managed to maximize the forest ecosystem services and minimize the negative impacts of the said factors. Table 8 shows the summary of ten frames reconstructed and the parent codes that composed them.

Frame 1: Forests support socio-economic and cultural well-being.

The documents framed forests as supporting society's social, economic, and cultural well-being. This frame included quotations related to forests as livelihood, employment, income, recreation, heritage, and food security providers. This frame also encompassed poverty alleviation, social and economic development, and the contribution of forests to human needs and welfare. Notably:

> The survival of forests and their continued contribution to human welfare depends to a great extent on succeeding in this endeavour [i.e., promoting efficient utilization and assessment to recover the full valuation of the goods and services provided by forests, forest lands, and woodlands]. (Agenda 21 Chapter 11 Combating Deforestation, UN, 1992c, p. 98)

> Forests provide … livelihoods or jobs for hundreds of millions of people worldwide. (CBD Conference of the Parties [COP] Decision II/9. Forest and Biological Diversity, UN Environment Programme [UNEP], 1995, p. 14)

> Intergovernmental Forum on Forests (IFF) recognized that the demand for and supply of wood and non-wood products and services of forests will continue to form the basis for the contribution of forests to economic and social development, particularly for poverty eradication. (Report of the IFF on its Fourth Session [IFF Proposals for Action], UN Economic and Social Council [ECOSOC], 2000, p. 33

Frame 2: Forests provide wood and non-wood forest products.

Forests were framed as sources of wood and non-wood forest products. This frame covered quotations that showed forests as providing wood, fuelwood, energy, water, food, medicine, and fodder, among others. Similar to the work of Elomina & Pülzl (2021), this frame tackled the provisioning services that forests could provide. However, quotations that said forests are reservoirs and sinks for carbon, which did not directly say for climate change adaptation and mitigation, were also included in this frame. Inter alia:

> The role of planted forests … as sustainable and environmentally sound sources of renewable energy and industrial raw material should be recognized, enhanced and promoted. (Forest Principles: Non-legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests [UN Forest Principles], UN, 1992a, p. 482)

> Private forests presently account for about half of world wood production… (IFF Proposals for Action, ECOSOC, 2000, p. 34)

> Both sustainably managed natural forests and forest plantations, as components of integrated land-use that takes account of environmental and socio-economic

> concerns, fulfil a valuable role in meeting the need for forest products, goods and services, as well as … providing a reservoir for carbon. (Report of the Ad Hoc Intergovernmental Panel on Forests [IPF] on its Fourth Session [IPF Proposals for Action], ECOSOC, 1997, p. 9)

Frame 3: Forests for Indigenous Peoples/Local Communities (IPs/LCs)

This frame encapsulated the role of forests for Indigenous Peoples/Local Communities (IPs/LCs). This frame differed from the role of forests as support to socio-economic and cultural well-being since this was specific to the contribution of forests to IPs/LCs and as sources of Traditional Forest-Related Knowledge (TFRK). Quotations from this frame recognized the participation of IPs/LCs and the need to protect TFRK. Further, some socio-economic conditions were not considered traditional, hence the reconstruction of this different frame. To give some examples:

> IFF recognized the critical importance of the rights of indigenous and local communities to participate in the conservation and management of all types of forests and forest biological resources. (IFF Proposals for Action, ECOSOC, 2000, p. 23)

> The Convention on Biological Diversity addresses specifically the need to respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of [forest] biological diversity, as well as the need to protect and encourage customary use of biological resources in accordance with traditional cultural practices. (CBD COP Decision II/9. Forest and Biological Diversity, UNEP, 1995, p. 14)

> Recognizing that indigenous people and forest-dependent people who possess TRFK could play an important role in sustainable forest management (IPF Proposals for Action, ECOSOC, 1997, p. 13)

Frame 4: Multifunctionality of forests

Forests were framed as multifunctional. Though this frame might encompass other frames in the roles, functions, and values of forests, this differed since it depicted the social, economic, and environmental aspects all at once in a quotation. For instances:

> Urged countries to engage in raising awareness of the ecological, social, cultural and economic roles that planted and natural forests might fulfil in the rehabilitation and sustainable management of forests in environmentally critical areas (IFF Proposals for Action, ECOSOC, 2000, p. 36)

> Recognizing that sustainable forest management, as a dynamic and evolving concept, is intended to maintain and enhance the economic, social and environmental value of all types of forests, for the benefit of present and future generations (Non-legally Binding Instrument on All Types of Forests [UN Forest Instrument], UN, 2007, p.1)

> Their [planted forests] contribution to the maintenance of ecological processes, to offsetting pressure on primary/old-growth forest and to providing regional employment and development with the adequate involvement of local inhabitants should be recognized and enhanced. (UN Forest Principles, 1992a, p. 482)

Frame 5: Forests cradle, conserve, protect, and maintain biodiversity and wildlife.

This frame encapsulated quotations that framed forests as sources and habitats of biodiversity and the role of forests in the conservation, protection, enhancement, and maintenance of biodiversity, genetic resources, and wildlife. This frame also contained how the sustainable use of forests contributed to biodiversity conservation. Some examples are:

> The natural ecosystems of forests, … contain most of the Earth's biodiversity. (Agenda 21 Chapter 15 CBD, UN, 1992c, p. 149)

> The vital role of a types of forests in maintaining the ecological processes and balance at the local, national, regional and global levels through, inter alia, their role … as rich storehouses of biodiversity and biological resources and sources of genetic material for biotechnology products, … should be recognized. (UN Forest Principles, UN, 1992a, p. 482)

> Promote sustainable use of forest resources to enhance the conservation of forest biological diversity (CBD COP Decision VI/22. Forest Biological Diversity, UNEP, 2002, p. 238)

Frame 6: Protective roles of forests

Our documents framed forests as contributors to environmental protection, restoration, hence the protective roles of forests, e.g., soil and water protection, combating desertification, and flood control. In particular:

> The objective is to preserve, reinforce and restore the role of forests, in particular their protective role, by improving the resistance of forest ecosystems … (Convention on the Protection of the Alps [Alpine Convention], EU, 1996, p. 33)

> The maintenance of forest ecosystems is crucial … for the key role they play in global climate dynamics and bio-geochemical cycles (CBD COP Decision II/9. Forest and Biological Diversity, UNEP, 1995, p. 14)

> In addition, many benefits [of forests], such as watershed and soil protection, the mitigation of natural disasters … are important to society as a whole. (IFF Proposals for Action, ECOSOC, 2000, p. 30)

Frame 7: Forests contribute to climate change adaptation and mitigation.

This frame showed the role of forests in combating climate change. Forests were framed as emitters of GHGs and stocks of carbon and could be used as a contribution to mitigating climate change. Based on our analysis, the documents did not explicitly cite the role of forests for climate change adaptation and mitigation but mainly on the role of forests as carbon reservoirs and sinks, wherein climate change was not heavily mentioned. Most of the quotations under this frame were found in the United Nations Framework Convention on Climate Change (UNFCCC) documents, which presented the relationship of the forest sector as a climate change solution. Some example quotations are:

> Recognizing the … contribution of forests to addressing climate change (UN Forest Instrument, UN, 2007, p. 3)

> Assess how the conservation and sustainable use of forest biological diversity can contribute to the international work relating to climate change. (CBD COP Decision VI/22. Forest Biological Diversity, UNEP, 2002, p. 235)

> Estimate [carbon] emissions and removals resulting from these activities [i.e., land use, land-use change and forestry activities] and assess the potential contribution of these activities to the mitigation of climate change. (Report of the COP on its Sixteenth Session 1/CP.16 The Cancun Agreements: Outcome of the Work of the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention [The Cancun Agreements], UNFCCC, 2010, p. 28)

Frame 8. Forests for sustainable management

Our documents framed forests for sustainable management. This frame included quotations that explicitly said forests are for sustainable management and activities that promote or support sustainable forest management. Quotations from this frame are:

> Forest resources and forest lands should be sustainably managed to meet the social, economic, ecological, cultural and spiritual needs of present and future generations. (UN Forest Principles, UN, 1992a, p. 481)

> Recognizing that sustainable forest management, as a dynamic and evolving concept, is intended to maintain and enhance the economic, social and environmental value of all types of forests, for the benefit of present and future generations (UN Forest Instrument, UN, 2007, p. 2)

> The Forum expanded the scope of attention to the … sustainable management of forest cover in environmentally critical areas, sub-humid, arid and semi-arid areas in tropical and temperate regions, mountain ecosystems, wetlands, coastal systems in particular mangroves and small islands, as well as trees outside forests. (IFF Proposals for Action, ECOSOC, 2000, p. 35)

Frame 9: Forests are vulnerable to threats.

Forests were framed as vulnerable to threats and pressures, both natural and anthropogenic. Our documents depicted forests as affected by pollutants, fires, pests, and diseases; and threatened by land-use conversion, economic development, and climate change. Further, this frame was also comprised of quotations regarding forests as a fragile ecosystem. Notably:

> Pollutants, particularly air-borne pollutants, including those responsible for acidic deposition, that are harmful to the health of forest ecosystems at the local, national, regional and global levels should be controlled. (UN Forest Principles, UN, 1992a, p. 485)

> Recognizing that poverty and demographic pressure are among the root causes of deforestation and forest degradation (IPF Proposals for Action, ECOSOC, 1997, p. 8)

> The Forum recognized that forests in environmentally critical areas are especially susceptible to degradation and destruction resulting from human activities and from natural disturbances. (IFF Proposals for Action, ECOSOC, 2000, p. 35)

Frame 10: Forests are affected by trade and industries.

The documents framed forests, specifically the products derived therein, as being affected by trade and industries and their related policies. In this frame, forests were shown as influenced by trade to maximize their full benefits and yet might have detrimental effects on forests. Further, this frame incorporated the relationship between trade and sustainable forest management. In particular:

> Trade is essential to meet such needs [i.e., forest goods and services], and international economic and trade policies may have serious impacts on the efforts of these countries to expand and rehabilitate their forest cover. (IFF Proposals for Action, ECOSOC, 2000, p. 15)

> The improved management of forests can increase the production of goods and services and, in particular, the yield of wood and non-wood forest products, thus helping to generate … additional value through processing and trade of forest products … (Agenda 21 Chapter 11 Combating Deforestation, UN, 1992c, p. 98)

> The Panel acknowledged the potential positive relationship between trade in forest products and services and sustainable forest management. (IPF Proposals for Action, ECOSOC, 1997, p. 40)

6.2 Interactions among the reconstructed frames/policy documents

As previously discussed, this present study also enabled us to identify the synergies and trade-offs. Based on the literature review done in the first chapters of the present thesis, synergies are interactions or situations where progress in one goal favors or contributes to the progress of other goals, while trade-offs are interactions or situations

in one goal hinders or leads to adverse effects in another goal (Breuer et al., 2019; Pradhan et al., 2017). These definitions did not directly discuss the documents' synergies and trade-offs. Nevertheless, we posited in our study that synergies are situations where the roles of forests contribute to or enhance the situations of others; otherwise, there are trade-offs. Again, as described by Luukkanen et al. (2012), synergies are “win-win” scenarios (p. 338), and trade-offs are the opposite. Table 9 shows the summary of interactions among the frames identified. It is important to note that not all our documents presented synergy and trade-offs in the same way that not all interactions, conflicts, or overlaps were illustrated in our reconstructed frames.

Table 9

Summary of synergies and trade-offs observed among the frames

	Frame 1: Socio-economic & cultural well-being	**Frame 2: Wood & non-wood forest products**	**Frame 3: IPs/LCs**	**Frame 4: Multifunctional**	**Frame 5: Biodiversity Conservation**	**Frame 6: Protective Roles**	**Frame 7: Climate Change**
Frame 1: Socio-economic & cultural well-being		+ -	+	+	+	+	N/A
Frame 2: Wood & non-wood forest products	+ -		+ -	+	-	+ -	N/A
Frame 3: IPs/LCs	+	+ -		+	+	+	+
Frame 4: Multifunctional	+	+	+		+	+	+
Frame 5: Biodiversity Conservation	+	-	+	+		+	+
Frame 6: Protective Roles	+	+ -	+	+	+		+
Frame 7: Climate Change	N/A	N/A	+	+	+	+	

Legend: + (synergy); **–** (trade-off); **+ –** (synergy and trade-off); N/A – not applicable

On Frame 1: Forests support socio-economic and cultural well-being

This frame was found to have synergies with almost all the frames except for *Frame 2: Forests provide wood and non-wood forest products,* which had trade-offs. For instance, actors saw the uses and contribution of wood and non-wood forest products for

economic and social development. Yet, the increasing demand for these products may result to their exhaustion. As seen in the IFF Proposals for Action:

> [The] demand for and supply of wood and non-wood products and services of forests will continue to form the basis for the contribution of forests to economic and social development, particularly for poverty eradication. (ECOSOC, 2000, p. 33)

However, Agenda 21 iterates that:

> Forests worldwide have been and are being threatened by uncontrolled degradation and conversion to other types of land uses, influenced by increasing human needs … (UN, 1992c, p. 93)

A few in our documents exhibited synergies between this Frame 1 and *Frame 3: Forests for Indigenous Peoples/Local Communities (IPs/LCs)*. Most of the documents imparted the roles of forests for ecotourism, employment, source of income, or social and economic development, in general, without considering the participation of IPs/LCs. Albeit the UN Forest Instrument illustrates that the:

> [Enhancement of] access by households, small-scale forest owners, forest dependent local and indigenous communities, living in and outside forest areas, to forest resources and relevant markets [can] support livelihoods and income diversification … (UN, 2007, p. 7)

On Frame 2: Forests provide wood and non-wood forest products

Based on our analysis, this frame was observed to have both synergy and trade-off with *Frame 6: Protective roles of forests.* For one, the IPF Proposals for Action promotes the use of wood and non-wood forest products from the forests and recognizes that there is a need to manage these to help in combating desertification and other protective functions. As stated,

> Forest-related action aimed at combating desertification and mitigating the effects of drought should address the causes of those phenomena in an integrated manner, and should consider … the provision of fodder and fuelwood … (ECOSOC, 1997, p. 16)

The Panel also considered that most of the focus was on timber; ergo, the "soil and water protection functions [of forests]" were seldomly involved (ECOSOC, 1997, p. 30).

This frame was also found to have both synergy and trade-off with *Frame 3: Forests for Indigenous Peoples/Local Communities (IPs/LCs).* As one of the aims of the CBD:

> Recognize in particular the vital role that women in indigenous and local communities play in the … sustainable use and conservation of non-timber resources, and values (UNEP, 2002, p. 230)

Based on the documents of the CBD, the involvement of IPs/LCs in the sustainable use and conservation of forest resources could secure the role of forests in providing for these resources. Nevertheless, the encouragement of the participation of IPs/LCs sometimes resulted in forest degradation due to their demands for forest goods and services. As such, the CBD specifies to:

> Promote projects and activities that encourage the use and supply of alternative sources of energy to prevent forest degradation due to the use of firewood by local communities (UNEP, 2002, p. 239)

On Frame 3: Forests for Indigenous Peoples/Local Communities (IPs/LCs)

This frame was identified to have a synergy with *Frame 5: Forests cradle, conserve, protect, and maintain biodiversity and wildlife.* Based on our analysis, our documents, especially those relating to biodiversity, illustrated how the forests could promote the participation of IPs/LCs in biodiversity conservation. For instance, the CBD COP Decision VI/22 states that there is a need to:

> Encourage the conservation and sustainable use of forest biological diversity by indigenous and local communities through their development of adaptive management practices, using as appropriate traditional forest-related knowledge (UNEP, 2002, p. 240)

This frame similarly contributed positively to *Frame 7: Forests contribute to climate change adaptation and mitigation* as observed in the IPF Proposals for Action:

> The Panel recognized the importance of the services provided by forests, including … global climate regulation, and the potential for developing mechanisms to translate those values into monetary terms to encourage forest owners, forest dwellers, indigenous populations and local communities to conserve forests and manage them sustainably (ECOSOC, 1997, p. 35)

On Frame 4: Multifunctionality of forests and Frame 7: Forests contribute to climate change adaptation and mitigation

Both frames were found to have synergies with almost all the other frames concerning forest ecosystem services. First, this was because the multifunctionality of forests encompassed social, environmental, and economic aspects, which were evident in all our forest ecosystem services frames. Second, *Frame 7: Forests contribute to climate change adaptation and mitigation* was primarily observed in the UNFCCC documents wherein the positive relationship between forests and climate change was presented.

On Frame 6: Protective roles of forests

This frame was identified to have a synergy with *Frame 2: Forests provide wood and non-wood forest products*, *Frame 3: Forests support socio-economic and cultural well-being*, and *Frame 5: forests cradle, conserve, protect, and maintain biodiversity and wildlife*. In particular, the activities that lead to environmental protection can support the increase of supply of forest products and services for humans and biodiversity. This synergy was found in one quotation in the CBD:

> Promote activities that minimize the negative impacts of forest fragmentation on forest biodiversity, including afforestation, forest restoration, secondary forest and plantation management, and agroforestry, watershed management and land use planning aimed at providing a combination of economic and environmental goods and services to stakeholders (UNEP, 2002, p. 234)

As per our analysis of the document, we probed that those activities, i.e., afforestation, forest restoration, and plantation establishment, among others, could contribute to the protection of biodiversity and the environment. These activities would eventually lead to realizing the function of the forest as a source of goods and services from which society could benefit.

Another synergy with this frame was with *Frame 7: Forests contribute to climate change adaptation and mitigation,* as the UNFCCC shows:

> Also recognizing that policy approaches and positive incentives for mitigation actions in the forest sector, as referred to in decision 1/CP.16, paragraph 70, can promote … ecosystem resilience (UNFCCC, 2011, p. 12).

The activities in the decision 1/CP.16 paragraph 70 of the Cancun Agreements include: reducing emissions from deforestation; reducing emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks (UNFCCC, 2010, p. 12). These previously mentioned activities could show support to achieving ecosystem resilience.

6.3 Areas of fragmentation and overlaps

The literature review on fragmentation and overlaps on institutions aided in identifying related areas in the policy documents at hand. By analyzing the reconstructed frames, interactions among these frames, and the various subject areas in the SDG 15.1-related international commitments/policy documents/legal agreement texts, we observed where fragmentation and overlaps were. The reconstructed frames showed how the documents framed the roles of forests. However, some of the frames were not widely recognized in other policy documents that should support the implementation of SDG 15.1. We determined the fragmented areas by examining their presence or absence in the policy documents. This step enabled us to analyze which frames were addressed in our forest-focused, biodiversity-focused, and climate change-focused documents.

Our documents recognize *Frame 8: Forests for sustainable management.* Since it was a broad subject, we observed fragmentation and overlaps with this frame. On the one hand, sustainable utilization, as a strategy for sustainable forest management, was primarily addressed in the biodiversity-focused policies compared with the forest-focused policies. On the other hand, the management aspects were widely found within the forest-

focused policies. The inclusion of cooperation, investments, and research in sustainable forest management also showed overlaps within the forest-focused policies but rarely on biodiversity- and climate change-focused policies. The latter focused more on joint mitigation and adaptation approaches in sustainable forest management which were seldomly mentioned in other documents.

The *Frame 2: Forests provide wood and non-wood forest products* signified various types of these products. We considered these as fragmented areas in our SDG 15.1-related international commitments/policy documents/legal agreement texts since the biodiversity- and climate change-focused policies did not encompass the use of wood-based energy. Wood-based energy was primarily presented in forest-focused policies. The absence of wood-based energy was predominantly in the case of the climate change-focused policies. Though these documents recognized the role of forests as sources of timber, they did not explicitly promote the use of wood-based energy as significant in addressing climate change.

The *Frame 7: Forests contribute to climate change adaptation and mitigation*, which was mostly found in the climate change-focused policies, concentrated on policy approaches and financial mechanisms; hence this frame provided us with several overlaps. Frame 7 was also highly fragmented as very few climate change-focused policies incorporated the role of forests as carbon sinks and reservoirs. It was not often addressed in other SDG 15.1-related international commitments/policy documents/legal documents agreement texts. Carbon sinks and reservoirs were mainly presented in the forest- and biodiversity-focused policies.

Fragmentation was observed on *Frame 5: Forests cradle, conserve, protect, and maintain biodiversity and wildlife* since this was not present in our climate change-focused policies. The biodiversity-focused policies did not address wildlife management and establishing buffer zones and ecological corridors for biodiversity conservation, which were addressed in the forest-focused policies. Similarly, biodiversity conservation through the establishment of protected areas was rarely incorporated in the forest-focused policies.

Frame 6: Protective roles of forests was also fragmented within SDG 15.1-related international commitments/policy documents/legal agreement texts, as this frame was mostly in forest-focused policies. It included the roles of forests for soil and water protection, flood control, and mitigation of natural disasters. Biodiversity-focused policies depicted the protective role of forests only for climate regulation and ecosystem services restoration in general. The biodiversity-focused policies rarely tackled the role of forests in combating fragmentation and desertification. This frame was only addressed in one to two documents; ergo, it was highly fragmented.

Other fragmented and overlapping areas included *Frame 3: Forests for Indigenous Peoples/Local Communities (IPs/LCs)*. This frame was never mentioned in our climate change-focused documents but was the second most talked about topic in biodiversity- and forest-focused documents. Thus, this frame was highly overlapping.

6.4 Frame Dominance

Upon analyzing the reconstructed frames, we also uncovered frames that were dominant and downplayed. It is important to remember that our analysis of frame dominance and downplayed frames were not meant to be exhaustive, ergo, we only discerned the number of times the reconstructed frames materialized within the 28 SDG 15.1-related international commitments/policy documents/legal agreement texts and across the three policy domains, i.e., forest-focused, biodiversity-focused, and climate change-focused policies, similar to the methodology by Elomina & Pülzl (2021). This analysis assisted us in determining which frames were given more importance in the documents that also supported our analysis in why some frames were fragmented or exhibited overlaps.

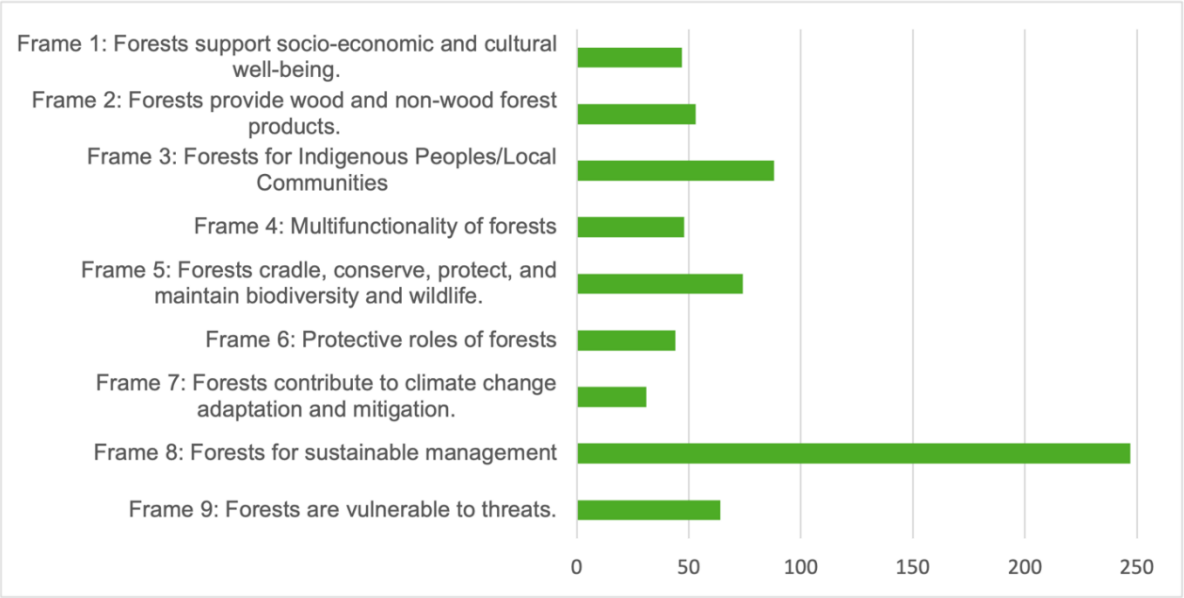

Figure 4. *Number of quotations from each frame within the policy documents*

For the determination of frame dominance, we did not incorporate *Frame 10: Forests are affected by trade and industries* since this frame was only apparent in two documents within the forest-focused policies. As seen in Figure 4, the results of this present study showed that *Frame 8: Forests for sustainable management* was the dominant frame in the 28 mapped SDG 15.1-related international commitments/policy documents/legal agreement texts. In all of the documents, we observed several quotations regarding the need for forests to be sustainably managed. Our results entailed that, compared with other frames, *Frame 8: Forests for sustainable management* was the most important aspect that needed to be addressed in the implementation of SDG 15.1. In contrast, *Frame 7: Forests contribute to climate change adaptation and mitigation* was not widely addressed in all the documents. But we did not consider this frame as the downplayed one since it was only evident in at most three forest- and biodiversity-focused policies combined. With this, the downplayed frames in our study were *Frame 1: Forests support socio-economic and cultural well-being; Frame 4: Multifunctionality of forests*; and *Frame 6: Protective roles of forests*. These three frames were apparent in the forest-focused policies but seldomly in biodiversity-focused policies, and only *Frame 1: Forests support socio-economic and cultural well-being* was observed once in the climate change-focused policies. Though the documents addressed these three downplayed frames, they were not given enough focus as roles of forests.

We also looked into the dominant and downplayed frames across the three policy domains of forest, biodiversity, and climate change (Figure 5). The most quotations were observed in the seven forest-focused policies with 512 quotations. This is followed by the ten biodiversity-focused policies with 137 quotations then by the ten climate change-focused policies with only 42 quotations. It is also important to note that similar with the analysis of frame dominance within the documents, we did not include *Frame 10: Forests are affected by trade and industries* since this frame was only observed in forest-focused policies within at most two policies.

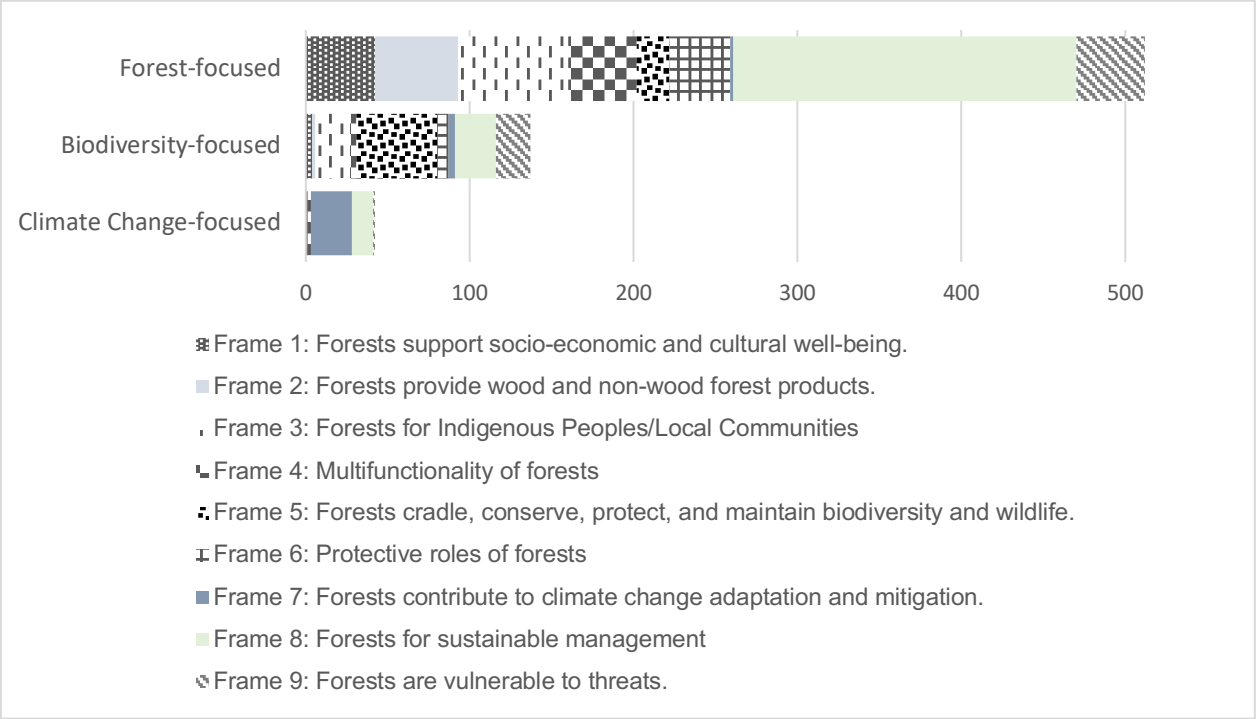

Figure 5. *Number of quotations from each frame per policy domains*

Based on the results, the dominant and downplayed frames differed in each policy domain. The dominant frame in the forest-focused policies was *Frame 8: Forests for sustainable management* while the downplayed frame is *Frame 6. Protective roles of forests.* For biodiversity-focused policies, the dominant frame is *Frame 5: Forests cradle, conserve, protect, and maintain biodiversity and wildlife* while the downplayed frame was *Frame 2: Forests provide wood and non-wood forest products.* For the climate change-policies, the dominant frame is *Frame 7: Forests contribute to climate change adaptation and mitigation*. We did not consider any downplayed frames in the climate change-

focused policies because there were only 42 quotations observed with some frames not even mentioned once and some climate change documents did not incorporate any of the ten frames. The summary of the dominant and downplayed frames both within 28 documents and across the three policy domains were illustrated in Table 10.

Table 10

Summary of dominant and downplayed frames

Frame Dominance	Within the 28 policy documents	Forest-focused policies	Biodiversity-focused policies	Climate Change-focused policies
Dominant Frames	Frame 8: Forests for sustainable management	Frame 8: Forests for sustainable management	Frame 5: Forests cradle, conserve, protect, and maintain biodiversity and wildlife	Frame 7: Forests contribute to climate change adaptation and mitigation
Downplayed Frames	Frame 1: Forests support socio-economic and cultural well-being Frame 4: Multifunctionality of forests Frame 6: Protective roles of forests	Frame 6: Protective roles of forests	Frame 2: Forests provide wood and non-wood forest products	N/A

7. Discussion

7.1 Uncovering the reconstructed frames

To restate, SDG 15.1 entails the "conservation, restoration, and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains, and drylands, in line with obligations under international agreements" (UN, 2015b, p. 24). The present study centers on forests, and the frame analysis provides an avenue to reveal how the SDG 15.1-related international commitments/policy documents/legal agreement texts frame the roles of forests and uncover the interactions, fragmentation, and overlapping areas among these policies and related frames. We have also looked at the dominant and downplayed frames to assist us in the analysis.

We have recognized that frames are rooted in the policy makers' "belief, perception, and appreciation" (Schön & Rein, 1994, p. 23). Numerous actors and institutions with multifaceted interests and priorities have formulated the documents for distinct issue areas. The frames show us that forests provide various ecosystem services, and at the same time, forest stakeholders must manage them sustainably to maximize their full benefits. Schön & Rein (1994) conveyed that "interests are shaped by frames and frames may be used to promote interests" (p. 74). As observed in the documents, climate change-, biodiversity-, and forest-focused policies express the roles of forests depending on their respective policy domains that also depict as their dominant frames. In particular, we have reconstructed the *Frame 8: Forests for sustainable management,* which is the dominant frame in the forest-focused policies; *Frame 5: Forests cradle, conserve, protect, and maintain biodiversity and wildlife,* which is the dominant frame in the biodiversity-focused policies; and *Frame 7: Forests contribute to climate change adaptation and mitigation*, which is the dominant frame in the climate change-focused policies.

Correspondingly, frame analysis enables us to "explore and make sense of people's multiple understandings of different situations and phenomena" (Beland Lindahl,

2008, p. 68), which is why we have found these areas in the SDG 15.1-related international commitments/policy documents/legal agreement texts. Because of these numerous interpretations of how policymakers address forests, we detect ambiguities and uncertainties in our documents. Rein & Schön (1996) stated that these are possible since "same beliefs and meanings can be consistent with different courses of action and attitudes" (p. 90). Further, the views and perceptions of the institutions stem from their "socio-political, economic, or ecological point of views or local or global perspectives" (Eikermann, 2015, p. 21). A similar argument came from earlier studies by Bateson (1954), in which Dewulf et al. (2009) cited that framing is employed when there are ambiguities on "how to interpret ongoing interactions" (p. 158). To illustrate briefly, forest- and biodiversity-focused policies acknowledge forests as carbon sinks and reservoirs. However, the SDG 15.1-related international commitments/policy documents/legal agreement texts seldomly depict this role in addressing climate change. The documents only recognize this role as one of the benefits that forests can provide, and they regard forests as carbon stocks without explicitly stating their contribution to climate change adaptation and mitigation. We then interpret this as policy documents that recognize the role of forests as carbon sinks and reservoirs, may be a solution for combatting climate change.

7.2 Making Sense of the Frames: Synergies and Trade-offs

Frame analysis allows us to reconstruct frames on the roles of forests and determine where these frames show synergy, trade-offs, fragmentation, and overlaps. As discussed before, synergies and trade-offs are situations that enhance and undermine the others, respectively. The documents do not explicitly discuss the specific areas in which these interactions or situations occur. We see these interactions as ambiguous or incoherent in that they differ in every international commitment/policy document/legal agreement text, and we can interpret them in numerous ways. One example is between *Frame 7: Forests contribute to climate change adaptation and mitigation and Frame 2: Forests provide wood and non-wood forest products.* Based on the analysis, the two frames do not have trade-offs, which are unlikely due to possible competition for resources (Elomina & Pülzl, 2021).

Nevertheless, this lack of trade-offs between these frames may reflect how the policy documents only recognize the specific role of forests as carbon sinks and reservoirs and as sources of wood, renewable energy, water, food, and medicine, among others. The SDG 15.1-related international commitments/policy documents/legal agreement texts do not indicate the possible trade-offs that may occur during implementation as they only confront the general relationships between the two frames. This situation is likely to occur as policy documents do not usually regard the inherent drawbacks in policy implementation (Elomina & Pülzl, 2021). Though we do not observe trade-offs between these two frames, it shows inconsistencies among the documents. Van Asselt's (2007) study supports this situation by stating that policymakers rarely deal with climate change interactions with others. As we have previously mentioned in uncovering the frames, the inconsistencies result from varied views on how we should utilize forests that lead to prioritization according to the interests of actors or institutions (Eikermann, 2015).

Another point worth taking is that *Frame 3: Forests for Indigenous Peoples/Local Communities (IPs/LCs)* infrequently show synergy with *Frame 1: Forests support socio-economic and cultural well-being.* These few interactions are surprising since the IPs/LCs are some of the significant groups that depend on the forests for survival. The role of forests in supporting spiritual and cultural well-being should primarily include the participation of the IPs/LCs (Eikermann, 2015). However, the policy documents only considerably imply and express *Frame 1: Forests support socio-economic and cultural well-being* to contribute to *Frame 3: Forests for Indigenous Peoples/Local Communities (IPs/LCs). Frame 1: Forests support socio-economic and cultural well-being* includes those about livelihood, employment, income, recreation, heritage, and food security. These matters support the IPs/LCs, but if we are to succeed in supporting the social and economic aspects of sustainability, we should acknowledge in the policies the participation of IPs/LCs and their rights (ibid, p. 25) for more coherent actions.

Meanwhile, we discover that *Frame 2: Forests provide wood and non-wood forest products* has trade-offs with most of the frames, such as *Frame 1: Forests support socio-economic and cultural well-being, Frame 6: Protective roles of forests,* and *Frame 5: forests cradle, conserve, protect, and maintain biodiversity and wildlife.* Specifically,

Agenda 21 recognizes that increasing human needs threaten forests (UN, 1992c). However, the IFF Proposals for Action encourage using wood and non-wood forest products (ECOSOC, 2000). Sayer et al. (2019) supports this argumentation, wherein they pointed out that since forests can enhance the well-being of society, their capability to provide for various goods and services may be exhausted, thus may result in degradation. This situation is mainly in the case of the growing population that relies on forests. Due to this, more pressure on forests may negatively affect livelihoods and human health. The UN (2019) explicitly highlights that land degradation still results in continued biodiversity loss. This is also why the *Frame 2: Forests provide wood and non-wood forest products* may undermine *Frame 5: forests cradle, conserve, protect, and maintain biodiversity and wildlife* and *Frame 6: Protective roles of forests.*

7.3 Fragmentation and Overlaps

We have understood that frame analysis can be a tool to identify fragmented areas and convert them into "a structured and meaningful whole" (Van Gorp, 2001, p. 5). Though the literature on fragmentation and overlaps covers institutions, it still offers arguments and considerations for discussion regarding the fragmented areas. The relevant literature also suggests that the notion of policy coherence is the main concern in determining these fragmented areas. Thus, we assumed that incoherent policies lead to fragmentation, and we can see this situation in *Frame 2: Forests provide wood and non-wood forest products; Frame 5: forests cradle, conserve, protect, and maintain biodiversity and wildlife; Frame 6: Protective roles of forests; Frame 7: Forests contribute to climate change adaptation and mitigation;* and *Frame 8: Forests for sustainable management*.

As mentioned before, the SDG 15.1-related international commitments/policy documents/legal agreement texts have shown ambiguities and inconsistencies that led to incoherent policies. Due to a number of regulations addressing SDG 15, they account for the multiple understandings of the roles of forests that result in fragmentation (Rodriguez Fernández-Blanco et al., 2019, as cited in Giessen, 2013). For instance, the climate change-focused policies do not incorporate *Frame 2: Forests provide wood and non-wood forest products*, which we can mostly find in the forest-focused policies, or *Frame 5:*

forests cradle, conserve, protect, and maintain biodiversity and wildlife, which the biodiversity-focused policies promote. One of the highly fragmented areas is in *Frame 7: Forests contribute to climate change adaptation and mitigation*. Climate change-focused policies present the ability of the forest to sequester carbon, but forest-focused policies rarely refer to the roles of forests as carbon sinks and reservoirs. As we have discussed before, the forest- or biodiversity-focused policies did not indicate the role of forests in addressing climate change. This situation may lead to policy incoherency wherein the "policies [have] contradicting goals and requirements" (Visseren-Hamakers, 2015, p. 138).

Likewise, we have observed that *Frame 6: Protective roles of forests* is fragmented. Forest-focused policies promote the use of the forest for soil and water protection, flood control, and mitigation of natural disasters. Per contra, the biodiversity-focused policies only acknowledge the role of forests in combating habitat fragmentation and desertification. Though these roles may reinforce each other, as regulating water and flood can contribute to minimizing desertification (FAO, 2011), the biodiversity-focused policies rarely recognize these interactions. This example again provides incoherency since different policies promote the different roles of forests.

Another point worth taking is *Frame 8: Forests for sustainable management* which exhibits fragmentation. Not all provisions in the SDG 15.1-related international commitments/policy documents/legal agreement texts incorporate sustainability in forest management. FAO (2011) recognizes that degradation is most likely to materialize if management strategies are marginal. The SDG 15.1, which primarily tackles the forest regime, requires sustainable management since it involves the social, economic, and environmental dimensions affecting forests. Although sustainable forest management is a holistic concept, its notion should not only be restricted to some forests functions (Tegegne et al., 2018). Sustainable forest management is not just sustainable utilization or joint mitigation approaches, which our biodiversity- and climate change-focused policies and related frames primarily promote. The social, economic, and environmental dimensions provide us with various areas we can employ to succeed in the conservation, restoration, and sustainable use of terrestrial and inland freshwater ecosystems.

However, the incoherency of the notion of sustainable forest management stems from the arguments apropos of the concept of sustainable development. Happaerts & Bruyninckx (2014) explained that the dogma and implementation of sustainable development had demonstrated arbitrary positions. While critiques have accepted the definition of sustainable development (Happaerts & Bruyninckx, 2014) as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (UN, 1987, p. 37), the premise of the three pillars of sustainable development is where the challenge resides (Happaerts & Bruyninckx, 2014). The Brundtland Report explicitly states that:

> The goals of economic and social development must be defined in terms of sustainability in all countries … Interpretations will vary [emphasis added], but must share certain general features and must flow from a consensus on the basic concept of sustainable development and on a broad strategic framework for achieving it. (UN, 1987, p. 37)

This account, as Gendron & Revéret (2000) mentioned, "legitimates [the] actions[9]" of different countries implementing sustainable development (p. 111). Hence, even the concept of sustainable development is subject to multiple interpretations (Happaerts & Bruyninckx, 2014), resulting in inconsistencies and incoherencies in policies.

The fragmentation in *Frame 8: Forests for sustainable management* is somewhat similar to *Frame 5: Forests cradle, conserve, protect, and maintain biodiversity and wildlife.* The biodiversity-focused policies highlight *Frame 5: Forests cradle, conserve, protect, and maintain biodiversity and wildlife*, hence, the presence of this frame in biodiversity-focused policies is not surprising. Nevertheless, we reiterate that SDG 15.1 involves social, economic, and environmental dimensions. If the forest- or climate change-focused policies rarely tackle *Frame 5: Forests cradle, conserve, protect, and maintain biodiversity and wildlife*, this endeavor will remain a challenge. Coherent policies need to

[9] Translated from French to English

have “[a] systematic promotion of mutually reinforcing policy actions across government departments and agencies creating synergies towards achieving the defined objective” (OECD, 2001, p. 90). If *Frame 8: Forests for sustainable management* is not widely evident in other policy domains in the same manner that other policy domains do not explicitly promote *Frame 5: Forests cradle, conserve, protect, and maintain biodiversity and wildlife*, these frames will remain fragmented. Also, as sustainable development is a concept with multiple interpretations, it is not surprising that these vary in each policy domain.

Similarly, the present frame analysis enables us to identify overlapping frames. As discussed, the SDG 15.1-related international commitments/policy documents/legal agreement texts express the multiple understanding of policymakers that do not just result in ambiguities and inconsistencies but also overlapping areas. According to Rosendal (2001), overlaps are not all disadvantageous since actors or institutions formulate policies based on congruent principles that often generate “reinforcing (positive) or complementary (neutral) regulations” (pp. 97-98). In particular, the forest- and biodiversity-focused policies promote *Frame 3: Forests for Indigenous Peoples/Local Communities (IPs/LCs)* in *Frame 5: Forests cradle, conserve, protect, and maintain biodiversity and wildlife* and *Frame 8: Forests for sustainable management*. The analysis shows that the IPs/LCs, as the primary group residing in forests, should be the main actors in ensuring the sustainable use of forest resources. This overlap with the frames stresses the importance of the participation of IPs/LCs in forestry matters.

In addition, we found that the institutional and financial mechanisms in *Frame 8: Forests for sustainable management* are overlapping, especially in the forest-focused policies. Since these documents address SDG 15.1, the presence of these overlaps is not surprising. This situation is similar to the policy approaches and financial mechanisms in *Frame 7: Forests contribute to climate change adaptation and mitigation* that are overlapping in the climate change-focused policies. Similar to the study of Ohler (2017), overlaps in these frames augment rather than undermine each other.

Meanwhile, we have understood that some policies can lead to redundancies wherein they contribute to the same purpose but result in lacunae if viewed from a broader perspective (Cejudo & Michel, 2017). We have also observed this in *Frame 8: Forests for sustainable management* wherein other forest management strategies may incite conflict during implementation. In particular, Agenda 21 encourages the:

> [Maintenance of] existing forests through conservation and management, and sustain and expand areas under forest and tree cover … through the conservation of natural forests, protection, forest rehabilitation, regeneration, afforestation, reforestation and tree planting … (UN, 1992c, p. 135)

However, the UN Forest Principles indicate that:

> Efforts to maintain and increase forest cover … should be undertaken in ecologically, economically and socially sound ways through the rehabilitation, reforestation and re-establishment of trees and forests … as well as through the management of existing forest resources. (UN, 1992a, p. 483)

We assume that this statement from the UN Forest Principles incorporates sustainable forest management in maintaining and increasing forest cover due to the inclusion of the three pillars of sustainability. The two provisions may not be directly in conflict with each other. But since the concept of sustainability is subject to interpretations, sustainable forest management, which the forest- and biodiversity-focused policies encourage, may lead to issues on the ground when the general management of forests is only in question.

7.4 Dominant and Downplayed Frames

We have seen in the results that the dominant and downplayed frames within the 28 policy documents and across the policy domains vary. These frames show what the policy domains or documents give more focus. For the 28 SDG 15.1-related international commitments/policy documents/legal agreement texts, the dominant frame is *Frame 8: Forests for sustainable management.* This result confirms that the documents that we mapped are related to SDG 15.1 since they promote the conservation, protection, and sustainable use of forests, which are the goals of sustainable forest management. In essence, the documents, such as the IPF Proposals for Action, IFF Proposals for Action, and UNFF, among others, were formulated to address sustainable forest management (Tegegne et al., 2018). From the 1987 Brundtland Report up to the development of the Agenda 2030 in 2015, forest-related international commitments/policy documents/legal agreement texts has embedded the concept of sustainable forest management (ibid, p. 3). Hence, the dominance of *Frame 8: Forests for sustainable management* is not surprising. What is noteworthy is the downplayed *Frame 4: Multifunctionality of forests.* The notion of sustainable forest management encompasses the social, economic, and environmental aspects of forests. Yet, the documents only referred to these three pillars of sustainability as general statements. According to Hoogstra-Klein et al. (2017), the multifunctionality concept has somewhat waned its essence due to the introduction of the idea on nature conservation, which was given focus during the Rio Declaration in 1992 and the emergence of biodiversity-related international commitments such as the CBD. In the CBD documents of this present study, only the CBD COP Decision II/9 on Forests and Biological Diversity cited *Frame 4: Multifunctionality of forests.* In addition, the multifunctionality of forests requires “integration of different functions” (ibid, p. 251). This integration can render the multifunctional concept adaptable to local situations and demands on forests.

The dominant and downplayed frames across the policy domains also vary but it is not surprising that the policy domains give more importance to their respective frames. It is worth noting though that even the climate change-focused policies, with only 42 quotations, referred to *Frame 8: Forests for sustainable management.* This is possible

because part of the climate change solution is the joint mitigation and adaptation approaches for sustainable forest management, which are necessary mainly for the role of forests as carbon sinks and reservoirs (UNFCCC, 2011, 2013, 2015). In fact, the IPCC Special Report on Climate Change and Land (IPCC, 2020) mentions that sustainable forest management can help in minimizing the impacts of climate change. Sustainable forest management is a way to maintain and enhance carbon stocks and sinks and reduce land degradation. Albeit the presence of *Frame 8: Forests for sustainable management* in climate change-focused policies, forest-focused policies very seldomly mentions *Frame 7: Forests contribute to climate change adaptation and mitigation* since the latter is not specifically stated as such but only as the role of forests as carbon sinks and reservoirs. Nevertheless, we understand that this role of forests is part of climate change solution.

In relation to the downplayed frames, *Frame 6: Protective roles of forests* is the downplayed one in the forest-focused policies. This is partially because the quotations in *Frame 6: Protective roles of forests* are primarily evident in the introductory parts of the policies that are only minimal and are only depicted as challenges that need to be addressed by the policies. Another possible reason is that the protective roles of forests is mainly dealt at the local level and depend on the countries' strategies (Elomina & Pülzl, 2021).

8. Conclusion

We have conducted the present study to understand how the SDG 15.1-related international commitments/policy documents/legal agreement texts framed the roles of forests. We employed frame analysis to reconstruct frames and identify the synergies, trade-offs, overlaps, and areas of fragmentation. The results of the study presented 10 frames that entail the different perceptions and beliefs on the roles of forests in SDG 15.1-related documents. The interactions among the reconstructed frames present ambiguities and inconsistencies as the specific areas where these occurred were not explicitly stated in the documents. In a similar manner, overlaps and fragmented areas were observed as the SDG 15.1-related policies encompass a wide range of regulations that resulted to multiple understandings on the roles of forests. Further, the analysis lent as an opportunity to uncover frame dominance. We found out that *Frame 8: Forests for sustainable management* receive more attention in the policies. Though the policies address several roles of forests, they give more focus on the need for sustainable forest management. This is understandable since the documents concerning SDG 15.1 addresses the conservation, protection, and sustainable use of forests. However, if the dominant frames demonstrate contradicting ideas or if the downplayed frames do not have equal footing in the policies, there will always be trade-offs and it will be a challenge to attain the goals and address gaps in the implementation of SDG 15.1.

In the case of Austria, as one of the 193 member states that committed to implement the SDGs, the country recognized that it needs to embark upon various sectors, stakeholders, and administrations to realize the success of the Global Framework (OECD, 2016). Since 2016, Austria has incorporated the SDGs in their national and state frameworks and strategies (Austrian Federal Chancellery, 2020). However, the inclusion of the 17 SDGs requires coherence and coordination among the actors to address overlapping and ineffective policies (FAO et al., 2018). Hence, Austria is one of the countries that have been in the pursuit of “policy coherence and an enabling environment for sustainable development at all levels and by all actors” (OECD, 2016, p. 15). As Cejudo & Michel (2017) pointed out, the notions of coherence, coordination, together with integration, must materialize in the policies and on-the-ground implementation of the

SDGs to achieve their common objectives. Nevertheless, the non-legally binding nature of the SDG-related policies opened an opportunity for countries, such as Austria, to prioritize concerns that they deem more relevant in the country's situation and contribution to solve a bigger problem. As mentioned in the Austria's first Voluntary National Review – Report on the Implementation of the SDGs (2020), the country's implementation of Agenda 2030 from 2018-2019, including their plans of actions, focused on digitalization; women, youth and 'leaving no one behind'; and climate action and adaptation to climate change (Austrian Federal Chancellery, 2020, p. 8). Further, Austria's development cooperation for implementing the Agenda 2030 prioritizes combating poverty; creation of sustainable economic system; protection and preservation of the environment; promotion of peace and security; building of inclusive societies; and supporting and assisting women (ibid, p. 22). This example of prioritization illustrates what Schön & Rein (1994) discussed wherein actors have multifaceted interests and priorities that shape policies or strategies.

When we look at the reconstructed frames vis-à-vis the Austria's 2020 Voluntary National Review for the implementation of Agenda 2030, the roles of forests that was primarily emphasized are related to *Frame 7: Forests for climate change adaptation and mitigation.* This is because one of Austria's three focused areas for implementing Agenda 2030 is climate action which also suggests that, currently, the main concern of Austria is addressing SDG 13 (Climate Action). Nevertheless, we posit that Austria recognizes the significance of the role of forests as carbon storage as a way to adapt to and mitigate climate change. Meanwhile, in the SDG 15.1-related policies, we uncovered that *Frame 7: Forests for climate change adaptation and mitigation* did not explicitly cite the role of forests for climate change adaptation and mitigation but as carbon reservoirs and sinks. This is somewhat opposite in the case of Austria wherein the role of forests for climate change adaptation and mitigation through storage of carbon in forest soils is specifically recognized.

We also observed that in addressing climate change, Austria involves the use of forest biomass for energy source (Austrian Federal Chancellery, 2020, p. 51). This is part of the country's Bioeconomy Strategy which its concept is not tackled in the SDG 15.1-related policies. This is mainly because these policies were formulated in the earlier years

when bioeconomy has yet to be widely proliferated. Albeit the role of forests as sources of energy in the SDG 15.1-related policies is indicated in *Frame 2: Forests provide wood and non-wood forest products* and not as part of *Frame 7: Forests contribute to climate change adaptation and mitigation* in which how Austria sees it.

In addition, the results of our study show that *Frame 6: Protective roles of forests* mostly involves soil and water protection, combating desertification, and flood control, among others. Yet, there are other protective functions of forests that the SDG 15.1-related policies did not express. For instance, most of the forests in Austria are found in mountainous areas that these forests provide protection from avalanches, rockfalls, and other natural hazards (FOREST EUROPE, 2020, p. 153). Hence, Austria is one of the countries that acknowledged the need to introduce policies that would allow for the protection of hazard-prone areas, including inhabited sites and infrastructure (ibid, p. 153). Austria is also one of the countries that have already allocated forest areas specifically to protect these infrastructure, inhabited areas, and managed natural resources (ibid, p. 153).

With all the examples presented above, it is apparent that the reconstructed frames are not widely depicted in Austria's implementation of SDG 15.1. This shows that even if countries committed to implement the SDG, due to the non-legally binding nature of the policies, countries have more leeway on how they will achieve their objectives. However, we have shown that contested areas are present in the policies and countries are circumventing these to maximize the synergies. For instance, Austria still recognizes the necessity of *Frame 6: Protective roles of forests* though this is downplayed in the documents. Another is *Frame 7: Forests contribute to climate change adaptation and mitigation*, which is heavily promoted in Austrian strategies. This goes to show that downplayed frames can contribute to the achievement of SDG 15.1, and it is in the responsibilities of countries on how they will employ them.

As a whole, the Agenda 2030 is an answer for "eradicating poverty in all its forms and dimensions, [which is the] greater global challenge and an indispensable requirement for sustainable development" (UN, 2015b, p. 1). This common complex problem is what

the policies intend to undertake, whether they explicitly express it or not. We have understood that the documents' contested and fragmented areas result from incoherent policies. The mere presence of trade-offs that we have uncovered renders the policies problematic to carry out in practice, especially on the ground. These situations also result from a lack of integration and coordination among the actors or institutions involved in formulating Agenda 2030 (Langou et al., 2020).

To this end, we have uncovered that the SDG 15.1-related international commitments/policy documents/legal agreement texts express multiple understandings of the roles of forests that can be subjected to various interpretations of countries. Also, not all roles of forests are given equal importance, as evidence in the analysis of frame dominance. However, our frame analysis is an opportunity for further cognizance for countries to address the fragmented nature of Agenda 2030. Understanding the varying frames, their interactions and contested areas, and the dominant or downplayed frames, can be useful as possible starting points for policymakers in making sense of forests' roles in the policies, and thus guide them to ensure synergies and positive divergent viewpoints for the achievement of SDG 15.1. Austria, in particular, can employ the use of frames to promote the social, economic, and environmental aspects of forests. This can also be used in the development of strategies for the country's implementation of SDG 15.1 by looking at how the roles of forests are addressed in the policies, make use of available synergies, and confront the contested areas. Though there are studies related to SDG 15, there is still not enough research on the underlying frames on forest-related policies in SDG 15. Ergo, future studies regarding this endeavor will be beneficial for countries such as Austria to raise their awareness on the importance of 'making sense' of the roles of forests and provide for strengthened coordination and coherent actions.

9. References

Ambroise, L., Abildtrup, J., & Pülzl, H. (2021). Analysis of French forest policy in the context of ecosystem services: From the national to the regional level. *Environmental Policy and Governance.* Retrieved from https://doi.org/10.1002/eet.2008

Austrian Federal Chancellery. (2020). *Austria and the 2030 Agenda Voluntary National Review – Report on the Implementation of the Sustainable Development Goals.* Retrieved from https://sustainabledevelopment.un.org/content/documents/26511 VNR_2020 _Austria_Report_English.pdf

Bateson, G. (1954). A theory of play and fantasy. *Psychiatric Research Reports*, *2*. Retrieved from http://courses.bloodedbythought.org/play/images/7/7e/Bateson %2C_Gregory_A_Theory_of_Play_and_Fantasy.pdf

Beland Lindahl, K. (2008). *Frame analysis, place perceptions and the politics of natural resource management* (Doctoral dissertation). Retrieved from https://doi.org/10/1/Karins_Acta_Thesis_080829_slutversion.pdf

Bernstein, S. (2017). The United Nations and the governance of Sustainable Development Goals. *Governing through Goals*. The MIT Press. Retrieved from https://doi.org/10.7551/mitpress/9780262035620.003.0009

Biermann, F., Kanie, N., & Kim, R. (2017). Global governance by goal-setting: The novel approach of the UN Sustainable Development Goals. *Current Opinion in Environmental Sustainability*, *26–27*, 26–31. Retrieved from https://doi.org/10.1016/j.cosust.2017.01.010

Biermann, F., Pattberg, P., Van Asselt, H., & Zelli, F. (2009). The fragmentation of global governance architectures: A framework for analysis. *Global Environmental Politics*, *9*(4), 14–40. Retrieved from https://doi.org/10.1162/glep.2009.9.4.14

BMLFUW. (2015). *Sustainable Forest Management in Austria. Austrian Forest Report 2015* (M. Freund, Trans.). Republic of Austria, Federal Ministry of Agriculture, Forestry, Environment and Water Management. Retrieved from https://www.bmlrt.gv.at/ english/forestry/Austriasforests/The-Austrian-Forest-Report-2015--Austria-s-forests-receive-top-grades.html

Breuer, A., Janetschek, H., & Malerba, D. (2019). Translating Sustainable Development Goal (SDG) interdependencies into policy advice. *Sustainability*, *11*(7), 2092. Retrieved from https://doi.org/10.3390/su11072092

Bridgewater, P., Régnier, M., & García, R. (2015). Implementing SDG 15: Can large-scale public programs help deliver biodiversity conservation, restoration and management, while assisting human development? *Natural Resources Forum*, *39*(3–4), 214–223. Retrieved from https://doi.org/10.1111/1477-8947.12084

Cejudo, G., & Michel, C. (2017). Addressing fragmented government Action: Coordination, coherence, and integration. *Policy Sciences*, *50*(4), 745–767. Retrieved from https://doi.org/10.1007/s11077-017-9281-5

CBD. (n.d.). *Austria—Main Details*. Retrieved from https://www.cbd.int/countries/profile/ ?country=at#facts

Crutzen, P. (2002). Geology of mankind. *Nature*, *415*(6867), 23–23. Retrieved from https://doi.org/10.1038/415023a

Dewulf, A., Gray, B., Putnam, L., Lewicki, R., Aarts, N., Bouwen, R., & van Woerkum, C. (2009). Disentangling approaches to framing in conflict and negotiation research:

A meta-paradigmatic perspective. *Human Relations*, *62*(2), 155–193. Retrieved from https://doi.org/10.1177/0018726708100356

Dewulf, A., Mancero, M., Cárdenas, G., & Sucozhañay, D. (2011). Fragmentation and connection of frames in collaborative water governance: A case study of river catchment management in Southern Ecuador. *International Review of Administrative Sciences*, *77*(1), 50–75. Retrieved from https://doi.org/10.1177/0020852310390108

Dombos, T. (2012). *Critical frame analysis: A comparative methodology for the QUING project*. Retrieved from http://pdc.ceu.hu/archive/00006845/01/cps-working-paper-critical-frame-analysis-quing-2012.pdf

ECOSOC. (2000). *Report of the Intergovernmental Forum on Forests on its fourth session*.

ECOSOC. (1997). *Report of the Ad Hoc Intergovernmental Panel on Forests on its fourth session*.

Eikermann, A. (2015). *Forests in international law*. Springer International Publishing. Retrieved from https://doi.org/10.1007/978-3-319-14950-9

Elomina, J., & Pülzl, H. (2021). How are forests framed? An analysis of EU forest policy. *Forest Policy and Economics*, *127*, 102448. Retrieved from https://doi.org/10.1016/j.forpol.2021.102448

Erlingsson, C., & Brysiewicz, P. (2017). A hands-on guide to doing content analysis. *African J. Emerg. Med.*, *7*(3), 93–99. Retrieved from https://doi.org/10.1016/j.afjem.2017.08.001

EU. (1996). Convention on the protection of the Alps (Alpine Convention). Retrieved from https://eurlex.europa.eu/legalcontent/EN/TXT/PDF/?uri=CELEX:21996A0312(01)&rid=5 0

EU. (2017). *Sustainable development in the European Union—Monitoring report on progress towards the SDGs in an EU context*. Retrieved from https://ec.europa.eu/eurostat/web/products-statistical-books/-/KS-04-17-780

FAO. (n.d.). *FAO Statistical Yearbook—Austria*. Retrieved from http://faostat.fao.org/static/syb/syb_11.pdf

FAO. (2011). *The State of the world's land and water resources for food and agriculture (SOLAW) – Managing systems at risk*. Food and Agriculture Organization of the United Nations and Earthscan. Retrieved from https://www.fao.org/3/i1688e/i1688e.pdf

FAO, IFAD, UNICEF, WFP, & WHO. (2018). *The state of food security and nutrition in the world 2018: Building climate resilience for food security and nutrition*. FAO. Retrieved from https://www.fao.org/3/I9553EN/i9553en.pdf

FOREST EUROPE (2020). *State of Europe's Forests 2020.* Retrieved from https://forest europe.org/wp-content/uploads/2016/08/SoEF_2020.pdf

Gendron, C., & Revéret, J. (2000). Le développement durable. *Économies et Sociétés*, *37*, 111–124. Retrieved from http://www.cregim.org/pdf/dd_Gendron-Reveret_2000.pdf

Giessen, L. (2013). Reviewing the main characteristics of the international forest regime complex and partial explanations for its fragmentation. *International Forestry Review*, *15*(1), 60–70. Retrieved from https://doi.org/10.1505/146554813805927192

Gläser, J., & Laudel, G. (2013). Life with and without coding: Two methods for early-stage data analysis in qualitative research aiming at causal explanations. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, *14*(2), Article 2. Retrieved from https://doi.org/10.17169/fqs-14.2.1886

Goffman, E. (1974). *Frame analysis reconsidered: An essay on the organization of experience*. North Western University Press. Retrieved from https://urup.or.id/wp-content/uploads/2020/07/Erving_Goffman_Bennett_Berger_Frame_Analysis_BookFi.pdf

Graneheim, U. H., & Lundman, B. (2004). Qualitative content analysis in nursing research: Concepts, procedures and measures to achieve trustworthiness. *Nurse Education Today*, *24*(2), 105–112. Retrieved from https://doi.org/10.1016/j.nedt.2003.10.001

Gratzer, G., & Keeton, W. (2017). Mountain forests and sustainable development: The potential for achieving the United Nations' 2030 Agenda. *Mountain Research and Development*, *37*(3), 246–253. Retrieved from https://doi.org/10.1659/MRD-JOURNAL-D-17-00093.1

Griggs, D., Smith, M., Rockström, J., Öhman, M. C., Gaffney, O., Glaser, G., Kanie, N., Noble, I., Steffen, W., & Shyamsundar, P. (2014). An integrated framework for sustainable development goals. *Ecology and Society*, *19*(4). Retrieved from http://dx.doi. org/10.5751/ES-07082-190449

Grusin, R. (2015). *The nonhuman turn*. University of Minnesota Press. Retrieved from https://edisciplinas.usp.br/mod/resource/view.php?id=3544678

Happaerts, S., & Bruyninckx, H. (2014). Sustainable development: The institutionalization of a contested policy concept. In M. Betsill, K. Hochstetler, & D. Stevis (Eds.), *Advances in International Environmental Politics* (2nd ed.). Palgrave Macmillan. Retrieved from https://doi.org/10.1057/9781137338976_12

Hazarika, R., & Jandl, R. (2019). The nexus between the Austrian forestry sector and the Sustainable Development Goals: A review of the interlinkages. *Forests*, *10*(3), 205. Retrieved from https://doi.org/10.3390/f10030205

Hey, C. (2005). EU environmental policies: A short history of the policy strategies. In European Environmental Bureau. *EU Environmental Policy Handbook, EEB Publication*. Retrieved from http://aei.pitt.edu/98675/1/environ_policies...pdf

Hoogstra-Klein, M., Brukas, V., & Wallin, I. (2017). Multiple-use forestry as a boundary object: From a shared ideal to multiple realities. *Land Use Policy, (69)*, 247-258. Retrieved from https://doi.org/10.1016/j.landusepol.2017.08.029

Hsieh, H.-F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, *15*(9), 1277–1288. Retrieved from https://doi.org/10.1177/1049732305276687

Intergovernmental Panel on Climate Change (IPCC). (2020). Special Report: Special Report on Climate Change and Land. Summary for Policymakers. Retrieved from https://www.ipcc.ch/site/assets/uploads/sites/4/2020/02/SPM_Updated-Jan20.pdf

International Council of Science (ICSU), International Social Science Council (ISSC). (2015). *Review of the Sustainable Development Goals: The science perspective*. ICSU/ISSC. Retrieved from https://council.science/wp-content/uploads/2017/05/SDG-Report.pdf

Johnson, T., & Urpelainen, J. (2012). A strategic theory of regime integration and separation. *International Organization*, *66*(4), 645–677. Retrieved from https://doi.org/10.1017/S0020818312000264

Jovanović, S., & Ilić, I. (2017). The most important goals of sustainable development and environmental policy in the European Union and the Western Balkan countries.

Ecoforum Journal, *6*(1). Retrieved from http://www.ecoforumjournal.ro/index.php/eco/article/view/436

Kim, R. (2016). The nexus between international law and the Sustainable Development Goals. *Review of European, Comparative & International Environmental Law*, *25*(1), 15–26. Retrieved from https://doi.org/10.1111/reel.12148

Klingebiel, S., Mahn Jones, T. C., & Negre, M. (2016). *Fragmented development cooperation in the age of the 2030 Agenda: The Current Column*. German Development Institute. *11*, 2. Retrieved from https://www.idos-research.de/uploads/media/German_Development_Institute_Klingebiel_Mahn_Negre_11.07.2016.pdf

Kondracki, N. L., Wellman, N. S., & Amundson, D. R. (2002). Content analysis: Review of methods and their applications in nutrition education. *Journal of Nutrition Education and Behavior*, *34*(4), 224–230. Retrieved from https://doi.org/10.1016/s1499-4046(06)60097-3

Körfgen, A., Förster, K., Glatz, I., Maier, S., Becsi, B., Meyer, A., Kromp-Kolb, H., & Stötter, J. (2018). It'sa hit! Mapping Austrian research contributions to the Sustainable Development Goals. *Sustainability*, *10*(9), 3295. Retrieved from https://doi.org/10.3390/su10093295

Kroll, C., Warchold, A., & Pradhan, P. (2019). Sustainable Development Goals (SDGs): Are we successful in turning trade-offs into synergies? *Palgrave Communications*, *5*(1), 1–11. Retrieved from https://doi.org/10.1057/s41599-019-0335-5

Langou, G. D., Florito, J., Biondi, A., Sachetti, F. C., & Petrone, L. (2020). Leveraging synergies and tackling trade-offs among specific Goals. In *Global State of the SDGs: Three Layers of Critical Action (Report 2019)* (Chapter 5 in Southern Voice,

pp. 93–144). Southern Voice. Retrieved from https://southernvoice.org/wp-content/uploads/2020/03/Synergies-Trade-Offs.pdf

Le Blanc, D. (2015). Towards integration at last? The Sustainable Development Goals as a network of targets. *Sustainable Development,* 19. Retrieved from https://doi.org/10.1002/sd.1582

Liu, J., Hull, V., Godfray, H. C. J., Tilman, D., Gleick, P., Hoff, H., Pahl-Wostl, C., Xu, Z., Chung, M. G., & Sun, J. (2018). Nexus approaches to global sustainable development. *Nature Sustainability*, *1*(9), 466–476. Retrieved from https://doi.org/10.1038/s41893-018-0135-8

Liu, S., Bai, J., & Chen, J. (2019). Measuring SDG 15 at the county scale: Localization and practice of SDGs indicators based on geospatial information. *ISPRS International Journal of Geo-Information*, *8*(11), 515. Retrieved from https://doi.org/10.3390/ijgi8110515

Luukkanen, J., Vehmas, J., Panula-Ontto, J., Allievi, F., Kaivo-oja, J., Pasanen, T., & Auffermann, B. (2012). Synergies or trade-offs? A new method to quantify synergy between different dimensions of sustainability. *Environmental Policy and Governance*, *22*(5), 337–349. Retrieved from https://doi.org/10.1002/eet.1598

Mayring, P. (2014). *Qualitative content analysis: Theoretical foundation, basic procedures and software solution* (Issue 2, p. 144). Retrieved from https://nbn-resolving.org/urn:nbn:de:0168-ssoar-395173

Nilsson, M., Chisholm, E., Griggs, D., Howden-Chapman, P., McCollum, D., Messerli, P., Neumann, B., Stevance, A.-S., Visbeck, M., & Stafford-Smith, M. (2018). Mapping interactions between the sustainable development goals: Lessons learned and ways forward. *Sustainability Science*, *13*(6), 1489–1503. Retrieved from https://doi.org/10.1007/s11625-018-0604-z

Nilsson, M., Griggs, D., & Visbeck, M. (2016). Policy: Map the interactions between Sustainable Development Goals. *Nature News*, *534*(7607), 320. Retrieved from https://doi.org/10.1038/534320a

Nilsson, M., Griggs, D., Visbeck, M., Ringler, C., & McCollum, D. (2017). Introduction: A framework for understanding sustainable development goal interactions. *A Guide to SDG Interaction from Science to Implementation. Paris: International Council for Science*. Retrieved from https://council.science/wp-content/uploads/2017/03/SDGs-interactions-framework.pdf

Nilsson, M., Zamparutti, T., Petersen, J. E., Nykvist, B., Rudberg, P., & McGuinn, J. (2012). Understanding policy coherence: Analytical framework and examples of sector–environment policy interactions in the EU. *Environmental Policy and Governance*, *22*(6), 395–423. Retrieved from https://doi.org/10.1002/eet.1589

OECD. (2016). *Better policies for sustainable development 2016: A new framework for policy coherence*. OECD Publishing. Retrieved from https://www.oecd.org/publications/ better-policies-for-sustainable-development-2016-9789264256996-en.htm

OECD. (2020). *OECD development co-operation peer reviews: Austria 2020*. Retrieved from https://www.oecd-ilibrary.org/development/oecd-development-co-operation-peer-reviews-austria-2020_03b626d5-en

OECD. (2001). *The DAC Guidelines on Poverty Reduction*. OECD. Retrieved from https://www.oecd-ilibrary.org/povertyreduction_5lmqcr2kgv8v.pdf?itemId=%2F content%2Fpublication%2F9789264194779-en&mimeType=pdf

Ohler, C. (2017). *Cooperation or Conflict? An Analysis of Global Forest Governance* [Master Thesis]. University of Natural Resources and Applied Life Sciences, Vienna.

Pan, Y., Opgenhaffen, M., & Van Gorp, B. (2019). Negotiating climate change: A frame analysis of COP 21 in British, American, and Chinese news media. *Public Understanding of Science*, *28*(5), 519–533. Retrieved from https://doi.org/10.1177/0963662518823969

Perri 6. (2006). What's in a frame? Social organization, risk perception and the sociology of knowledge. *Journal of Risk Research*, *8*(2), 91–118. Retrieved from https://doi.org/10.1080/1366987032000081213

Pradhan, P., Costa, L., Rybski, D., Lucht, W., & Kropp, J. P. (2017). A systematic study of Sustainable Development Goal (SDG) interactions. *Earth's Future*, *5*(11), 1169–1179. Retrieved from https://doi.org/10.1002/2017EF000632

Pullin, A., Báldi, A., Can, O., Dieterich, M., Kati, V., Livoreil, B., Lövei, G., Mihók, B., Nevin, O., & Selva, N. (2009). Conservation focus on Europe: Major conservation policy issues that need to be informed by conservation science. *Conservation Biology*, *23*(4), 818–824. Retrieved from https://doi.org/10.1111/j.1523-1739.2009.01283.x

Rajamani, L. (2006). *Differential treatment in international environmental law*. Oxford University Press. Retrieved from https://doi.org/10.1093/acprof:oso/9780199280704.003.0002

Rees, W. E. (1992). Ecological footprints and appropriated carrying capacity: What urban economics leaves out. *Environment and Urbanization*, *4*(2), 121–130. Retrieved from https://doi.org/10.1177/095624789200400212

Rein, M., & Schön, D. (1993). Reframing policy discourse. In F. Fischer & J. Forester (Eds.), *The Argumentative Turn in Policy Analysis and Planning* (pp. 145–166). UCL Press Limited. Retrieved from https://doi.org/10.1192/ bjp.111.479.1009-a

Rein, M., & Schön, D. (1996). Frame-critical policy analysis and frame-reflective policy practice. *Knowledge and Policy*, *9*(1), 85–104. Retrieved from https://doi.org/10.1007/BF02832235

Rockström, J., Steffen, W., Noone, K., Persson, \AAsa, Chapin, F. S., Lambin, E. F., Lenton, T. M., Scheffer, M., Folke, C., & Schellnhuber, H. J. (2009). A safe operating space for humanity. *Nature*, *461*(7263), 472–475. Retrieved from https://doi.org/10.1038/461472a

Rodríguez Fernández-Blanco, C., Burns, S. L., & Giessen, L. (2019). Mapping the fragmentation of the international forest regime complex: Institutional elements, conflicts and synergies. *International Environmental Agreements: Politics, Law and Economics*, *19*(2), 187–205. Retrieved from https://doi.org/10.1007/s10784-019-09434-x

Romeo, R., Vita, A., Testolin, R., & Hofer, T. (2015). Mapping the vulnerability of mountain peoples to food insecurity. *Rome: FAO*. Retrieved from https://www.weadapt.org/sites/weadapt.org/files/2017/may/mapping_the_vulnerability_of_mountain_peoples_to_food_insecurity.pdf

Rosendal, G. K. (2001). Impacts of overlapping international regimes: The case of biodiversity. *Global Governance*, *7*(1), 95–117. JSTOR. Retrieved from https://www.jstor.org/stable/27800288

Sanderink, L. (2020). Shattered frames in global energy governance: Exploring fragmented interpretations among renewable energy institutions. *Energy Research & Social Science*, *61*, 101355. Retrieved from https://doi.org/10.1016/j.erss.2019.101355

Sayer, J., Sheil, D., Galloway, G., Riggs, R. A., Mewett, G., MacDicken, K. G., Arts, B., Boedhihartono, A. K., Langston, J., & Edwards, D. P. (2019). SDG 15: Life on Land

– The central role of forests in Sustainable Development. In C. J. Pierce Colfer, G. Winkel, G. Galloway, P. Pacheco, P. Katila, & W. de Jong (Eds.), *Sustainable Development Goals: Their Impacts on Forests and People* (pp. 482–509). Cambridge University Press. Retrieved from https://www.cambridge.org/core/books/sustainable-development-goals-their-impacts-on-forests-and-people/sdg-15-life-on-land-the-central-role-of-forests-in-sustainable-development /71022020344AF64457556C837DC669C0

Scholz, I. (2004). *A forest convention - yes or no? Position paper for the BMZ on the state and the perspectives for creating a legally binding instrument for international forest policy*. Dt. Inst. für Entwicklungspolitik. Retrieved from https://www.files.ethz.ch/isn/27768/2004-06.pdf

Schön, D. A., & Rein, D. (1994). *Frame Reflection: Towards the Resolution of Intractable Policy Controversies*. BasicBooks. Retrieved from https://archive.org/details/framereflectiont00dona

Söderberg, C. (2011). *Environmental policy integration in bioenergy: Policy learning across sectors and levels?* [Doctoral dissertation, Umeå University]. Retrieved from http://urn.kb.se/resolve?urn=urn:nbn:se:ltu:diva-26102

Stafford-Smith, M., Griggs, D., Gaffney, O., Ullah, F., Reyers, B., Kanie, N., Stigson, B., Shrivastava, P., Leach, M., & O'Connell, D. (2017). Integration: The key to implementing the Sustainable Development Goals. *Sustainability Science*, *12*(6), 911–919. Retrieved from https://doi.org/10.1007/s11625-016-0383-3

Tegegne, Y. T., Cramm, M., & Van Brusselen, J. (2018). Sustainable Forest Management, FLEGT, and REDD+: Exploring interlinkages to strengthen forest policy coherence. *Sustainability*, *10*(12), 4841. Retrieved from https://doi.org/10.3390/su10124841

UN. (1987). *Report of the World Commission on Environment and Development: Our Common Future*. Retrieved from http://www.un-documents.net/wced-ocf.htm

UN. (1992a). *Forest Principles: Non-legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests*. Retrieved from https://www.un.org/esa/documents/ ga/conf151/aconf15126-1.htm

UN. (1992b). *Rio Declaration on Environment and Development*. Retrieved from https://undocs.org/en/A/CONF.151/26/Rev.1(vol.I)

UN. (1992c). *Agenda 21*. Retrieved from https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf

UN. (2007). United Nations Forest Instrument, Pub. L. No. A/RES/70/199. Retrieved from https://documents-ddsny.un.org/doc/UNDOC/GEN/N15/450/10/PDF/N1545010.pdf?OpenElement

UN. (2012). *Realizing the Future We Want for All. Report to the Secretary-General*. United Nations. Retrieved from https://www.un.org/millenniumgoals/pdf/Post_2015_UNTTreport.pdf

UN. (2015a). *The Millennium Development Goals Report*. United Nations. Retrieved from https://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20rev%20(July%201).pdf

UN. (2015b). *Transforming Our World: The 2030 Agenda for Sustainable Development*. Retrieved from https://doi.org/10.1891/9780826190123.ap02

UN. (2019). *Report of the Secretary-General on SDG Progress 2019: Special Edition*. United Nations. https://sustainabledevelopment.un.org/content/documents/24978Report_of_the_SG_on_SDG_Progress_2019.pdf

Underdal, A., & Kim, R. E. (2017). The Sustainable Development Goals and Multilateral Agreements. In N. Kanie & F. Biermann (Eds.), *Governing through Goals: Sustainable Development Goals as Governance Innovation*. The MIT Press. Retrieved from http://www.jstor.org/stable/j.ctt1pwt5xr.15

UNEP. (1995). *Decisions Adopted by the Conference of the Parties to the Convention on Biological Diversity at its Second Meeting. Decision II/9: Forests and Biological Diversity* (UNEP/CBD/COP/2/19). UNEP.

UNEP (2002). *Decisions Adopted by the Conference of the Parties to the Convention on Biological Diversity at its Sixth Meeting. VI/22. Forest Biological Diversity* (UNEP/CBD/COP/6/20). UNEP.

UNFCCC. (2010). *Report of the Conference of the Parties on its sixteenth session. 1/CP. 16 The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention* (FCCC/CP/2010/7/Add.1). Retrieved from https://unfccc.int/sites/default/files/resource/docs/2010/cop16/eng/07a01.pdf

UNFCCC. (2011). *Report of the Conference of the Parties on its Seventeenth Session. 2/CP.17 Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention* (FCCC/CP/2011/9/Add.1). Retrieved from https://unfccc.int/resource/ docs/2011/cop17/eng/09a01.pdf

UNFCCC. (2013). *Report of the Conference of the Parties on its Nineteenth Session. 15/CP.19 Addressing the Drivers of Deforestation and Forest Degradation*

(FCCC/CP/2013/10/Add.1). Retrieved from https://unfccc.int/resource/docs/2013/cop19/eng/10a01.pdf

UNFCCC. (2015). *Report of the Conference of the Parties on its Twenty-First Session. 16/CP.21 Alternative policy approaches, such as joint mitigation and adaptation approaches for the integral and sustainable management of forests.* Retrieved from https://unfccc.int/documents/9099

van Asselt, H. (2007). Dealing with the fragmentation of global climate governance: Legal and political approaches in interplay management. *SSRN Electronic Journal*. Retrieved from https://doi.org/10.2139/ssrn.1335082

Van Gorp, B. (2001). The implementation of the asylum policy: Which frame dominates the debate? *ECPR Joint Sessions, Date: 2002/04/06-2002/04/11, Location: Grenoble, France*.

Verloo, M. (2005). Displacement and empowerment: Reflections on the concept and practice of the Council of Europe approach to gender mainstreaming and gender equality. *Social Politics: International Studies in Gender, State & Society*, *12*(3), 344–365. Retrieved from https://doi.org/10.1093/sp/jxi019

Vijge, M. J., Biermann, F., Kim, R. E., Bogers, M., Driel, M. V., Montesano, F. S., Yunita, A., & Kanie, N. (2020). Governance through Global Goals. In F. Biermann & R. E. Kim (Eds.), *Architectures of Earth System Governance: Institutional Complexity and Structural Transformation* (pp. 254–274). Cambridge University Press. Retrieved from https://doi.org/10.1017/9781108784641.012

Visseren-Hamakers, I. J. (2015). Integrative environmental governance: Enhancing governance in the era of synergies. *Current Opinion in Environmental Sustainability*, *14*, 136–143. Retrieved from https://doi.org/10.1016/j.cosust.2015.05.008

Young, O. R. (1996). Institutional Linkages in International Society: Polar Perspectives. *Global Governance*, *2*(1), 1–23. JSTOR. Retrieved from https://www.jstor.org/stable/27800125

Zhou, X., Moinuddin, M., & Xu, M. (2017). *Sustainable Development Goals interlinkages and network analysis: A practical tool for SDG integration and policy coherence* (X. Zhou & M. Moinuddin, Eds.; p. 122). Institute for Global Environmental Strategies. Retrieved from https://www.iges.or.jp/en/pub/sustainable-development-goals-interlinkages/en

Zimm, C., Sperling, F., & Busch, S. (2018). Identifying sustainability and knowledge gaps in socio-economic pathways vis-à-vis the Sustainable Development Goals. *Economies*, *6*(2), 20. Retrieved from https://doi.org/10.3390/economies6020020

Zürn, M., & Fraude, B. (2013). Commentary: On Fragmentation, Differentiation, and Coordination. *The MIT Press*, *13*(3), 119–130. retrieved from https://doi.org/10.1162/GLEP_a_00186