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Master Thesis

COOPERATION OR CONFLICT?
AN ANALYSIS OF GLOBAL FOREST GOVERNANCE

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Eidesstattliche Erklärung

Ich erkläre eidesstattlich, dass ich die Arbeit selbständig angefertigt habe. Es wurden keine anderen als die angegebenen Hilfsmittel benutzt. Die aus fremden Quellen direkt oder indirekt übernommenen Formulierungen und Gedanken sind als solche kenntlich gemacht. Diese schriftliche Arbeit wurde noch an keiner Stelle vorgelegt.

Catherine Ohler

Abstract

Presently, international forest policy is occurring within an intricate governance arrangement. This arrangement has come to be viewed by some as the international forest regime complex (IFRC) and includes various actors and forums as well as many agreements, conventions, and other such policy documents. One major critique of the IFRC is that it is ineffective, lacking the ability to adequately solve the global forest-relevant problems of today. Fragmentation is most frequently cited as the cause of the ineffectiveness within the IFRC. Regime fragmentation, in general, is a situation whereby there is a lack of coherence or conflict exists amongst regime elements, which negatively impacts the ability of the regime to function. Specifically, the existing belief is that the IFRC experiences institutional fragmentation or fragmentation of objectives. Since fragmentation of objectives and institutional fragmentation of the IFRC have already been widely explored, this study was focused on the fragmentation of issue areas and ultimately the outputs that have been created. The goal of this study is to explore how the IFRC is fragmented through the use of content analysis, in order to determine if the IFRC is highly fragmented or it does in fact exhibit levels of coherence and synthesis. Furthermore, in examining the fragmentation and overlaps in the IFRC, the study also aims to determine in what subject or issue areas the fragmentation and overlaps can be found. Using MAXQDA, a qualitative data analysis program, fifty documents of pertinence to the IFRC underwent language coding. The coding revealed what issue areas are addressed within the IFRC and how fragmented or overlapped the issue areas were within the various documents. The results revealed that IFRC contains instances of both overlap and fragmentation when considering many forest-relevant topics. Overall, the results indicated that there was substantial overlap when considering the many different topics addressed in the IFRC. Additionally, the results revealed that while there may be institutional fragmentation and fragmentation of objectives there was considerably less fragmentation of outputs. Despite the existence of many overlapping forest-relevant subject areas there is still substantial room for strengthening existing synergies and fostering new relationships from these overlaps through the use of various coordination efforts. Consequently, the ultimate goal of improving the effectiveness of the IFRC can be reached through the use of coordination mechanism that promote the enhancement of synergies amongst regime elements.

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List of Abbreviations

CBD…Convention on Biological Diversity
CIFOR…Center for International Forestry Research
CITES…Convention on International Trade in Endangered Species of Wild Fauna and Flora
COP…Conference of the Parties
CPF…Collaborative Partnership on Forests
CSA…Canadian Standards Association
CSD…Commission on Sustainable Development
CTE…Committee on Trade and Environment
ECOSOC…The United Nations Economic and Social Council
FAO…The Food and Agriculture Organization of the United Nations
FSC…Forest Stewardship Council
GATT…General Agreement on Tariffs and Trade
GEF…Global Environment Facility
IFF…Intergovernmental Forum on Forests
IFRC…International Forest Regime Complex
IPCC…Intergovernmental Panel on Climate Change
IPF…Intergovernmental Panel on Forests
ITTA…International Tropical Timber Agreement
ITTC…International Tropical Timber Council
ITTO…International Tropical Timber Organization
IUCN...International Union for Conservation of Nature
IUFRO…International Union of Forest Research Organizations
MDG…Millennium Development Goals
MRV…Monitoring, Reporting, Verification
NLBI…The Non-Legally Binding Instrument on All Types of Forests
PEFC…Programme for the Endorsement of Forest Certification
REDD+…Reducing Emissions from Deforestation and Forest Degradation
SDG…Sustainable Development Goals
SFI…Sustainable Forestry Initiative
TBT…The Agreement on Technical Barriers to Trade
UNCCD…United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa
UNCED…United Nations Conference on Environment and Development
UNDP… United Nations Development Programme
UNEP…United Nations Environment Programme
UNFCCC…United Nations Framework Convention on Climate Change
UNFF…United Nations Forum on Forests
WHC…World Heritage Convention
WTO…World Trade Organization

1. Introduction

1.1. International Regimes & Global Forest Governance

Presently, the governance of the world's forests is occurring within the framework of environmental regimes. While governance is a broad term, a regime is a more specific arrangement. The interest in regimes and regime theory developed in the 1980's in response to the need to improve methods for international relations and cooperation (Smouts, 2008). A regime is a "a set of interrelated norms, rules, and procedures that structure the behaviour and relations of international actors so as to reduce the uncertainties that they face and facilitate the pursuit of a common interest in a given issue area" (Le Prestre, 2002). Regimes have also been viewed as a set of rules that restrict behaviour and activities (Keohane, Haas, & Levy, 1993). Furthermore, regimes have been thought of as "social institutions that define practices, assign roles and guide the interaction of occupants of such roles within given issue areas" (Young, 1994). Likely the most broadly accepted definition for a regime states that regimes are "sets of implicit or explicit principles, norms, rules, and decision making procedures around which actors' expectations converge in a given area of international relations" (Krasner, 1982). Therefore, it can be seen that regimes have been defined in various ways in the literature. Much like these definitions indicate, regimes are dynamic and fluctuating arrangements for pursuing certain goals or tackling an issue. The ability of regimes to be constantly changing can be beneficial as it allows regimes to evolve and adapt. However, there are many arguments that suggest that the dynamic nature of regimes is a considerable drawback to their effective functioning. Regardless, each regime is unique and varies in its structure, function, and relevant actors. In general, a regime exists when the involved actors recognize a certain set of norms, procedures, and rules in a specified issue area (Smouts, 2008). However though, the existence of a regime does not guarantee actor adherence, regime coherence, or effectiveness. There are various other components at play that affect the ability of a regime to function effectively. As will be revealed shortly, the international forest regime complex is no exception as it is made up of an elaborate web of actors and instruments that affect its functioning.

Globally, forests make up some of the most vital ecosystems on Earth as they fulfill vast and diverse roles in environmental, socio-cultural, and economic systems. Focusing on the environmental realm, about 70% of the world's known terrestrial plant and animal species call forests home (Visseren-Hamakers & Glasbergen, 2007). Additionally, forests are important for the conservation and protection of water resources, soil, and can be both sinks and sources of CO_2 (Rayner, Humphreys, Welch, Prabha, & Verkooijen, 2010). From the socio-cultural aspect, forests are home to 300 million people and 1.6 billion people are dependent on forests to sustain their livelihoods (FAO, 2014a). Furthermore, forests are of

spiritual and cultural importance to various groups of people around the world. Economically, it is estimated that the yearly wood removals from forests have a value greater than $100 billion while the forest sector proper employs about 13.2 million people globally (FAO, 2014a). Informally, the forest sector approximately employs an additional 41 million people (FAO, 2014a). Therefore, it can be seen that forests are complex, versatile, and integral to the sustained functioning of various global systems.

In the 1980's there was increasing attention focused on deforestation and degradation in tropical, temperate, and boreal forests. Tropical forests were suffering greatly from the expansion of agriculture and ranching while temperate and boreal forests were being lost to agricultural, urban, and industrial expansion (Rayner et al., 2010). These threats led to widespread impacts such as the loss of forest biodiversity, changes to ecosystem structure and functioning, and various negative affects to local peoples. Since the recognition of the forest issue, there have been many responses through various governance channels. One of the original, and arguably most well known, instances of forests on the international agenda was the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in June 1992 (UN GA, 1992a). As will be discussed in greater detail later, there were certain forest-related outcomes from this conference. However, following this conference an assortment of other political instruments and governance attempts have been developed in order to structure the governance of international forest resources. Consequently, global forest governance has evolved into a complex web of actors and arrangements and these various components have come to be known as the elements of the international forest regime.

The issue area surrounding forests has come to be described by some as a regime complex rather than simply a regime due to its unique structure (Rayner et al., 2010). Despite having some slight variations in definitions, a regime in general is defined as a set of institutions, rules, norms, and principles that appoint roles and functions to actors and also govern how these actors interact. However, a regime complex covers a broader scope, considering how other, additional elements affect interactions and relationships. Therefore, a regime complex has been defined as a regime and other governance elements that are, in some way, linked and furthermore can be overlapping, supportive, or conflicting (Keohane & Victor, 2011). Along a spectrum that ranges from a succinct regime centred on one binding instrument to a governance arrangement lacking structure, a regime complex falls somewhere in the middle (Raustiala & Victor, 2004). In occupying this position, a regime complex is neither perfectly comprehensive nor completely unstructured, but rather falls somewhere in between these two extremes. Furthermore, regime complexes are more flexible and adaptable than traditional governance systems in terms of both their structure and function making them a dynamic entity (Young, 2011). The international forest regime complex (IFRC) is comprised of a plethora of various policy instruments. These policy

instruments, as regime elements, can be placed into three categories, (1) hard, legally binding instruments, (2) international soft law on forests, and (3) international private legal instruments (Humphreys, 2006). Furthermore, as this arrangement has been characterized as a regime complex, the diversity of actors is much greater than would be found within a strict regime based solely on hard law. In this way, the actor composition of the forest regime complex goes beyond the traditional set of government actors and includes various institutions with forest-related goals, other loosely related organizations or networks, and also privately organized initiatives (Rayner et al., 2010). Given that forest-focused issues are, in themselves, complex they cannot be resolved in a simplistic manner. Consequently, the likely trend is then towards the addition of further elements and actors to the regime complex as attempts are made to solve the interrelated and intricate global forest problems. Despite the considerable support for describing the forest issue area as a regime complex, it is important to consider that this view is not held by all, as many still consider the arrangement to be just a regime. The argument from this side then is to take further action by strengthening the international forest regime through a single legally binding instrument to govern global interactions (Glück, Tarasofsky, Byron, & Tikkanen, 1997). The argument for a legally focused regime is most strongly threatened by the increasing role of private instruments and soft law which give rise to added intricacies in the forest issue area. Consequently, advocates of the forest regime complex highlight the considerable contribution of other elements, besides hard legal instruments, to the forest issue area and thus consider these elements and interactions to be a regime complex rather than just a regime.

The trend in the international forest regime complex is towards increasing complexity, as previously described. However, adding regime elements does not directly result in achieving regime effectiveness. Smouts (2008) describes three simple measures of regime effectiveness. These measures of regime effectiveness are: (1) the regime positively supports problem solving in the issue area, (2) there is successful implementation of the regime elements amongst actors, and (3) there is strong compliance amongst the actors involved, which occurs when actors observe and respect the rules and regulations of the regime (Smouts, 2008). Though these benchmarks for effectiveness may seem simple they can be quite difficult to achieve. Therefore, Smouts (2008) has conceded that it would be better to adopt lower standards of effectiveness, simply by assessing whether the regime brings about any small positive changes and helps contribute to the betterment of some issue within the broader society.

Based on these standards, the international forest regime complex has been rendered ineffective, as it is not fulfilling the goals and objectives for which it has been created. The perpetually increasing complexity among policy instruments has led to regime fragmentation and this has been cited as the ultimate source of the ineffectiveness and

failure. Institutional fragmentation exists when regime elements lack coherence or are conflicting and therefore negatively impact the ability of the regime to effectively carry out its mandate. In contrast, however, it has also been argued that there are existing overlaps amongst the objectives and goals of elements within the forest regime complex. Through positive and effective interactions, overlaps have the potential to develop into synergies within the regime, counteracting fragmentation. However, it has been strongly argued that the international forest regime complex is institutionally fragmented, but there has yet to be an investigation into what specific areas of the regime complex are fragmented and what areas are overlapping. Consequently, this study is an evaluation of fragmentation, overlaps, and potential synthesises that are presently characterizing the forest regime complex.

1.2. Research Question & Objectives

Within the literature to date, there is considerable focus the existence of institutional fragmentation in the IFRC. While it may be true that the institutions that make up the IFRC are fragmented and thus there is fragmentation of objectives, this study aims to reveal that there is considerably less fragmentation of outputs. If in fact the outputs are more overlapping than fragmented then the IFRC is, to some extent functioning and positively contributing to international decision-making on forest-relevant issues.

Therefore, this study aims to answer the question:
Given that forest governance is occurring in multiple arenas, comprised of numerous public and private instruments, what forest-related issue areas are fragmented within the international forest regime complex and in contrast what issue areas are overlapping?
Within the bounds of this research question the research objectives of the study are to:
(1) Collect and analyze all forest-relevant texts that contribute in some way to the international forest regime complex
(2) Evaluate the focus of the different texts, through content analysis, in order to understand what forest issues are of concern within the documents,
(3) Uncover any trends in terms of the topics, subjects, and issue areas addressed within the texts, and finally
(4) Assess the areas of fragmentation versus overlaps within the documents that together constitute the international forest regime complex in order to determine the state of the outputs.

2. The International Forest Regime Complex

2.1. Elements of the International Forest Regime Complex

In recent decades international forest policy has gained increasing interest in global environmental politics. Global concern for forests, with a particular focus on deforestation,

appeared on the international agenda in the years leading up to UNCED, held in June of 1992 in Rio de Janeiro, Brazil (Rosendal, 2001b). This conference and its results provided the impetus for further development of forums, multilateral arrangements, and other such efforts to govern the world's forests. Consequently, the field of international forest policy has developed into a complex array of actors and decision-makers each pursuing a specific goal within the broader forest regime.

Given that the international forest regime complex is both intricate and dynamic, it is useful to organize its elements into categories based on the main field that is addressed. Furthermore, in order to fulfill the first research objective, of collecting and analysing all IFRC contributory texts, an exploration into the various components that make up the regime complex is necessary. The various forums, committee, and organizations that make up the IFRC are responsible for the development of the relevant conventions, texts, and other relevant documents. As such, an exploration into pertinent background information aids in achieving the first research objective. Similar to divisions used by Eikermann (2015), the components of the IFRC can be separated into four groups: UNCED outcomes, conservation-focused initiatives, trade-focused initiatives, and other elements, as summarized in Figure 1, below. Additionally, to fully understand the IFRC it is necessary to review the historical development that set the stage for increased focus on forests in international environmental policy.

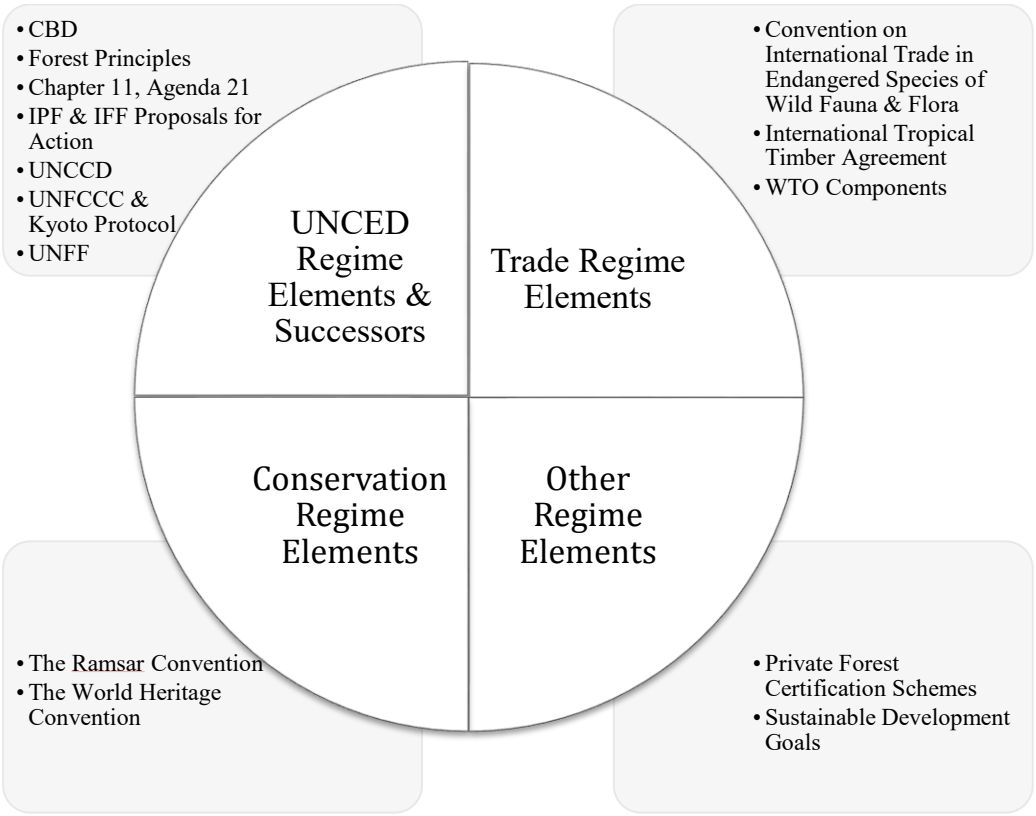

Figure 1. Schematic description of the elements that make up the International Forest Regime Complex

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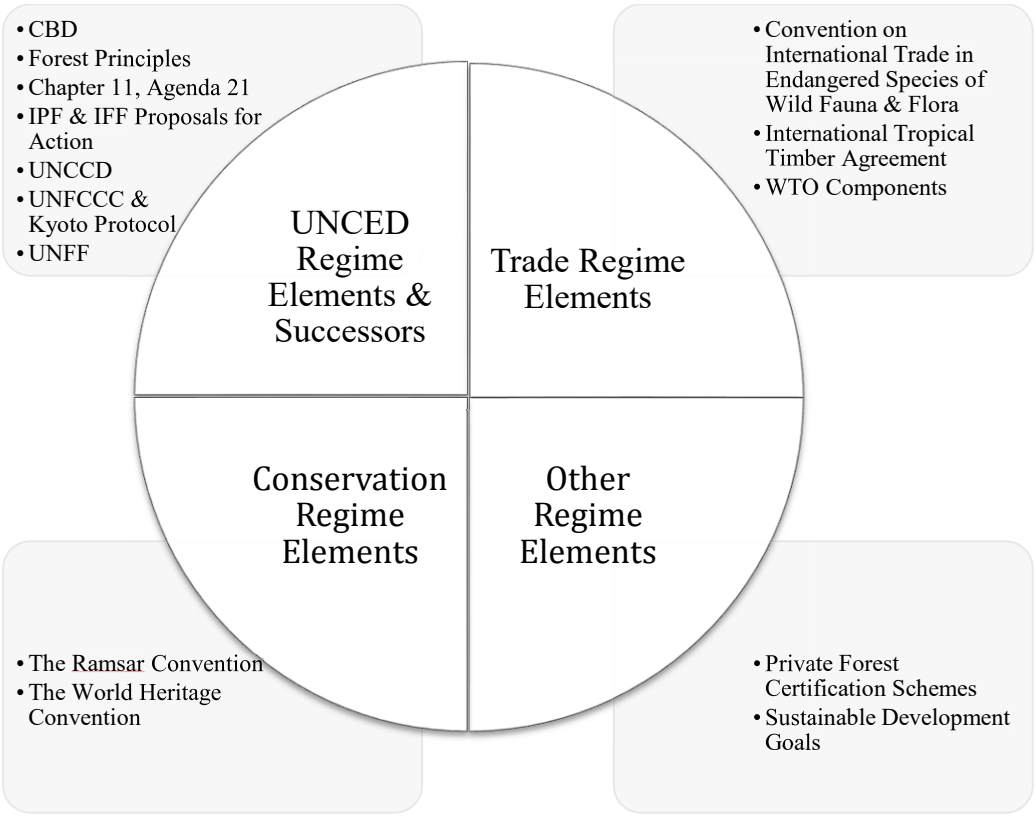

Figure 1. Schematic description of the elements that make up the International Forest Regime Complex

During the late 1980's three discourses were gaining recognition and as such began to affect the focus of international conferences and resulting agreements. Sustainable Development, Biodiversity, and Governance were emerging as the three main dominant discourses of global policy (Arts & Buizer, 2009). Sustainable development was first referenced in the World Conservation Strategy of 1980 where, accordingly, the primary focus was on conservation (International Union for Conservation of Nature and Natural Resources, United Nations Environment Programme, World Wildlife Fund, Food and Agriculture Organization of the United Nations, & United Nations Educational, Scientific, and Cultural Organization, 1980). The Bruntland Commission of 1987, in *Our Common Future*, utilized a broader definition of sustainable development, integrating environmental and economic components (World Commission on Environment and Development, 1987). In forestry, this discourse manifested as sustainable forest management, a means through which forests could contribute to sustainable development (Lanly, 2009). In a similar fashion, the rise of the biodiversity and governance discourses also set the stage for changes and additions to international environmental policy regimes (Arts & Buizer, 2009). Naturally, these three discourses continued to influence the focus of policy into the 1990's and as such were central elements of UNCED in 1992.

2.1.1. UNCED, Rio de Janeiro Regime Elements & Successors

During the month of June in 1992, government representatives from 178 countries, NGOs, and thousands of other individuals from government met in Rio de Janeiro to discuss issues of growing global concern (Kubiszewski & Cleveland, 2007). One particular problem that was to be addressed at the conference was deforestation rates and consequently the need to protect the world's forests. The two other issues of political and environmental importance were global warming and the loss of biodiversity. Both global warming and biodiversity loss were addressed through the creation of legally binding framework conventions, the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity (CBD), respectively (Davenport, 2005). However, the forest issue was not awarded a piece of legally binding legislation but instead two pieces of soft law were generated (Humphreys, 2005). These two instruments of soft law are the *Non-legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation, and Sustainable Development of All Types of Forests,* also known as the Forest Principles, and the Chapter 11 of Agenda 21, titled *Combating Deforestation* (Davenport, 2005; Humphreys, 2005).

2.1.1A. Forest Principles & Chapter 11

The two most forest-relevant instruments to emerge from the Rio Conference were the Forest Principles and Chapter 11 of Agenda 21, *Combating Deforestation*. Despite being unable to agree to a global forest convention, largely due to north-south political issues, the soft-law Forest Principles were developed as guidelines (Humphreys, 2005). A considerable amount of the focus of the forest-related negotiations was on two topics:

national sovereignty, a country's right to utilize their own resources, and the importance of considering all types of forests, temperate, tropical, and boreal, in the global forest discussions (Davenport, 2005). Consequently, the principles focused heavily on sovereignty over natural resource and the importance of national policies for sustainable forest management (Eikermann, 2015). However the principles were unclear about how, in practice, use and conservation should be balanced and implemented. As such, from its initiation, this instrument was weak and was not able to provide a sound basis for further negotiations and development (Gulbrandsen, 2003).

Agenda 21 was the primary, non-binding program that developed from UNCED in order to guide sustainable development into the future (UN GA, 1992a). Specifically, with regard to forests, Chapter 11, *Combating Deforestation* outlined causes of deforestation in all types of forests and notes the various economic, ecological, social, and cultural roles of forests (United Nations, 1992). Despite being more theoretical and less practical than the Forest Principles, Chapter 11 addresses issues of conservation, utilization, and the necessary technological and financial prerequisites for a comprehensive international forest plan (Kasimbazi, 1995). However, *Combating Deforestation* was generally considered to be too broad and general in its approach and thus not an extremely useful instrument going forward in global forest policy (Eikermann, 2015; A, 2013).

2.1.1B. UNFCCC & The Kyoto Protocol

One major issue that was to be addressed at UNCED and arguably the most public of the concerns was global climate change. Climate change had been recognized as a global concern as early as the 1980's and attempts had been made to address the issue, such as through the creation of the Intergovernmental Panel on Climate Change (IPCC) which first met in 1988 (Poore, 2003). When the UN General Assembly met for its 45th session in 1990, a resolution was adopted that laid the groundwork for the development of a framework convention on climate change (Poore, 2003). Negotiations on this convention were to be completed prior to UNCED but these negotiation sessions revealed that states held very different views on how such a convention should look. After five arduous sessions of negotiations, the final text was adopted on May 9, 1992 in New York (Bodansky, 1994). However, the issue of a financing mechanism was left open and the interim solution was to have the Global Environment Facility (GEF) control the fund until a decision could be made at the first COP (Poore, 2003). As intended, the framework convention was prepared in time for UNCED. Then at UNCED, the United Nations Framework Convention on Climate Change was signed, entering international law and becoming the leading instrument on climate policy (Rayner et al., 2010). In general, the overall objective of the UNFCCC is to counteract human interference in the climate system in order to stabilize the levels of greenhouse gases in the atmosphere all while maintaining necessary levels of food production and allowing for continued sustainable economic development (UN GA, 1992b). As a framework convention the UNFCCC can increase in

strength via the addition of legally binding protocols with one of the most notable examples being the Kyoto Protocol. In 1997 in Kyoto, Japan, the Kyoto Protocol was adopted but did not enter in to force until February 2005 at which point the minimum requisite number of parties signed the convention (Poore, 2003). The role of the protocol is to define the emission reduction targets for all members in straightforward terms; presently the protocol includes 192 parties with 83 signatory members (United Nations Treaty Collection, 2016). In principle, the UNFCCC and its Kyoto Protocol address emissions from fossil fuel sources used in industry and development (UN GA, 1992b). However the text of the convention does recognize the role of forests as vast carbon sinks and the need for states to take measures to conserve and enhance these sinks (UN GA, 1992b). While the forest issue had been hindered by ambiguity and confusion, the addition of Reducing Emissions from Deforestation and Forest Degradation (REDD) to the climate change field in 2005 provided an opportunity for a new approach. This approach was originally proposed at COP 11 but at COP 13 the mechanism was altered and enhanced to REDD+ (UNFCCC, 2008). As the main mechanism for forests within the UNFCCC, REDD+ attempts to protect forests in developing countries through a payment scheme whereby compensation is offered for emission reduction and conservation activities (UN-REDD Programme, 2016). Despite being considered to be a legitimate emission reductions tool, REDD+ continues to have problems with establishing baseline levels, funding, local community relations, and monitoring, reporting and verification (MRV), to name a few (Glück et al., 2010). In an attempt to tackle the many issues plaguing the REDD+ instrument, global efforts have occurred in the form of various non-legally binding partnerships. Examples of such mechanisms include the REDD+ Partnership of 2010, the Forest Carbon Partnership Facility, and various other private, bilateral, and multilateral arrangements (Glück et al., 2010). Notwithstanding the bleak outlook of the future of the REDD+ mechanism, significant ground was made on this front at the latest, COP in Paris, 2015.

The most recent Conference of the Parties of the UNFCCC, COP 21, occurred in Paris from November 30th to December 12, 2015 where the key role of forests in climate change was reaffirmed. In the Paris Agreement forests where included via text on REDD+ initiatives, forest financing, and the integrated role of indigenous and local communities (The World Bank, 2015). Forests are seen as a "winner" in the outcomes of COP 21 as they are finally, legally included in international climate regulations in the form of an individual REDD+ article (Silva-Chávez, 2015). Article 5 clearly states that greenhouse gas sinks should be conserved and enhanced, including forests as sinks (UNFCCC, 2015). In addition, the same article explains that states should utilize incentives and other policy tools to encourage the reduction of emissions from deforestation and degradation by adopting conservation initiatives, SFM practices, and forest carbon sinks (UNFCCC, 2015). Furthermore, in the finance section, the agreement recognizes the importance of steady and sufficient financial resources to achieve suitable levels of implementation for the forest-

related emission reduction programs (UNFCCC, 2015). With these legal commitments, going forward it is likely that protection, conservation, and sustainable management of forests will occur on a large scale in order to utilize the potential of forests to reduce global emissions.

2.1.1C. Convention on Biological Diversity

With the rise of the biodiversity discourse, in 1992 the Convention on Biological Diversity was adopted and it entered into force in December of 1993 (Khalastchi & Mackenzie, 1999). The convention is comprised of three legally binding protocols, but is weakened due to the fact that not all parties have ratified all of the protocols (Eikermann, 2015). In addressing issues related to biological diversity, the convention focuses on sustainable use and benefit sharing. Additionally, when the Conference of the Parties met for the 5th session of its biennial meetings in 2000, the ecosystem approach was adopted (UNEP/CBD/COP, 2000). By its nature, the ecosystem approach decision uniquely distinguished the CBD from other conservation agreements and the previously popular species- or habitat-centric approaches (Eikermann, 2015). Consequently, these three characteristics: sustainable use, benefit sharing, and an ecosystem approach, directly connect the convention to forestry. Specifically, similarities and overlap can be found between the CBD and principles of sustainable forest management (Rayner et al., 2010). In 2002, at the 6th meeting of the COP, the expanded programme of work on forest biological diversity was adopted, building on the original programme of 1998 (UNEP/CBD/COP, 2002). Comprised of three program elements and twelve goals, the expanded programme focused on conservation and sustainable use, benefit sharing, socio-economic concerns, monitoring, and assessment (UNEP/CBD/COP, 2002). The main benefit of the CBD within the international forest regime is that it utilizes a comprehensive approach for conservation and specifically addresses forests in the programme of work. However, like many other elements of the CBD, the programme on forest biological diversity lacks procedural and temporal guidelines for implementation thus restricting its usefulness (Jóhannsdóttir, Cresswell, & Bridgewater, 2010). Consequently, decisions about implementation are left to interpretation by national authorities, potentially causing a significant reduction in the success of the objectives. From these weaknesses it can be seen that the CBD does not adequately address forests in all capacities.

2.1.1D. IPF & IFF

An additional outcome of UNCED in Rio de Janeiro was the creation of the Commission on Sustainable Development (CSD), which was charged with the task of following up on efforts to reduce deforestation and degradation (Rosendal, 2001b). In 1995, the CSD created the Intergovernmental Panel on Forests (IPF) that, for the next two years, was tasked with addressing forest-related issues and developing implementation mechanisms for the forest outcomes of UNCED (UN ECOSOC, 1995). For further support and assistance, the IPF created the Interagency Task Force on Forests (ITFF) which was

composed of members from the CBD secretariat, the Center for International Forestry Research (CIFOR), FAO, UN Department of Economic and Social Affairs, UNEP, and the World Bank (Rosendal, 2001b). Throughout its lifespan, the IPF focused negotiations on the weaker issues such as sustainable forest management research and forest good and services valuation techniques. The harder more political issues, for instance, the development of a forest convention, were not addressed. After meeting four times, the IPF generated 150 proposals for action and recommended the creation of a successor forum, the Intergovernmental Forum on Forests (IFF) (Humphreys, 2005).

As a subgroup of the CSD, the IFF was given a three-year term to undertake the proposals for action and finish the programme of work from the IPF while continuing to envision the international forest arrangement (Humphreys, 2006; UN ECOSOC/CSD, 1997). Again, proposals for action were developed but negotiating parties were unable to come to an agreement on the terms of a legally binding forest convention (Rosendal, 2001b). Alternatively, the parties involved proposed the creation of yet another forum, the United Nations Forum on Forests (UNFF).

2.1.1E. UNFF & CPF

In 2000 the UNFF was created as a body directly under ECOSOC, unlike its predecessors (IPF and IFF), which were under control of the CSD (Humphreys, 2005). This new body was developed in order to promote implementation efforts from forest decisions at all levels, provide a straightforward framework for policy development, coordination, and implementation, and continue to execute the existing forest policy functions (UN ECOSOC, 2000). Three additional functions of the UNFF were added to the original six in 2006, these new functions focused primarily on sustainable development (UNFF, 2006). Annually the UNFF meets to carry out and report on multi-year programs of work while continuing to consider issues related to the possibility of a global forest convention (Humphreys, 2005).

The Collaborative Partnership on Forests (CPF) was established within the same decision that created the UNFF (UN ECOSOC, 2000). The CPF is comprised of fourteen organizations and secretariats, as shown in Figure 2, that work together on topical issues addressing forest conservation, management, production, and trade (CPF, 2016). Members of the CPF include, for example, the Center for International Forestry Research (CIFOR), FAO, UNFF, and the World Bank; together these fourteen organizations work towards continued promotion of SFM, enhancing political commitments, and supporting the UNFF (CPF, 2016).

Figure 2. Diagram exhibiting all members of the Collaborative Partnership on Forests

In the first years of meeting the UNFF failed to adopt any substantial decisions or make progress towards strengthening the existing framework for forests (Schwoerer, 2015). Progress occurred when at UNFF5 four global objectives were agreed upon, which was followed by the creation of a *Non-Legally Binding Instrument on All Types of Forests* (NLBI) at UNFF7 (UNFF, 2007). The NLBI was generated with the objective of enhancing cooperation and implementation efforts of SFM while also working to achieve the previously developed global objectives (Rayner et al., 2010). Most recently, the UNFF met in May 2015 to review the NLBI and consider the options for international forest policy instruments going forward. At UNFF11 (2015) the parties adopted "*The Forests We Want: Beyond 2015*" (UNFF, 2015). The goal of this declaration is to continue to improve implementation efforts of SFM and further enhance cooperation and coordination with the forest-focused arrangement (UNFF, 2015).

2.1.1F. UNCCD

Despite also being an outcome of UNCED in Rio, 1992, the United Nations Convention to Combat Desertification (UNCCD) was overshadowed by the highly publicized climate and biodiversity conventions. Officially adopted in 1994, the UNCCD operates with the goal of improving cases of drought and desertification with an emphasis on efforts in Africa (UN GA, 1994). In order to reach this goal, the UNCCD set out to utilize a multi-level, cooperative, and long term approach to improve the condition of the land and promote sustainable management (Wildburger, 2010). This convention is unique in that instead of focusing on the protection of an ecosystem or environmental element, it focuses on a major threat and the potential social and economic impacts (Eikermann, 2015). Forests fit in to the convention as the relationship between deforestation and desertification is recognized and so, the use of SFM to reduce the further desertification is one objective (UN GA, 1994).

Given that this convention is extremely limited in scope both geographically and in terms of subject matter, the applicability to the forest regime is also extremely limited.

2.1.2. Conservation Regime Elements

2.1.2A. The Ramsar Convention

The Convention on Wetlands of International Importance, especially as Waterfowl Habitat, more commonly known as the Ramsar Convention, is an international treaty focused on the protection of wetland habitats. Adopted in 1971 in Iran, this convention is a senior element of international environmental legislature (Koester, 1989). The convention was conceived in response to the growing concern of global wetland loss in the 1960's and 70's (Downes, 1999). Since its inception, the convention has been amended twice, in 1982 and 1987, mainly in order to update the convention and to strengthen the framework for decision-making (Eikermann, 2015). Broadly, the convention is focused on the protection and "wise use" of wetland areas, similar to the idea of sustainable use in forestry (Ramsar Convention Secretariat, 2013). At its adoption, the convention was strictly focused on wetlands of importance for migratory bird species but the scope has since been broadened, now including areas like mangrove ecosystems, seagrasses, and peatlands (Convention on Wetlands, 1996). Consequently, this augmentation to the convention increased its relevance to forests, most notably through the inclusion of mangroves and peatlands. By using an ecosystem approach, the importance of multiple goods and services is recognized, which is significant especially for mangroves as they fulfill various crucial functions. Though this recognition of mangroves and peatlands is of importance, like many other conventions, the Ramsar convention is based on guidelines. While these dynamic guidelines for wise use allow the instrument to be adaptable, they also limit its strength and credibility. Therefore, while the Ramsar Convention is a part of the international forest regime complex its specificity to wetlands and lack of legal weight limits its overall significance.

2.1.2B. World Heritage Convention

The second convention falling under the conservation umbrella is the Convention Concerning the Protection of the World Cultural and Natural Heritage or more simply, the World Heritage Convention (WHC). The WHC was adopted in Paris in 1972 with the objective of protecting cultural and natural sites from both human and natural destruction (UNESCO, 1972). The World Heritage List and the List of World Heritage in Danger are the two primary components of the convention that are administered by the World Heritage Committee (Wildburger, 2010). The addition of sites to these lists follows a procedure set out in the convention, utilizes the operational guidelines, and requires consultation at the national level (UNESCO, 1972). Upon admission to a list, the national government then has the obligation to protect and conserve the identified area while the WHC can provide assistance with fulfilling these duties mainly via the World Heritage Fund (UNESCO, 1972). While at first glance it may seem to be farfetched to include the WHC in the forest

regime, its scope incorporates forests as areas of cultural and spiritual importance. Within the sites included in the WHC they are both protected forest areas as well as sites with a considerable amount of forest but are not defined as a protected forest area (World Heritage Forest, 2005). This division occurs because of the WHC's definition of a forest requires a certain threshold to be met, but regardless, forests are certainly being protected under this convention. In addition, evaluations have found that forests protected under the WHC are globally diverse and thus represent a wide range of ecosystems (Eikermann, 2015). However, like the Ramsar Convention, the WHC is limited in its applicability as the forests that are included must be part of a defined area of cultural or natural importance. Also, the main concern with protecting forests under the WHC is displacement, whereby the protection of a forested area causes the surrounding forest to be more heavily utilized and degraded (Ewers & Kapos, 2011). Despite efforts to minimize this side effect, such a flaw negatively impacts the conventions ability to protect and conserve forests. Much like the Ramsar Convention, the WHC is restricted to an extremely specific role as an instrument of forest regulation.

2.1.3. Trade Regime Elements

2.1.3A. CITES

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is one of three items making up the trade regime elements of the IFRC. The negotiations on the creation of CITES concluded in 1973 and the convention entered into force in 1975 (IUCN & UNEP, 1973). Prior to the development of CITES, many regional and sector-specific conventions existed in the field of species-related trade. To agglomerate all efforts, the International Union for the Conservation of Nature and Natural Resources (IUCN) in coordination with UNEP created CITES as the first international treaty to regulate global trade of wildlife (Downes, 1999). Three lists that describe the level of extinction threats for traded species characterize the convention. Appendix I details the species completely restricted from trade while Appendix II contains trade-controlled species and Appendix III allows countries to add species of concern to this list (IUCN & UNEP, 1973). Though CITES is commonly referenced in relation to popular faunal species, it also includes trees, forest plants, and other animals utilizing forests as their habitat. In fact, approximately 200 tree species can be found within the three appendices, specifically six species are strictly restricted as they are of trade interest and also extremely threatened (Eikermann, 2015). Including tree species under these legally binding restrictions is extremely beneficial for the advancement of forests within international regulations. However, CITES' main limitation in regard to forests is that it specifically focuses on trade related endangered species. Accordingly, the convention is then only useful for trees that can be found on the red list of endangered species and that are also of significance in global trade. Similarly, given that CITES is focused explicitly on species, the convention is unable to incorporate, into any sort of protection mechanism, the multiple

functions that forests offer (Mulliken, 2009). For this reason, CITES' limited scope inhibits the convention from completely encompassing the forest issue and thus restricting its usefulness to trade-related endangered species.

2.1.3B. The WTO

Under the auspice of trade liberalization and internationalization, the World Trade Organization (WTO) was created in 1995 and is to date the only international organization regulating the rules of trade between countries (WTO, 2016). The governments of the member organizations carry out the activities of the WTO while the secretariat works to coordinate all activities (WTO, 2016). The main functions of the organization are trade negotiations, implementation and monitoring, dispute settlement, capacity building, and outreach (WTO, 2016). The WTO aspires to have trade conducted in a manner that positively contributes to standards of living, employment levels, income growth, and production levels all while using resources at a sustainable rate, protecting the environment, and considering economic concerns (WTO, 1995). Therefore, from its initial establishment, the WTO expressed the importance of recognizing the relationship between trade and sustainable development. The main text of the WTO is the General Agreement on Tariffs and Trade (GATT). In 1947 GATT was established, during the same time at which negotiations failed to create the International Trade Organization (ITO) (Glück et al., 2010). While the original content of GATT is still in effect it was altered in 1994 during negotiations for the creation of the WTO (WTO, 1995). The relevance for forests in GATT and the WTO can be found in policy elements of the 1994 update of GATT that reference tariff reduction in forest products (Glück et al., 2010). Additionally in 1994 two further elements were added to the WTO framework, the Agreement on Technical Barriers to Trade (TBT Agreement) and the Committee on Trade and Environment (CTE) (Downes, 1999). While the WTO has never addressed a forest-related dispute nor do the elements of the WTO explicitly address forests, they have the potential to apply rules and regulations to forest-related issues if such a need was to arise.

2.1.3C. The ITTA

Unlike the other trade regime elements the International Tropical Timber Agreement (ITTA) explicitly addresses forests and trees in international trade. However, this specificity also limits the agreement because, as the title suggests, it focuses solely on tropical species and those who's trade needs to be regulated. Nevertheless, the agreement still contributes, albeit through a limited scope, to international regulations on forests. The original ITTA was adopted in 1983 with 35 signatories from both producing (countries that are net exporters of tropical timber, by volume) and consuming (countries that are importers of tropical timber) members (UN GA, 1983). Making a distinction between the producing and consuming members was a novel idea and it helped to draw attention to the various concerns of the two groups of members (Poore, 2003). In general discussion was focused on reforestation and management in response to alarming deforestation occurring

in the 1970s (Poore, 2003). However, there was also strong interest from consuming countries to have a continued source of tropical timber while supplying countries fought for greater stability of prices and an improved demand and supply balance (Poore, 2003). Despite containing eight objectives including a specific interest in environmental concerns, such as sustainable use and conservation of tropical forests, this issue took a backseat to the previously mentioned trade-related interests of the involved parties and the attempt to further promote international trade in tropical timber (Chasek, 2001). Within the ITTA regime, the International Tropical Timber Organization (ITTO) was created, including the body with greatest authority, the International Tropical Timber Council (ITTC) (Poore, 2003). Since 1983, two subsequent ITTAs have followed in 1994 and 2006 (UN GA, 2006). As the main administrative organ, the ITTO has been updated over time as well and now includes 25 producing countries and 11 consuming countries (the European Union and its member states are considered to be one body) (UN GA, 2006). Even with the evolution of the ITTA through time, the dominant discourse of regulation for further tropical timber trade has persisted. In attempting to align with international interests in sustainable development and SFM, the ITTO has promoted conservation. However, conservation is of interest insofar that it allows for continued exploitation of tropical timber resources (Nagtzaam, 2008). Accordingly, conservation and protection of forests under the ITTA is admittedly less important than utilization for trade. Therefore, the ITTA occupies a narrow field in the IFRC falling strictly within the bounds of economic, trade-related interest in tropical tree species.

2.1.4. Miscellaneous Regime Elements

2.1.4A. Sustainable Development Goals

In September 2015, within the context of the UN Sustainable Development initiatives, 17 Sustainable Development Goals (SDGs) were adopted as a follow up to the Millennium Development Goals (MDGs) that expired in the same year (UN GA, 2015). Within the bounds of 169 targets, the SDGs were created to address sustainable development in all countries, differing from the preceding goals that focused strictly on developing countries (United Nations, 2016). Additionally, the new set of goals recognizes that addressing climate change challenges is crucial for further sustainable development. It can be argued that forests play a crucial part of many of the identified SDGs. For example, trees and forest flora and fauna are significant in addressing the goal to end hunger. Additionally, forests have the ability to affect both water quality and quantity and consequently can be included in the goal addressing clean water and sanitation. It is well known also, the substantial contribution of forests to mitigating climate change and their potential to contribute to clean energy. In addition, forests are specifically referenced in SDG 15 that states “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 GA, 2015). These are just some ways in which it is possible to picture the strong

position of forests as elements of the sustainable development goals. Following the release of the SDGs there has been recognition that forests are a crucial component to be considered in order to meet these global targets. Specifically, at the 14th World Forestry Congress in September 2015 in Durban, South Africa, the FAO declared that forests have a "decisive role" to play in solving these international problems and additionally, forests are critical in order to achieve the SDGs (UN News Centre, 2015). Thus far it has been recognized that forests are a fundamental element of sustainable development and going forward they will likely be incorporated into various action plans and strategies in order to reach these 17 global goals.

2.1.4B. Private Forest Certification Schemes

Often when characterizing the international forest regime complex, elements are grouped into hard legal instruments, soft law instruments, and private international law. Forest certification standards fall into the last group as they have been privately developed before gaining international recognition. The predominant organization for private certification is The Forest Stewardship Council (FSC), a non-governmental organization whose members aspire to manage the world's forests in a sustainable manner (Park & Allay, 2013). At the founding of the FSC in Toronto, Canada, twenty-six countries were represented in the form of 126 different participants from various NGOs, indigenous groups, and members of industry (Pattberg, 2005). The members of this general assembly came together in response to the inability of governments to negotiate a binding agreement for forests and thus privately negotiated ten principles for regulating SFM (Giessen, 2013). Given that sustainable management requires the cooperation of economically, environmentally, and socially focused parties, each of these three interests is equally represented within the general assembly of the FSC and representation is also balanced between north and south members (Forest Stewardship Council, 2015a). Certification is simply laid out as a three-step process in which an external certification body provides information, this is followed by a certification audit, and lastly the certification body assists the member with reaching full FSC compliance (Forest Stewardship Council, 2015b). Through the use of an external certification body the FSC enhances its credibility and illustrates that the FSC remains neutral during certification processes (Pattberg, 2005). In addition to the development of SFM standards, the FSC has also created a structured system of private governance that can be replicated and emulated in other fields attempting to solve environmental problems (Pattberg, 2005). The FSC is a unique element of the IFRC as it has successfully negotiated standards amongst actors representing various interests. Additionally, the FSC is exceptional in its efficient, decentralized structure whereby various branches of the organization offer assistance or information to stakeholders, members, and the public regarding topics like prerequisites to accreditation, technical advice, as well as standards and compliance (Pattberg, 2005). In order to ensure continued compliance with the standards, the FSC also contains a mechanism for continued verification and associated penalties if stakeholders' fail to meet the required standards. Despite having successfully

developed a network of differentiated actors and interested parties resulting in the private certification of millions of hectares, the FSC has been subject to certain criticisms. One significant concern is the distribution of certified areas as the majority of FSC certified forest is located in industrialized countries in Europe and North America (Gulbrandsen, 2004). Therefore, comparatively less certification has occurred in developing countries and those in transition. A second concern, showing that FSC does not fully meet the needs and wants of all actors, is the rise of other private certification schemes. Most notably, in Europe, was the creation of the Pan-European Forest Certification (PEFC) scheme and in North America the Sustainable Forestry Initiative (SFI) and the forest certification scheme of the Canadian Standards Association (CSA) have been created (Gulbrandsen, 2004). The creation of alternative standards schemes adds further complexity to this field of private governance and allows parties to choose schemes based on their own interests. Overall though, the FSC offers a comprehensive approach for setting a standard in SFM and was able to develop rather successfully in the intricate arena of international environmental governance.

2.1.5. The Inner Forest Regime

The inner forest regime is a subset of the larger international forest regime complex and is comprised of the IPF and IFF Proposals for Action, UNFF Sessional Final Reports, Chapter 11 of Agenda 21, and the Forest Principles. Such a specified group exists because these texts are the most recent and most relevant documents on forest policy decisions. While in a wider scope, many of the other elements of the forest regime complex are forest-relevant, but these highlighted texts are unique because they are forest-focused. In this way, the central goals and objectives of these documents are to address forest issues directly. While the other texts of the broader regime may reference forests and related issues, forests are not the sole focus of these documents. As such, the inner forest regime includes the most recent and most relevant documents which are considered to be the IPF and IFF's Proposals for Action, the UNFF Sessional reports, Chapter 11 of Agenda 21, and the Forest Principles.

2.1.6. Wrapping up the International Forest Arrangement

From this brief review, it is clear that the international forest regime is composed of a complicated array of actors and agreements. In general it is possible to organize the components into three broad classes, those elements resulting from UNCED, elements focused on conservation, and trade-related elements. Additionally, the specification of the inner forest regime gives insight into which components are most relevant to the forest issue area. Each regime element that makes up the forest regime complex has both uniquely beneficial components as well as shortfalls to its effectiveness and scope. Consequently, the many elements and the increasingly complex nature of the regime continue to be a pervasive topic of discussion in the international community with considerable attention being focused on determining levels of overlap and fragmentation.

3. Theoretical Frameworks: Fragmentation in International Regimes

There is much discussion, within various international regimes, about fragmentation and overlap and furthermore if the regime elements are synthesized or conflicting. In an attempt to fully address the research questions and objectives that ask, essentially, how and where the fragmentation and overlaps are located within the IFRC, it is first essential to understand the concept of fragmentation more generally and how it is relevant to the forest issue area. Over time, with the development of numerous agreements, public, private, and mixed policy instruments, environmental regimes have become increasingly complex and fragmented (Visseren-Hamakers, 2015). This situation specifically applies to the international forest regime complex as it is composed of a variety of elements stemming from many different fields of environmental policy. Though fragmentation is seen as being a main characteristic of the institutions of the IFRC, it is still unclear as to how fragmented the content addressed and subsequent outcomes are, and if necessary, whether there is the possibility to take measures to counteract this situation. Therefore, in order to explore the current status of fragmentation in the international forest regime it is first necessary to understand what fragmentation is, possible explanations for its development, and some of the proposed solutions to the fragmentation issue.

3.1. Regime Complexity & an Introduction to Fragmentation

As seen in the previous section, the international forest regime is composed of many agreements, forums, actors, and other institutional elements. Additionally, the regime includes dichotomies such as hard and soft law elements, public and private actors, and agreements both directly and indirectly relating to forests. Over time, this regime has been modified and adapted through the addition of new elements and structural changes. Consequently it is seen now as more of a regime complex than simply a regime (Howlett et al., 2010). Regime complexity can be defined as "a situation in which there is no single, unified body of hierarchically imposed rules governing a transnational issue area or policy domain, but instead a set of parallel or overlapping regulatory institutions (Overdevest & Zeitlin, 2014). As a result of this complexity, the international forest regime has become increasingly fragmented. Fragmentation, in global regimes, is defined as "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, Pattberg, & van Asselt, 2009). This definition illustrates how fragmentation is a consequence of the development and dynamic nature of a regime. There have been multiple attempts to define and delineate fragmentation while also determining if it should be addressed as a positive, negative, or neutral outcome of the development of regime complexes.

Fragmentation is additionally important because some believe the assessment of it contributes to the understanding of regime effectiveness. Literature on regime effectiveness has begun to take in to account the increasing complexity that has been developing in international regimes (Bernstein & Cashore, 2012). Thus, there has been a shift towards studying effectiveness through measures beyond merely regime compliance (Skjærseth, Stokke, & Wettestad, 2006). Going beyond compliance, other measures of effectiveness allow for an analysis of how well regimes are able to resolve the issues they were created for (Bernstein & Cashore, 2012). Furthermore it is vital to consider regime influence, which can result in synergies or overlaps that can be supportive or conflictive, as such this measure is important to regime effectiveness (Bernstein & Cashore, 2012). Therefore, a suitable starting point for assessing regime effectiveness is through understanding levels of fragmentation and in contrast levels of overlap and possible synthesises.

3.2. Exploring Further: Existing Fragmentation Frameworks

In order to categorize fragmentation levels, certain benchmarks must be set, as such Biermann et al. (2009) utilize three distinguishing principles. These three measures for assessing the degree of fragmentation are: (1) the amount of institutional integration and the amount of overlap amongst decision-making settings, (2) whether and to what degree there is conflict amongst existing norms, and (3) what type of relationships exist amid the actors involved (Biermann et al., 2009). Consequently, the use of these three standards has led Biermann (2009) and colleagues to define three types of fragmentation, which are synergistic, cooperative, and conflictive fragmentation, as shown in Figure 3, below. Firstly, synergistic fragmentation occurs when the institutional arrangement for the issue includes all or most of the relevant countries while also providing an effective policy arrangement and consequently this results in a highly integrated governance arrangement (Biermann et al., 2009). Cooperative fragmentation can be characterized, individually by any of these three situations or by any combination of them, which are: (1) when there is an arrangement of many different institutions and decision-making processes, (2) when there is an unclear relationship between the norms of the different institutions, and/or (3) when countries important to the field of interest are not included in the institutions (Biermann et al., 2009). Finally, the last type of fragmentation that is described is conflictive fragmentation. Conflictive fragmentation is also characterized by three factors: (1) the institutions involved are barely connected or coordinated, (2) conflict exists between the norms or rules, and/or (3) the members and actor networks accept or contribute further to these conflicts (Biermann et al., 2009). Describing fragmentation in this way seems to paint the concept in a negative light but in fact Biermann et al. (2009) see fragmentation as being value free and a central element of all global governance systems. Despite successfully delineating degrees of fragmentation, this approach does not consider fragmentation in a broader sense. Instead, the previously examined system strictly focuses on institutional characteristics of fragmentation while other defined classifications have examined fragmentation under a wider lens.

	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

Figure 3. Typology of fragmentation in global governance. Adapted from "The Fragmentation of Global Governance Architectures," by F. Biermann, P. Pattberg, H. van Asselt, and F. Zelli, 2009, *Global Environmental Politics*, 9. p. 19.

Besides the previously mentioned framework, other organizational structures for describing fragmentation in international regimes exist. Zürn and Faude (2013) apply value to fragmentation and see it as productive rather than destructive despite the many challenges that accompany it. With this viewpoint in mind, three types of fragmentation have been described: segmentary, stratificatory, and functional (Zürn & Faude, 2013). Segmentary fragmentation occurs when institutions or organizations carry out a specified agenda in different territories and therefore the same processes, rules, and norms are implemented in various, spatially separated locations (Zürn & Faude, 2013). Alternatively, stratificatory fragmentation is described by a hierarchical system whereby institutions involved are focused on the same issue but are separated by hierarchical boundaries (Zürn & Faude, 2013). Lastly, functional fragmentation occurs when there is no hierarchical system amongst the institutions but the actors are working to further sector-specific goals in the issue area (Zürn & Faude, 2013). This typology varies significantly from the one proposed by Biermann et al. (2009), showing the diversity within fragmentation theories.

While the previous two frameworks focus on institutional fragmentation, a broader approach is taken by Giessen (2013) whereby institutional, political, and other characteristics are taken into account. Building on the work of Biermann et al. (2009), this alternative approach considers, in addition to previously explained institutional elements, political and other components that can potentially contribute to fragmentation. In this way, fragmentation is also influenced by the politics that surround the regime and by other factors such as new and relevant laws or technologies (Giessen, 2013). This expanded view allows for an improved understanding of the factors that contribute to fragmentation and how, if necessary, their impact could be mitigated in order to prevent further fragmentation of a regime. Below, Table 1 gives a summary review of the three fragmentation typologies that have previously been described and explained.

Table 1. Regime fragmentation frameworks. A summary of the three frameworks and their associated categories as explained in the previous section.

Author & Year	Summary Description	Fragmentation Categories
Biermann et al. (2009)	Utilizes information on three factors: institutional integration, norm conflicts, and actors constellations, to determine the fragmentation category	1. Conflictive 2. Cooperative 3. Synergistic
Zürn & Faude (2013)	Frames fragmentation in a positive way before developing the three descriptive categories	1. Functional 2. Segmentary 3. Stratificatory
Giessen (2013)	Builds on the previous two frameworks and considers in addition, political, institutional, and other such factors that may affect fragmentation levels	N/A

3.3. Theories on Fragmentation

In relating to their framework as described earlier, Zürn & Faude (2013) propose that fragmentation exists as a response to increasing complexity. Such a viewpoint frames fragmentation as an unavoidable, next-step as international regimes become more intricate (Zürn & Faude, 2013). However, there are many other existing theories suggesting that fragmentation exists as a result of various other causes. For example, one theory proposes that fragmentation is not consequential but rather a purposeful action carried out by the most powerful actors in the regime (Benvenisti & Downs, 2007). The purpose of this deliberate fragmentation is to concentrate control with dominating institutions in the regime, allowing them to advance a certain agenda or steer actions in a specific direction (Benvenisti & Downs, 2007). Another theory offers the proposal that fragmentation exists and is perpetuated by complex regimes that allow actors to pick and choose forums at their leisure (Meyer, Boli, Thomas, & Ramirez, 1997). In this way, actors choose institutions or agreements within the regime that best fit their needs, instead of adhering to the regime as a whole (Meyer et al., 1997). The result then is unequal participation in the agreements and institutions of the regime, causing inconsistencies, a lack of complete coherence, and thus fragmentation. As these are just some examples, other theories exist that attempt to explain the existence of regime fragmentation, many of which are just slight variations of the previously mentioned examples. Given the multiplicity of available theories, it is apparent that the reason for existing fragmentation depends on various factors and is unique to each regime in which it is occurring.

3.4. The Forest Connection: Fragmentation in the IRFC

Given that there are many types of fragmentation and various theories about why it exists, it is necessary to specify the situation within the international forest regime complex. Institutionally fragmented is just one of four central characteristics of the IFRC, the others being: hollow, ineffective, and failed (Giessen, 2013). Yet, institutionally fragmented is

the most important characteristic to focus on as it perpetuates the existence of the other three characteristics. In one scenario, it is thought that fragmentation is this regime complex is caused by the individualistic nature of countries attempting to further their own goals and meanwhile perpetuating the North-South divide on forest issues (Humphreys, 2006). In this way, fragmentation is, in general, the result of northern countries attempting to advance capitalist interests in the forest regime while southern countries call for sovereignty over natural resources (Humphreys, 2009; Visseren-Hamakers & Glasbergen, 2007). Dimitrov (2005) builds on the views of Humphreys and focuses on the multiplicity of multilateral agreements and empty institutions that make up the IFRC, stating that these characteristics are the cause of its fragmentation. Here, the argument is that fragmentation causes the regime to be weak and ineffective while also fulfilling the interests of both north and south countries (Dimitrov, 2005). Thus, the southern countries benefit from a weak and fragmented regime because their national sovereignty is not challenged while northern countries gain the proof they need to show that a binding forest convention is required (Giessen, 2013). The focus has been on international actors and their effects on fragmentation, yet it is also important to consider how domestic actors may also influence forest regime fragmentation.

In the domestic realm, to first focus specifically on one actor, the lack of US leadership is often cited as one of the main reasons that a forest convention was not adopted at UNCED. Furthermore, within the IRFC, Davenport (2005) sees the US and its own domestic interests as a considerable barrier to a coherent regime. The domestic interests that Davenport (2005) refers to are economically focused. More specifically, the US fears regulation and control of their wood industry, which could occur within a properly functioning regime (Davenport, 2005). In general, other authors emphasize national bureaucratic competition as a contributing factor to regime fragmentation (Gulbrandsen, 2003; Hudson & Weinthal, 2009; Werland, 2009). As the IRFC is composed of various institutions and forums, there are many opportunities for various domestic departments to be involved in the regime. Consequently, within one country, different state departments can be involved in different aspects of the regime while also competing for power and control and thus exacerbating the fragmentation issue (Gulbrandsen, 2003; Werland, 2009).

Despite expressing various theories about its creation and manifestation, there is a general consensus that fragmentation does exist within the IFRC. Whether power relations or the institutional design of the regime is at fault remains unclear. However, given that fragmentation is most often negatively framed, a solution is required to counteract this problem. It is often proposed that one global forest convention would solve the fragmentation issue in the regime. However, given that this has been debated for decades now with little substantive result, other possibilities have been developed as alternative solutions to solving the fragmentation challenge.

3.5. Existing Theories of Regime Coordination and Integration

In contrast to the many different fragmentation theories that exist, there are also theories that examine regime coordination and integration. International regimes are a type of international institution made up of agreed-upon norms and rules and are, in general, supposed to improve transparency and further opportunities for cooperation (Hasenclever, Mayer, & Rittberger, 2000). Expanding on this idea, regimes are often composed of formal rules for how actors should behave on a certain issue area, as regimes are needed when individual behaviour produces less than optimal outcomes (Stein, 1982). Along this same line of thinking, when self-interested actors pursue their own objectives in an issue area, causing negative outcomes for other actors, regimes emerge as the response (Stein, 1982). Therefore, one way to assess regimes is to explore how well the regime provides for coordination or collaboration on an issue area while minimizing conflict or negative impacts on actors. Coordination makes a system work more smoothly or effectively, helping it to systematically function as a whole, and to also works to limit fragmentation (Metcalfe, 1994). However, the difficulty then lies in determining how successful regime coordination or integration comes about and specifically in this case, how overlap gives rise to these types of interactions. Consequently, various theories have arisen in this subject area, attempting to understand when and how regime coordination occurs. Table 2 gives a brief overview of three theories for regime integration that help to explain the interactions occurring in the IFRC, each theory is examined further and explained below.

Table 2. Summary of the three relevant regime integration/coordination theories utilized to examine existing relationships within the international forest regime complex.

Author & Year	Name	Summary Explanation
Johnson & Urpelainen (2012)	Positive & Negative Regime Spillovers	Positive spillovers hinder interactions while negative spillovers promote integration and coordination amongst issue areas.
Stein (1982)	Dilemmas of Common Interest & Aversion	Actors take either collaborative efforts to deal with dilemmas of common interest or coordinative efforts to resolve dilemmas of common aversion.
Young (1996) & Rosendal (2001)	Typology of Overlaps	Four types of overlap characterize the relationships between rules and norms in regimes.

3.5.1. Spillovers and the Integration of Regime Elements

Coordination in international arenas exists along a spectrum, from mandatory to voluntary coordination efforts (Metcalfe, 1994). In reference to situations explored in this study, within the IFRC, coordination activities are voluntarily adopted by the actors involved in order to minimize negative interactions, avoid duplication, or enhance potential synthesises. Additionally, coordination can also be distinguished along the lines of vertical versus horizontal and negative versus positive (Metcalfe, 1994). Again, here the focus is on enhancing positive coordination through horizontal, inter-institutional mechanisms. The

first theory, explained here, of coordination and regime integration, proposed by Johnson and Urpelainen (2012), is based on regime spillovers. In general, spillovers occur when a specific issue area addresses a topic that is similar and related to topics addressed in another issue area, causing overlap (Alter & Meunier, 2009). Negative spillovers occur when cooperation activities take place in one issue area, thwarting efforts to cultivate objectives in another issue area (Johnson & Urpelainen, 2012). Alternatively, positive spillovers occur when cooperation happening in one issue area aids the fulfillment of objectives in a second issue area (Johnson & Urpelainen, 2012). It was found though that both types of spillovers do not equally result in cooperation. Cooperation comes about only as the result of negative spillovers and not positive ones. With positive spillovers the recipient regime has no incentive to cooperate as they are already experiencing benefits without interaction whereas with negative spillovers both parties would benefit from cooperative activities (Johnson & Urpelainen, 2012). Thus, negative spillovers promote regime integration and discourage fragmentation. Therefore, in general, the presence of positive and negative spillovers aids in explaining the existence and level of regime fragmentation or cooperation.

3.5.2. Characterizing Overlaps in Regimes

Another theory in the field of international regime relationships was proposed by Rosendal (2001a) and builds on the work of Oran Young. Of the four types of institutional linkages proposed by Young (1996) and described earlier, Rosendal (2001a) focuses on overlapping linkages and how they relate to international regimes. In this sense, overlap occurs when the functions and objectives of one regime extend into or match the functions and objectives of a second regime (Young, 1996). Building on this definition, Rosendal (2001a) describes four types of overlap, as shown in Figure 4 that can be found in international regimes: (1) Type I: the overlap between the regimes is composed of compatible norms and compatible rules, (2) Type II: the overlap between regimes is composed of compatible rules and diverging norms, (3) Type III: the overlap between regimes is composed of compatible norms and diverging rules, and (4) Type IV: the overlap between regimes is composed of diverging rules and diverging norms.

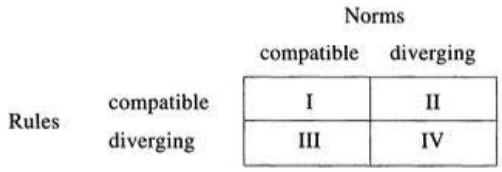

Figure 4. Types of overlap amongst regimes. Adapted from "Impacts of Overlapping International Regimes: The Case of Biodiversity," by K. Rosendal, 2001, *Global Governance*, 7. p. 98.

Consequently, it is necessary to first explicitly define rules and norms, as they are the two key components of the previously described situations of overlap. In this context, norms are "overall policy objectives and principles of a regime that tend to carry legitimacy among participating actors", while (explicit) rules "prescribe specified regulations for state

behaviour" (Rosendal, 2001a). As previously stated, overlap between rules and norms do not result automatically in synergy, as synergy requires a coordination mechanism, but overlap does increase the likelihood of synergistic situations (Rosendal, 2001a). Of the four described types of overlap, Rosendal (2001a) states that Type I overlap is most likely to result in synergies because of the high degree of compatibility, while Type II is considered to be relatively synergistic, and Type III and IV feature greater degrees of conflict. Therefore, it can be seen that this theory is quite different from the previously described spillover theory whereby negative spillovers and conflict give rise to cooperation and synergy instead of synergies arising from conflict-free situations. Fragmentation and synthesis amongst regimes and regime elements occurs in response to various situations and thus the existence of differences amongst theories in this field is acceptable.

3.5.3. Exploring Dilemmas of Common Interest & Common Aversion

A third important regime integration theory to consider looks at two types of situations leading to cooperation or collaboration. In this theory Stein (1982) differentiates between dilemmas of common interest: where independently made decisions leave actors with deficient outcomes and so there is a common interest for actors to work together, and dilemmas of common aversion: where actors benefit from working together in order to avoid a certain result. In this way, these two different types of dilemmas require different solutions to solve the interactive problems. Dilemmas of common interest are dealt with through collaborative activities while dilemmas of common aversion require coordination activities (Stein, 1982). In scenarios of common interest, the resulting regime interactions are highly regulatory. Common interest dilemmas occur when the desirable outcome is not the equilibrium outcome and thus there is potential for actors to cheat, requiring collaboration in the form of rules to avoid cheating and mechanisms to detect it (Stein, 1982). A well-known instance of a dilemma of common interest in resource use is the tragedy of the commons whereby when actors using a common resource exhibit rational behaviour they do not reach their preferred optimal outcome (Hardin, 1968). Alternatively, if these same actors were to pursue individualistic behaviour to maximize their own benefit, the result would be a depleted resource and a suboptimal collective outcome (Hardin, 1968). A current, relevant example of this type of dilemma is unsustainable logging practices causing widespread forest destruction. In contrast, dilemmas of common aversion exist when actors must work together to develop coordination mechanisms in order to avoid a specific outcome. These dilemmas do not suffer from cheating but instead a deviation by an actor shows that they are unhappy with the existing coordination mechanism (Stein, 1982).

These six theories, three describing regime fragmentation and three describing regime integration are informative and useful but do not wholly apply to this study. The three theories of regime fragmentation were included to offer support and context for the

institutional fragmentation of the IFRC. While the regime integration theories were included to examine possibilities for enhancing regime integration and coordination. Overall, the applicability of these theories are limited in this study because they are useful when exploring institutional fragmentation or fragmentation of objectives. Furthermore, both the fragmentation and integration theories require an analysis of norms and rules within the regime in question. However, within the confines of this study there is no exploration into regime rules and norms but rather the focus is on regime content and outputs. The one theory of regime integration that may be applicable here is Johnson and Urpelainen's (2012) spillover theory as it can be used to understand subject area overlap and subsequent voluntary coordination efforts. However, in general, the theories supply adequate supporting structure and background information but are limited by their scope. Therefore, this study moves past the existing theories to investigate regime fragmentation and overlap through an examination of the outputs of the IFRC.

4. Materials and Methods

This chapter provides information about the materials analysed and methods used to carry out this study. The materials section considers which documents were utilized in the content analysis, explaining how the documents were selected. Subsequently, the methods section includes an in-depth explanation of the steps that were followed to perform a thorough content analysis on the fifty texts of the international forest regime complex.

4.1. Materials

With an end goal of determining where output fragmentation can be found amongst the elements of the international forest regime complex, it was first necessary to follow certain steps in order to reach this final objective:

First, it was necessary to compile all relevant documents that make up and contribute to the forest regime agglomeration. In total, fifty documents were seen as making significant contributions to the regime complex and thus were utilized in the study [see Table 3]. The selection of these fifty texts was guided by an in-depth exploration into background literature where international forest arrangements had been extensively analyzed and insight was provided into what documents were relevant. These fifty international documents were chosen, because they are either forest-focused texts that include decisions, protocols, or processes that directly impact forests or the text was deemed forest-related. Forest-related documents generally originate in other regimes like the Convention on Biological Diversity that is the backbone of the biodiversity regime or the United Nations Framework Convention on Climate Change, which is crucial to the climate regime. However, these two documents and many others like it, though not specifically focused on forests, contain relevant statements that do affect forest policy-making. The documents that were included in the compilation ranged in subject matter and date of origin, from the World Trade Organization's (WTO) General Agreement on Tariffs and Trade (GATT) of

1974, which is still valid today, to the UNFF sessional texts, with the latest session occurring in 2015; a full list of the documents is shown in Table 3. Overall, this agglomeration is made up of the most relevant and recent international forest-related documents. The fifty documents were then divided into the inner and outer forest regime groups for the analysis portion. The inner forest regime is comprised of both the IFF and IPF and their Proposals for Action, the eleven reports from UNFF sessions, the Forest Principles, and Chapter 11 of Agenda 21. These documents are specifically focused on forests and thus make up the inner forest regime. The outer forest regime included the remaining thirty-five documents that referenced forests in some capacity but are not core regime documents. In this way, the outer forest regime documents are considered important elements of the international forest regime complex but have other subject matter as their central focus and thus only peripherally address forests.

Table 3. International forest regime complex texts: list of the documents used for the content analysis.

Documents of the International Forest Regime Complex
• Agenda 21, Chapter 11: Combating Deforestation*
• Convention on Biological Diversity (CBD)
• CBD Expanded Programme of Work on Forest Biodiversity
• CBD COP 2: Forests and Biodiversity
• CBD COP 10/2 Decision: Aichi Biodiversity Targets
• Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
• CITES COP 16, Summary of Decisions
• Convention Concerning Indigenous and Tribal Peoples in Independent Countries
• Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention)
• Forest Principles*
• Forest Stewardship Council (FSC) Principles
• General Agreement on Tariffs and Trade (GATT)
• Intergovernmental Forum on Forests (IFF) Proposals for Action*
• Intergovernmental Panel on Forests (IPF) Proposals for Action*
• International Tropical Timber Agreement, 1983 (ITTA)
• International Tropical Timber Agreement, 1994
• International Tropical Timber Agreement, 2006
• Kyoto Protocol
• Montreal Process (5th Edition)
• New York Declaration on Forests
• Programme for the Endorsement of Forest Certification (PEFC) Standards
• Sustainable Development Goals
• The Ramsar Strategic Plan 2009 - 2015
• United Nations Convention to Combat Desertification ain those countries experiencing serious drought and/or desertification, particularly in Africa (UNCCD)
• United Nations Declaration on the Rights of Indigenous Peoples (UNDRIPS)
• United Nations Forum on Forests (UNFF) Sessional Texts 1-11 *(11 texts)**
• United Nations Framework Convention on Climate Change (UNFCCC)
• UNFCCC COP 15 Decision 4
• UNFCCC COP 16 Decision 1
• UNFCCC COP 17 Decisions 2 and 12 *(2 texts)*
• UNFCCC COP 18 Decision 1
• UNFCCC COP 19 Decisions 9,10,11,13,14,15 *(6 texts)*
• UNFCCC COP 21 Decision 16
• World Heritage Convention (WHC)
*Denotes the documents that make up the inner forest regime

4.2. Methods

The methodological approach used in this study was qualitative text analysis; the MAXQDA program was used as the primary tool of analysis that supported the qualitative analysis. MAXQDA is one program available to users in order to explore qualitative data. The MAXQDA software is primarily utilized to analyze text contained in documents of various formats making use of codes developed by the user. Sources, in various file formats can be loaded to the program for analysis and codes are the main instrument of the program available to the user to perform analysis. These codes are used to organize, analyze, and

interpret the language, ideas, and themes contained within the documents. Furthermore, this type of qualitative text analysis software allows the user to uncover trends or patterns in the data while providing an inclusive workspace whereby a variety of procedures can be performed (Kuckartz, 2014).

Qualitative content analysis is a process whereby various forms of text data can be analyzed in order to answer research questions or come to an understanding. The text used in the analysis can be of various forms, such as electronic or print format, interviews, observations, or reports, to name a few. However, for this study, the focus was on reports and decisions, all of which were available in electronic format. Hsieh and Shannon (2005) describe three type of qualitative content analysis, which are conventional, directed, and summative. In this study, the second approach, directed content analysis was applied in order to determine if and to what extent the international forest regime complex exhibits subject area fragmentation. Directed content analysis occurs when the researcher is building on existing theories or incomplete research and builds on existing information when developing initial coding categories (Hsieh & Shannon, 2005). The user then assigns codes to the documents and develops new codes as necessary to address novel topics found within the texts (Hsieh & Shannon, 2005). Given the nature of the results, this type of text analysis is usually done in order to support or reject an existing theory and this study is no exception as it is used to appraise existing theories on IFRC fragmentation.

After the collection of these fifty texts, all of the documents subsequently underwent text analysis in order to analyse and then understand their relevance to global forest issues. Furthermore, the text analysis made it possible to address the research question, which was focused on understanding if the content of the international forest regime complex is fragmented or overlapping. Specifically, in this study, the content of each of the fifty documents was analyzed in order to first determine which topics, relevant to the IFRC, were present in each of the documents.

All of the fifty documents were fully read and explored, during the text analysis of the forest regime documents careful consideration was taken to make sure that coding was only applied to forest-specific segments, as will be further explained below. As such, the text content analysis followed a methodological approach that can be explained in two distinct steps, as shown in Figure 5 below.

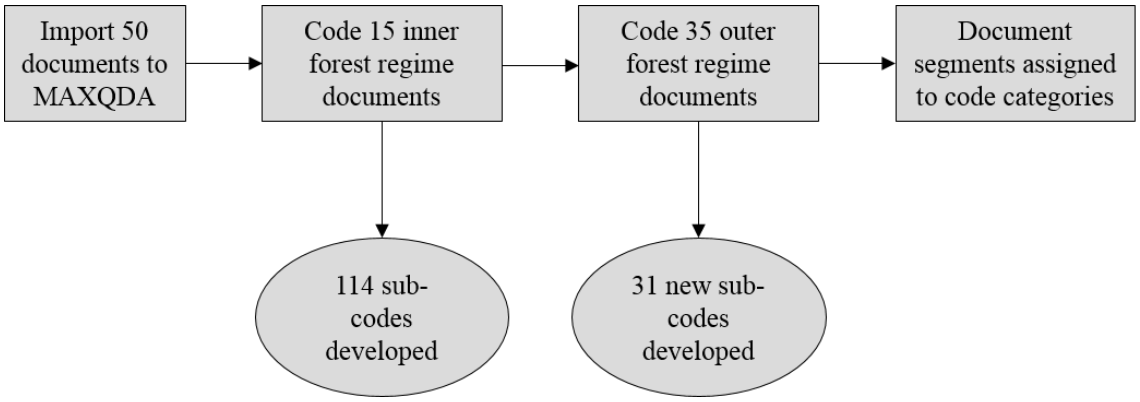

Figure 5. Illustrative display of the steps used in the methodological approach for text analysis.

The first step involved evaluating the documents of the inner forest regime. As previously mentioned, the inner forest regime is comprised of both the IFF and IPF and their Proposals for Action, the eleven reports from UNFF sessions, the Forest Principles, and Chapter 11 of Agenda 21. These documents are specifically focused on forests and thus make up the inner forest regime. After importing the documents of the inner forest regime into the MAXQDA program, the documents were coded in their entirety. Carefully reading through the text and coding each paragraph, decision, objective, goal, or other text elements in order to determine the main forest-focused topics that were addressed was how the coding of the inner forest regime documents was carried out. Therefore, the analysis involved analysing the central forest-focused idea identified in each section and thereafter developing a code for that topic. Then, if an idea was reoccurring in a document, each subsequent portion of the document was coded with the same relevant code that had already been developed before. Furthermore, during the analysis it was also possible to organize the codes into a hierarchy and therefore group related topics within a broader, umbrella coding category. This procedure, of developing relevant forest-centric codes was done for all of the documents making up the inner forest regime.

The second step of the methodological process was to perform a similar coding on all the remaining documents of the IFRC, thus the documents making up the outer forest regime. These thirty-seven documents were deemed relevant to the forest issue area in some way; they are however not always forest-focused and thus make up the broader, outer forest regime complex. As the goal of this study is to determine in what pertinent subject areas the forest regime complex is fragmented, this methodological portion provided the first possibility towards uncovering any fragmentation. In this way, remaining documents of the IFRC underwent a coding process, focusing on document sections that explicitly referenced forests. In order to only code text explicitly referencing forests the decision, goal, objective, or other document element had to include the word forest or some related

derivative such as forestry, forest conservation, wood, timber, forest products, traditional forest related knowledge, or deforestation. This measure was taken in order to define a boundary in the level of content analysis performed. This methodological boundary was necessary, because otherwise it would be possible to also consider sections of the documents that implicitly referenced forests. However, this approach is also limiting, because document sections are included only when they outwardly state their connection to forests. Yet, it is also possible for the documents to have an indirect connection to forest topics, which then would not be considered in the scope of this study. Despite the possible limitations this step was necessary in order maintain a manageable scope for the study. When considering the explicit references to forests, the MAXQDA program has a function, the lexical search, which allows the user to search the use of words or phrases in the documents. This tool was used during the content analysis in order to search the documents to confirm that every section that used the word forest, or some relevant derivative, was coded accordingly.

In summary, the *inner forest regime documents* were entirely coded by subject area addressed in each section. Following the coding of the documents that make up the inner forest regime, the rest of the documents that are forest-relevant were coded when the section explicitly referenced forests. When carrying out the coding of the documents in the *outer forest regime* previously developed codes were used if they were applicable. However, if a new subject, topic, or issue area surfaced than a new code that accurately described the section was developed. Also, when a new code was developed in the documents of the outer forest regime, it was important to make note of this occurrence. It was necessary to perform this step, because the existence of a topic in the outer but not inner forest regime, or to have a topic found in the inner but not outer forest regime, gave an initial indication of fragmentation.

Table 4 below, shows the twelve parent code categories that resulted from this methodological process, along with their associated descriptions. The parent code categories acted as a heading for the various related sub-codes that belonged in each category. The topics addressed within the Climate Change category considered the multiple connections between forests and climate change, such as negative environmental affects and also possibilities to utilize forests as a counteracting force. Eleven topics were located under the Deforestation and Forest Degradation heading and they focused on a range of topics from the underlying causes of deforestation to possible programs and ways to combat this negative global problem. Thirdly, Forest Conservation mainly included the many different types of conservation activities that can occur that are relevant to forest ecosystems. Moving away from the ecological and environmental dimensions, Forest Governance and Forest Law and Monitoring considered forest-relevant topics from a different perspective. The Forest Governance category contained topics centred on forest policy and instruments while Forest Law and Monitoring concentrated on legal aspects as

well as ways to monitor and assess forests. The smallest category, Forest Protection, solely considers the components of forest systems that require protection and the possible methods for carrying out these activities. Indigenous Peoples/Local Communities contains topics about the ways local peoples interact with forests, the importance of understanding their roles and knowledge, and also the ways in which involvement of these groups can be strengthened. Similarly, the National Level Support category considers the importance of forests in developing countries and the ways in which support and assistance can be provided to the people of these nations. Sustainable Development topics recognize the multiple roles of forests in reaching development goals. The largest category, Sustainable Forest Management, encompasses the many facets of sustainably managing forests, from financial, social, environmental, and political dimensions. Furthermore, there is also specific focus in this category on efforts such as national forest programs, forest inventories, management planning, and management responsibilities. The Forest Environment category was a miscellaneous group of topics that were addressed in the texts but did not fit in to any of the other categories. However, these topics were connected in that they all addressed issues related to forests at the ecological level such as the affects of pesticides or pollution and also the general health and productivity of forests. Lastly, the Trade and Economy category considered both wood and non-wood forest products in the marketplace. It also addressed other trade-relevant issues such as trade liberalization, illegal trade, and workers' rights. Overall, the parent code categories are broad headers for quite detailed categories containing many forest-relevant topics.

Table 4. The twelve parent code categories developed during the content analysis of the fifty IFRC texts and the number of sub-codes in each category.

Parent Code	Description	Number of Sub-codes
Climate Change	Contains codes detailing the various ways in which forests and climate change are connected.	14
Deforestation & Forest Degradation	Considers the causes and results of global deforestation and degradation, also includes possible ways to reverse the trend.	11
Forest Conservation	Specifies multiple roles of forests and the many components of a forest system for which conservation efforts are necessary. The category also includes conservation mechanisms and financing.	19
Forest Governance	Topics in this category coded document portions that discussed topics such as existing forest instruments and possibilities for policy formulation and coordination.	8
Forest Law & Monitoring	Codes in this category describe ways in which forests can be monitored or assessed and options for enforcing forest-relevant laws.	13
Forest Protection	Codes focus on the many components of forest systems that require protection.	5
Indigenous Peoples/Local Communities	Contains codes addressing the ways in which local and indigenous people interact with forests and how they are affected by external factors and decisions.	7
National Level Support	Encompasses the multiple ways in which support can be provided to nations, specifically developing countries, such as through financial support or training and education programs.	12
Sustainable Development	Considers how forests contribute to sustainable development through social, economic, and environmental channels.	11
Sustainable Forest Management	Encompasses sustainable forest management in all its facets from criteria and indicators to stakeholder participation.	23
The Forest Environment	It is a collection of all of the miscellaneous sub-codes that did not fit into another category. However, they are related in that they all have an ecological collection to forests and forestry.	7
Trade & Economy	Includes codes that address trade and economic matters related to markets and valuation methods of timber, wood and non-wood forest products, and ecosystem services.	15

Once coding of all fifty documents was completed a review of the coding process was performed. This self-check, review process was performed in order to make sure that the coded sections were accurately assigned to a code category and to also ensure that all sections assigned to one category addressed the same topic. Also, at this stage it was possible to reorganize the codes within the hierarchical system. The reorganization process involved consolidating any codes that could be combined into one topic and also placing related sub-codes within the confines of a broader, overarching code. This step resulted in an organized hierarchical arrangement of codes and sub-codes and even in some cases, codes within the sub-codes. The visual representation of the code hierarchy can be found in the appendix section of this study. Upon the completion of code reorganization, the methodological portion of the study was finished and the results of the content analysis were available for evaluation and analysis.

5. Results

The content analysis of fifty forest-related documents gave rise to a variety of interesting results that, among other outcomes, aided in specifically addressing the second, third, and fourth research objectives. As such, this section of the study will explore the results of the content analysis with specific focus on how the results relate to the research objectives. The content analysis of the fifty IFRC documents revealed that there were twelve general categories that were broadly addressed within the documents. Table 5, below, shows the twelve parent codes and the number of segments that were coded within each parent category. From these results it can be seen that overall, Sustainable Forest Management was the most frequently utilized category with 360 coded segments in the fifty documents. Following in second was National Level Support with 249 coded segments and then Forest Law and Monitoring with 231 segments. Then in decreasing order of usage there was Forest Governance (169), Sustainable Development (160), Trade and Economy (140), Conservation (136), Deforestation and Forest Degradation (130), Climate Change (120), Indigenous Peoples/Local Communities (92), Protection (55), and lastly The Forest Environment (36). These results give an indication of the level of focus on certain issue areas within the regime complex.

Table 5. The twelve parent code categories, ordered according to their overall usage during content analysis.

Parent Code	Number of Segments	Number of Sub-codes
Sustainable Forest Management	360	23
National Level Support	249	12
Forest Law & Monitoring	231	13
Forest Governance	169	8
Sustainable Development	160	11
Trade & Economy	140	15
Deforestation & Forest Degradation	130	11
Forest Conservation	136	19
Climate Change	120	14
Indigenous Peoples/Local Communities	92	7
Forest Protection	55	5
The Forest Environment	36	7

To allow for a finer level of detail, within each of the previously described parent code categories, more specific sub-codes were found. The number of topics found in each category varied, which gave an indication of the scope and amount of detail in each category. In this way, a higher number of sub-codes revealed that more topics were addressed within the category. Furthermore, categories that contained more topics did so because the documents addressed this subject matter with a greater amount of detail than others and thus it was necessary to have more specific sub-codes. Consequently, as shown in Table 5, the most sub-codes were developed in the Sustainable Forest Management category, with 23 sub-codes as SFM was a topic frequently addressed in the documents, with a high level of detail, resulting in many SFM topics. Forest Conservation and Trade

and Economy followed with 19 and 15 sub-codes per category, respectively. In the Climate Change category 14 sub-codes were developed in order to describe the topics addressed while 13 were developed for the Forest Law and Monitoring category. National Level Support resulted in the creation of 12 sub-codes while Deforestation and Forest Degradation and Sustainable Development each had 11 sub-codes per category. In the Forest Governance category 8 sub-codes were created while The Forest Environment and Indigenous Peoples/Local Communities had 7 each. Finally, the least number of sub-codes was found in the Forest Protection category with 5. While exploring the general results gives some idea of the topics of interest, it does not delve into the level of detail required to understand the fragmentation and overlaps within the IFRC. Therefore, it is also necessary to look at the specific results of the inner forest regime and compare them to the results of all other peripheral documents that make up the regime complex in question.

5.1 Exploring Results of the Inner Forest Regime

As previously explained, the inner forest regime is comprised of the IFF and IPF Proposals for Action, the eleven reports from UNFF sessions to date, the Forest Principles, and Chapter 11 of Agenda 21. Within these fifteen documents, various topics, from all of the twelve parent categories, were addressed. Figure 6, below focuses just on the results of the inner forest regime documents and it illustrates the number of text segments found in each parent code group. It can be seen here that within the inner forest regime documents, topics within the Sustainable Forest Management group were most frequently addressed in the documents, found in 289 segments of text. The National Level Support category followed in second with 221 instances of use. The parent code group with the third highest frequency of use was Forest Law and Monitoring with 168 coded segments. This category was followed, in decreasing order of frequency by Forest Governance (161), Sustainable Development (134), Trade and Economy (103), Deforestation and Forest Degradation (89), Indigenous Peoples and Local Communities (79), Forest Conservation (77), Forest Protection (28), Climate Change (21), and lastly The Forest Environment (16).

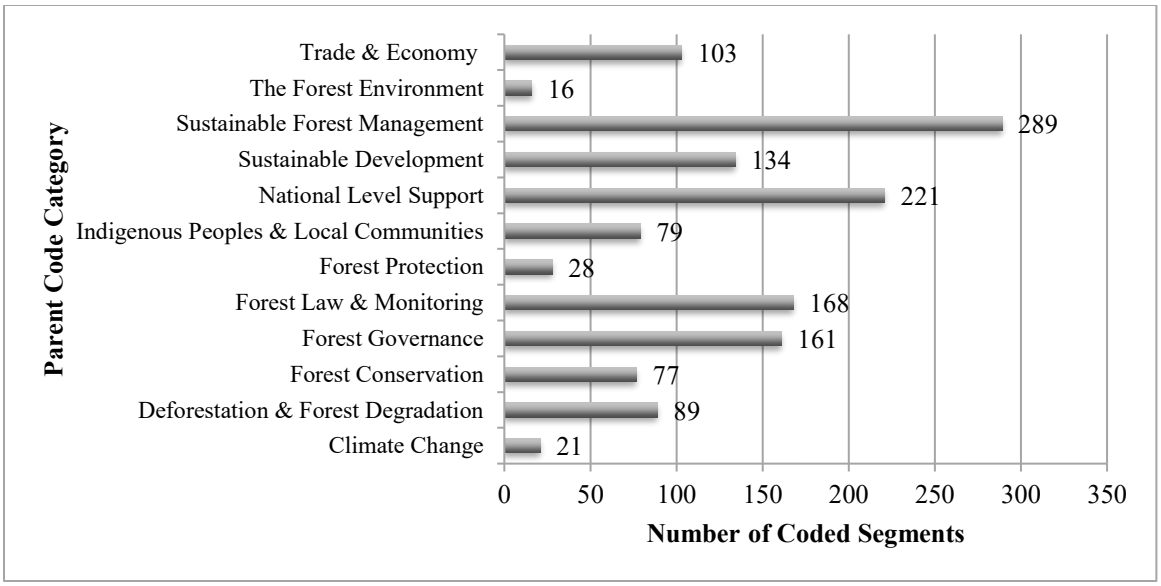

Figure 6. Number of coded segments, in the inner forest regime, assigned to each of the twelve parent codes.

Below, Figure 7 displays the ten most popular topics within the inner forest regime documents. In this context, popularity refers to the frequency of use of the topic, also referred to as sub-code, in the documents. These topics all fall into one of the larger parent categories and thus the results in in Figure 7 below relate back to Figure 6 as well. Figure 7 shows that Financing for Sustainable Forest Management was the most frequently used topic, located in 44 text segments. The second most popular topic had 42 instances of use, which was National Forest Programs, also within the Sustainable Forest Management category. In third, with 41 coded segments was Financial Support, found in the National Level Support category. Within the Sustainable Development parent code, the Role of Forests for Development Goals followed with 38 text segments. Sustainable Forest Management's Criteria and Indicators tied at 34 instances of use with two other sub-codes: Forest Science, Policy and Research and Supporting Implementation of Instruments. From the Forest Law and Monitoring category Land Tenure and Property Rights tied with Forest Governance's Institutional/Instrumental Cooperation with 33 coded segments each. To round out the top ten, Forests and Poverty Relief from the Sustainable Development category was used in coding 30 text segments. Further results from the inner forest regime are of interest in their relation to results from the outer forest regime and thus, exploring the results from these other documents next is crucial.

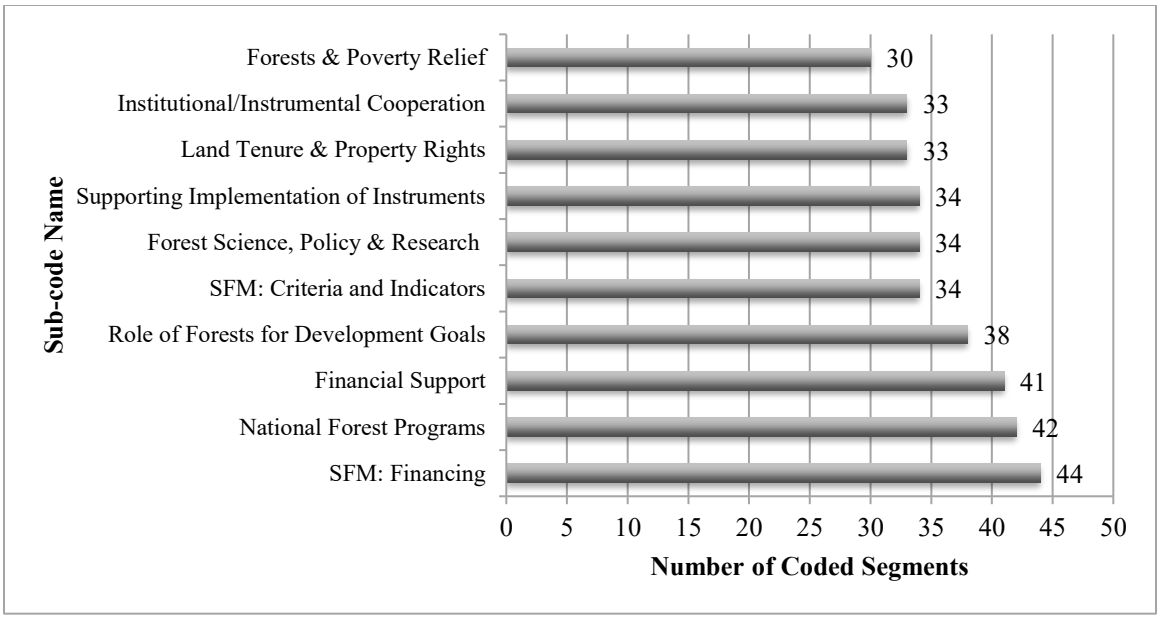

Figure 7. The ten most frequently used sub-codes within the inner forest regime documents, revealed during content analysis.

5.2 Results from the Outer Forest Regime

The content analysis of the outer forest regime was performed on the remaining thirty-five documents. These results revealed a lot of information about the content of the outer forest regime documents. Like with the inner forest regime, it was possible to first consider the popularity of the parent code categories based on their frequency of use in coding the documents.

Figure 8 shows the frequency of use of the parent code categories in the documents of the outer forest regime. These results showed that there is considerable difference in the primary focus of the outer than inner forest regime. Figure 8 reveals that Climate Change is the most frequently utilized parent code category in the outer forest regime with 100 coded segments. Where Sustainable Forest Management was by far the most popular parent code in the inner forest regime documents, here in the outer forest regime it follows in second with only 71 instances of use. Forest Law and Monitoring followed in third with 63 coded segments in the documents. Then, in decreasing order of coded segments, the use of parent codes was as follows: Forest Conservation (59), Deforestation and Forest Degradation (41), Trade and Economy (37), National Level Support (28), Forest Protection (27), Sustainable Development (26), Indigenous Peoples and Local Communities (13), and lastly Forest Governance (8). Here it is important to consider that when comparing these results, the order of parent code popularity is considered to be a more substantive result than the absolute value.

Despite including many more documents, the outer forest regime resulted in less overall segments being coded, because the documents were forest-relevant but not forest-focused. Therefore considerable parts of the documents did not address forests or did not relate to forests at all. As described in the methods section, the complete text of every inner forest

regime document was coded, because the entirety of every document referred to forests. However, in the outer forest regime documents, only those sections explicitly referencing forests were coded and thus the resulting number of coded segments was substantially less.

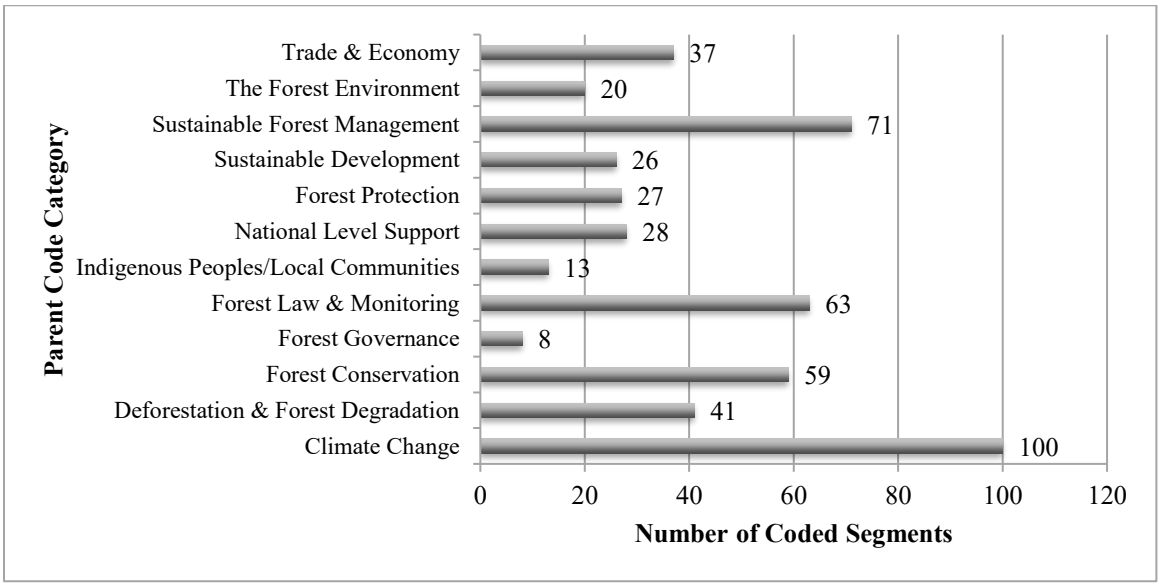

Figure 8. Number of coded segments, in the outer forest regime, assigned to each of the twelve parent codes.

Following the content analysis of the outer forest regime documents, the results regarding the popularity of sub-code usage were revealed. Figure 9 shows the topics that were most frequently addressed in the outer regime documents. From first glance it is already apparent that the areas of focus in the outer forest regime documents are very different from the inner forest regime documents. As shown in Figure 9, REDD+ Safeguards was the most prevalent topic addressed in the thirty-five outer regime documents, with 19 text segments. Furthermore, four of the ten sub-codes shown below fall into the Climate Change parent code, which aligns accordingly with the results shown in Figure 8. Land Tenure and Property Rights, Conservation of Biodiversity, and REDD+'s Results-based Finance each had 16 text segments per topic and were subsequently followed by Climate Change's MRV with 12 text segments. Forest Law Enforcement Efforts had 11 coded segments while SFM's Ecosystem Approach and REDD+'s Financial/Technical Support each had 9 text segments per topic. Lastly, from the Trade and Economy category Forest Workers/Employment and SFM's Management Responsibilities each were considered in 8 text segments.

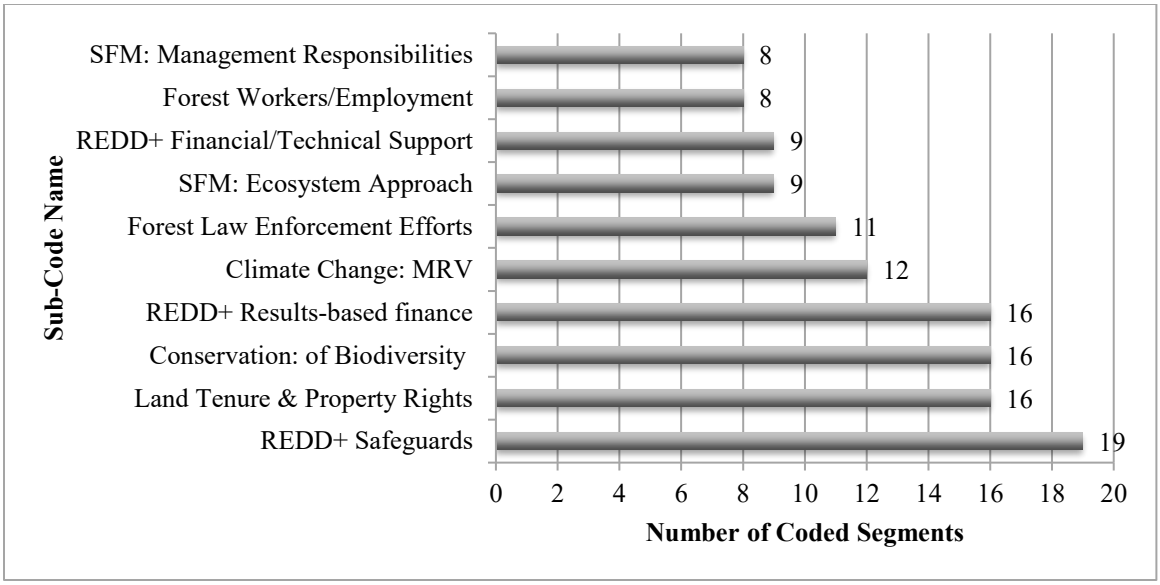

Figure 9. The ten most frequently used sub-codes within the outer forest regime documents, revealed during content analysis.

5.3. The Inner and Outer Forest Regimes: Comparative Results

In order to determine where the fragmentation and synthesis lies within the international forest regime complex it is essential to look at the results that also reveal the absence of certain forest-relevant topics. This can be done determining which topics are addressed only in the inner forest regime documents and not the outer, as well as the reverse, those topics found in the outer but not inner forest regime documents. Upon completing the coding of the outer forest regime documents, thirty-one new sub-codes had been developed. These new sub-codes, as shown in Table 6, were the result of the document analysis addressing forest-relevant topics that had not appeared previously in the inner forest regime documents.

Table 6. The new sub-codes created during the content analysis of the thirty-five outer forest regime documents.

Parent Code Category	New Sub-Code
Sustainable Forest Management	Enhance Carbon Stocks Stand/Landscape Structure Forest Infrastructure Forest Management Plans
Forest Law and Monitoring	Assessing/Monitoring Biodiversity Forest Biodiversity Programs
Sustainable Development	Sustainable Use of Biodiversity Green Climate Fund
Trade and Economy	Producer/Consumer Country Cooperation Improve/Expand Tropical Timber Trade CITES Species ID/Measurement
Deforestation and Forest Degradation	Forest Conversion
Forest Conservation	High Conservation Value Forest

	Impact of Trade Of Natural Heritage Of Soil and Water Resources Of Species Tropical Timber Of Carbon Stocks
Climate Change	Negative Impacts on Biodiversity Emissions from Deforestation/Forest Degradation MRV REDD+ Involving LC/IP REDD+ Positive Incentives REDD+ Forest Reference Levels REDD+ Results-based Finance REDD+ Safeguards
Forest Protection	Of Threatened/Endangered Species
The Forest Environment	Recreation Function Protective Function of Forests Pesticides/Fertilizers

These same results can be considered from another standpoint whereby it is determined which topics were not addressed in any of the outer forest regime documents and thus were exclusive to the inner forest regime documents. In this way, there were 18 sub-codes that were solely used to categorize segments of the inner forest regime documents, as shown in Table 7 below. These results show which specific sub-codes within the broader parent code category were only addressed in either the IFF/IPF Proposals for Action the UNFF sessions, Agenda 21 Chapter 11, or the Forest Principles. As such, this exclusivity of certain topics to the inner forest regime can already indicate issue areas of fragmentation within the broader forest regime complex.

Table 7. Sub-codes, according to their parent code category, that were exclusively utilized in coding segments of the inner forest regime documents.

Parent Code Category	**IFR Exclusive Sub-Code**
Sustainable Forest Management	A Link to Other Sectors Biotechnology Economic Factors Enabling Environment for Investment National Forest Finance & Accounting
National Level Support	Debt Reduction/Relief Programmes Developing Country Support Official Development Assistance Sovereign Responsibility
Forest Law and Monitoring	Certification Schemes Voluntary Progress Reporting
Forest Governance	Considering the LBI on All Types of Forests Role of Existing Forest Instruments

	Supporting Implementation of Instruments Multi stakeholder Engagement/Participation
Sustainable Development	Forests and Island/Coastal States Global Environment Facility Global Forest Fund
Trade and Economy	Forest Products & Processes Green Economy Illegal Trade Valuation Techniques Non-market based approaches
Forest Conservation	Finance/Information Support Landscape/Ecosystem Approaches Low Forest Cover Areas Mechanisms
Climate Change	Adverse Impacts Forest Health
Indigenous Peoples/Local Communities	Role of Women Strengthening Women/Youth Participation TRFK Research & Planning
The Forest Environment	Urban Forests Transboundary Pollution

5.4. Further Exploration: Issue Area Results

Previously, in the background information section, the international forest regime complex was described as being composed of smaller groupings of regime elements. Components of the regime complex were divided into four categories: Outcomes from the 1992, Rio de Janiero UNCED, conservation regime elements, trade regime elements, and other miscellaneous regime elements. Such divisions have been previously explained within the background information and are supported by the work of Tarasofsky (1999) and Eikermann (2015). Table 8, below displays what documents fall into the four subject categories and also considers the texts of the inner forest regime. It is then possible to evaluate the results of the content analysis along the divisions by subject or issue area. Breaking the outcomes into categories and looking at the results from content analysis of UNCED and successor regime elements, conservation elements, and trade elements separately would reveal which topics were of particular importance and also which were not addressed in the different categories. Furthermore, these results could then be compared to those expressed by the inner forest regime. In turn, such discoveries would further aid in revealing the areas of fragmentation and overlap in the regime complex.

Table 8. Documents of the international forest regime complex according to their groupings used for specific, issue area analysis.

Inner Forest Regime	UNCED Outcomes & Successor	Conservation Regime Elements	Trade Regime Elements	Miscellaneous Regime Elements
• Chapter 11, Agenda 21 • IPF & IFF Proposals for Action • Forest Principles • UNFF Sessional Reports	• CBD Convention • CBD Aichi Biodiversity Targets • CBD COP 2: Forests and Biodiversity • CBD Expanded Programmed of Work on Forest Biodiversity • Kyoto Protocol • UNCCD • UNFCCC • UNFCCC relevant COP Decisions (12 documents	• Ramsar Convention • Ramsar Strategic Plan (2009-2015) • World Heritage Convention	• CITES • CITES COP 16 Decisions Summary • GATT • ITTA 1983, 1994, 2006	• Indigenous People's Convention • FSC Principles • Montreal Process • New York Declaration on Forests • PEFC Standards • Sustainable Development Goals • UNDRIPS

5.4.1. Exploring Issue Area Results: UNCED Regime Elements and Successors

In the context of this study, the UNCED regime elements and successors include many various texts. The documents in this group are the CBD and its subsequent forest-relevant decisions, the UNCCD, UNFCCC, the Kyoto Protocol, and REDD+ forest-focused decisions. - Given that the IPF/IFF Proposals for Action, UNFF reports, Chapter 11 Agenda 21, and the Forest Principles have all been addressed in the inner forest regime, they are not included again in the UNCED regime elements. - It was then possible to consider the specific results from this document group.

In total, 209 relevant text segments were located within the confines of these documents. Figure 10 displays the number of texts segments per parent code category amongst the previously listed documents. It can be seen here that the primary focus amongst these documents was on topics within the Climate Change category as it had the most text segments (91). This group of documents was very diverse as every parent code category, except for The Forest Environment, was located in these documents. From Climate Change to the second most dominant subject area there was a considerable gap as Forest Conservation follows in second with 23 instances of use. Sustainable Forest Management and Deforestation and Forest Degradation tie for third with 17 text segments each. The parent codes that follow are Forest Law and Monitoring (16), National Level Support (13), Forest Protection (10), Indigenous Peoples/Local Communities (8), Sustainable Development (6) and Trade and Economy and Forest Governance with 4 each. Given that

eleven of the twelve parent codes are addressed means that more specific investigation into the use of sub-codes is needed to learn what issue areas were most frequently addressed.

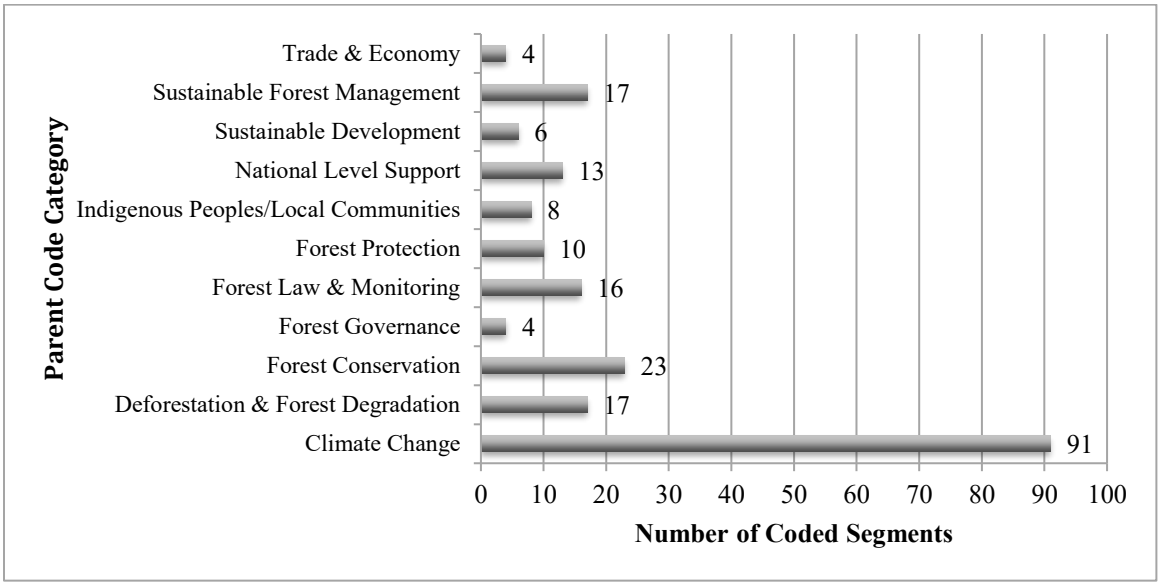

Figure 10. The distribution of coded segments amongst the twelve parent code categories within the UNCED regime elements and successors document group.

For more specific results regarding the focus of this document group, the ten most frequently considered topics were revealed, as shown in Figure 11. Congruent with the results shown in Figure 10, it can be seen below that the top four topics all fall within the parent code category of Climate Change. Furthermore, the most dominant topic here is REDD+ Safeguards, with 19 text segments. The next most frequently coded topics are REDD+ Results-based Finance and Climate Change's Monitoring, Reporting and Verification, each with 12 text segments. These two sub-codes are trailed by REDD+'s Financial/Technical Support with 9 text segments. Drivers of Biodiversity Loss and Climate Change's SFM Mitigation/Adaptation are each used 8 times within this document group. Conservation of Biodiversity, Deforestation: Underlying Causes, and REDD+'s Forest Reference Levels, each had 7 text segments. Lastly, to round out the top ten, with 6 uses, is Sustainable Forest Management's Enhance Carbon Stocks. These results revealed more detail about the focus of the documents showing that there is considerable emphasis on matters related to REDD+ while also addressing matters related to deforestation, sustainable forest management, and biodiversity loss and forest conservation. These results are useful to a greater extent once the same analysis is performed on other document groups and comparison is possible.

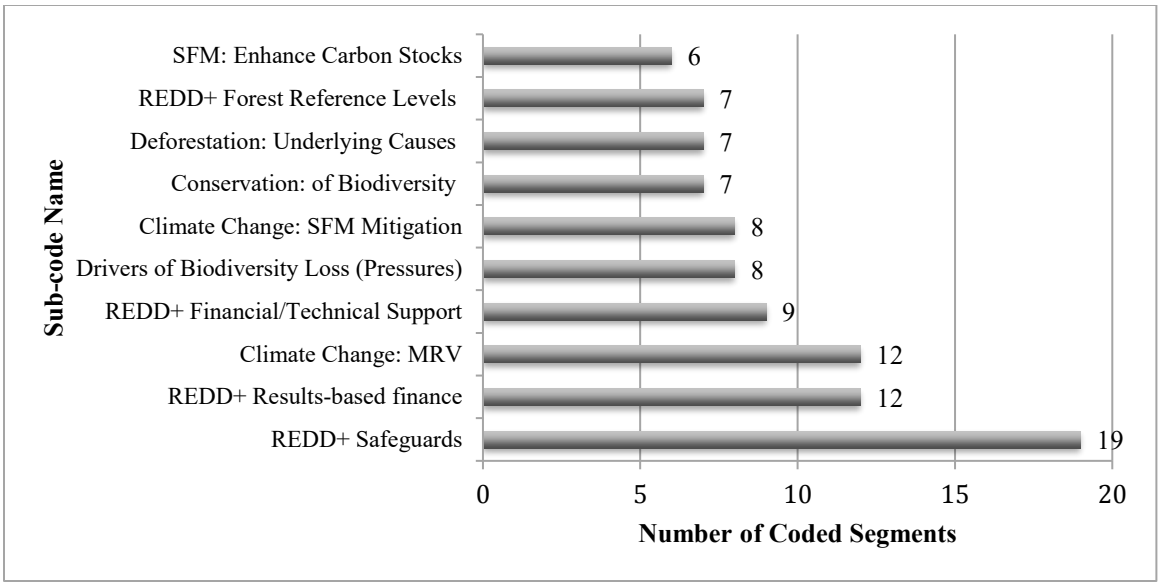

Figure 11. The ten most frequently used sub-codes of the UNCED regime elements and successors document group.

5.4.2. Exploring Issue Area Results: Conservation-specific outcomes

The document elements of the conservation regime are the Ramsar Convention text and subsequent Ramsar Strategic Plan (2009-2015), as well as the World Heritage Convention. With so few texts in this group as well as the fact that the documents are only forest-relevant not forest-focused means that only eight segments were coded. Consequently, not all of the parent code categories were represented. The Conservation, Forest Law and Monitoring, and Sustainable Development categories had two text segments each while National Level Support and Trade and Economy each had one text segment. More specifically, these text segments were assigned to the following sub-codes: Forests and Poverty Relief (2), Conservation of Natural Heritage (2), Training/Education Programs (1), Trade Liberalization (1), Monitoring, Assessment, Reporting (1), and Forest Law Enforcement Efforts (1). Standing alone, the results from this document group were quite limited. However, even in their limited scope, the results do show which areas were addressed in these documents, allowing for some comparison.

5.4.3. Exploring Issue Area Results: The Trade Issue

The trade regime elements of the international forest regime complex are CITES and its forest-relevant decisions, the WTO's GATT, and the three ITTAs.

The content analysis of these six documents resulted in 81 coded segments in total. Of the twelve parent code categories, nine were represented via text segments while Climate Change, Indigenous Peoples/Local Communities, and The Forest Environment were the three parent code categories that were not present. Figure 12 shows the nine parent codes that were represented in the documents of the trade regime. Accordingly, topics falling into the Trade and Economy category were coded most frequently with 19 segments. National Level Support and Forest Law and Monitoring followed with 13 and 12 coded segments,

respectively. Then in decreasing order of number of coded segments the results were: Conservation (10), Sustainable Forest Management (9), Deforestation and Forest Degradation (7), Sustainable Development (6), Protection (3), and Forest Governance (2). Thus, the overarching issue areas that are addressed most prominently within this document group are related to trade, economic matters, as well as legal and supervisory activities related to forests.

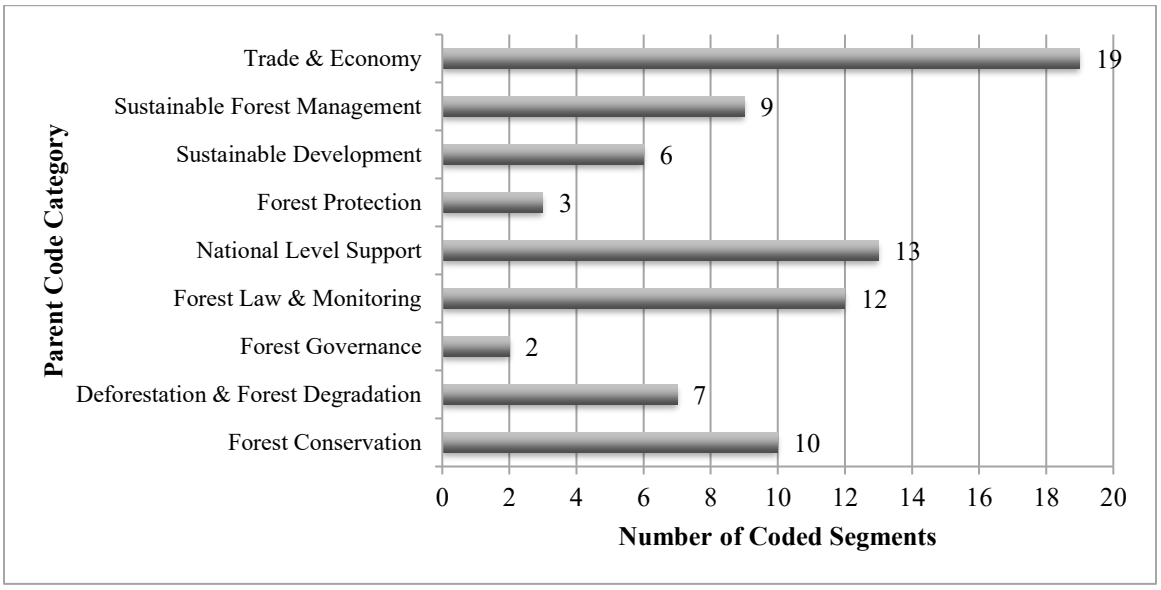

Figure 12. Number of coded segments in each parent code category within the trade regime documents.

Upon further analysis of the trade regime elements, through evaluating the sub-codes, it becomes apparent what the more detailed results are within this document group, as indicated graphically in Figure 13. Given that three of the texts were strictly focused on tropical forestry, there was a correspondingly high focus on tropical forest issues amongst the sub-codes. The topic that dealt with ways to improve or expand the tropical timber trade was most frequently utilized with 7 text segments. Another tropical-focused topic followed in second, Tropical Reforestation, with 6 segments. In third was Ethics/Transparency, which was used to code 5 segments. The Economic Importance of Tropical Timber, Technology Transfer, and Conservation of Tropical Timber were each utilized in coding 4 times. Lastly, four topics were addressed 3 times each, these being: Producer/Consumer Country Cooperation, Sustainable Forest Management of Tropical Timber, Sovereignty over Natural Resources, and Forest Law Enforcement Efforts.

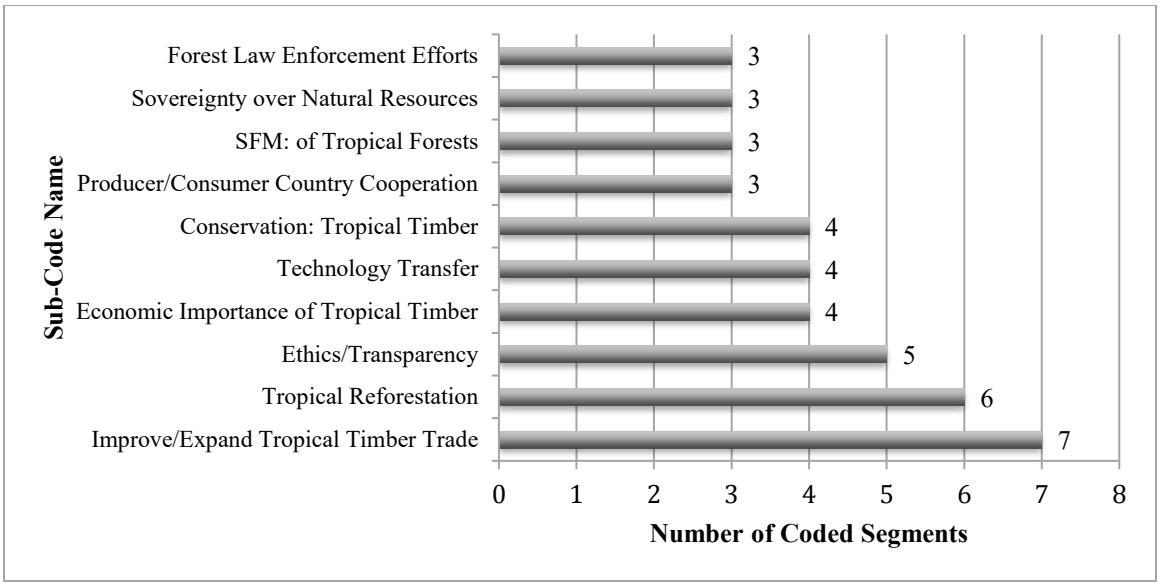

Figure 13. The ten most frequently used sub-codes of the trade regime elements and successors document group.

5.4.4. Results of the Miscellaneous Regime Elements

The remaining group of regime documents are not specifically related to each other but rather include all of the texts not included in the other categories. This grouping is comprised of the Sustainable Development Goals, UNDRIPS, PEFC and FSC Standards, the ILO Convention Concerning Indigenous and Tribal Peoples in Independent Countries, the New York Declaration on Forests, and the Montreal Process (5th Edition).

Despite the lack of relationship between the documents, the results from their analysis are still of interest because they reveal what subject matter is addressed outside of the already existing inner forest regime, UNCED, conservation, and trade regimes. As such, these results were explored in the same fashion as for the other document groupings, looking at which parent codes and sub-codes were most popular and which were absent.

There was considerable diversity amongst the elements of this document group and accordingly, each of the twelve parent codes was represented in some manner. Below, Figure 14 shows that number of coded segments accorded to each of the parent codes. Sustainable Forest Management topics are utilized most frequently amongst these documents as its parent code category had 45 segments. Forest Law and Monitoring came in second with 33 segments; it was followed by Forest Conservation with 24 segments. In contrast to the other document groups, the Forest Environment topics were used frequently as they had 20 segments. Then, in decreasing order of usage, the number of coded segments per parent code were: Deforestation and Forest Degradation (17), Forest Protection (14), Trade and Economy (13), Sustainable Development (12), Climate Change (9), Indigenous Peoples/ Local Communities (5), Forest Governance (2), and National Level Support (1).

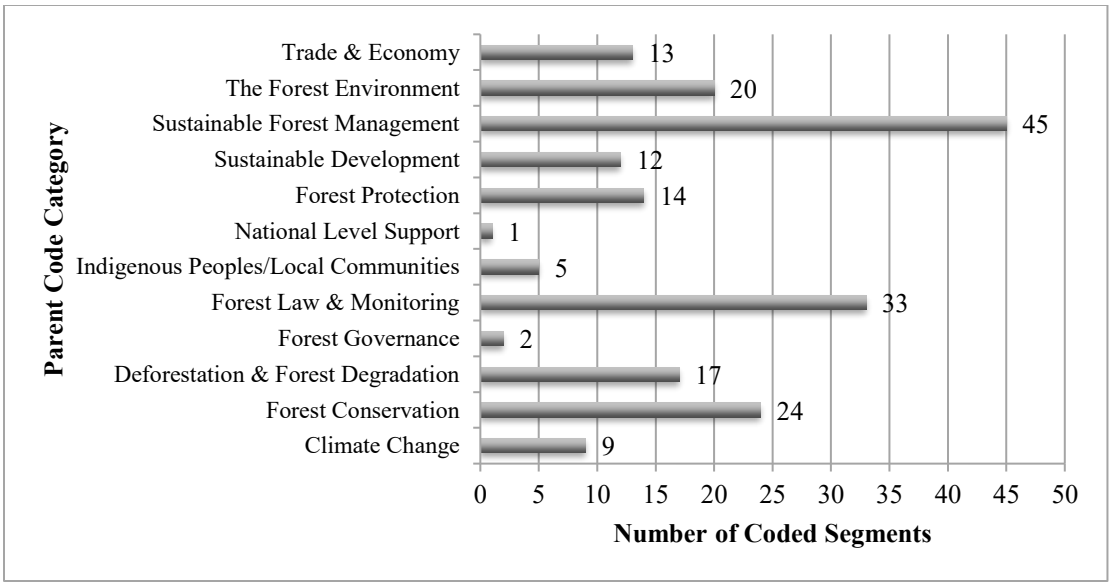

Figure 14. Number of coded segments in each parent code category amongst the miscellaneous regime complex documents.

When reviewing the sub-code frequencies from these documents, there were some interesting results to take note of. First of all, in all the other document groupings, the most frequent sub-code is one that is within the most frequently used parent code group. However, in this case, Sustainable Forest Management was the most frequently used parent code but the sub-code of greatest usage was Land Tenure and Property Rights of the Forest Law and Monitoring category, with 14 coded segments. Secondly, it was intriguing that the ten most frequent sub-codes, shown in Figure 15, were very different than the most frequent sub-codes of all other result groups. Land Tenure and Property Rights as well as Conservation of Biodiversity were the only two sub-codes that were also located in the top ten sub-codes of other results. Conservation of Biodiversity was the second most frequently utilized sub-code amongst the miscellaneous texts with 9 coded segments. Three topics, Forest Workers/Employment, Pesticides/Fertilizers, and Sustainable Forest Management's Management Responsibilities each had 7 coded segments. Again, three other topics had 6 coded segments each, which were Forest Health and Productivity, Forest Management Plans, and Monitoring Assessment Reporting. Lastly, Sustainable Forest Management's Stakeholder Participation had 5 coded segments.

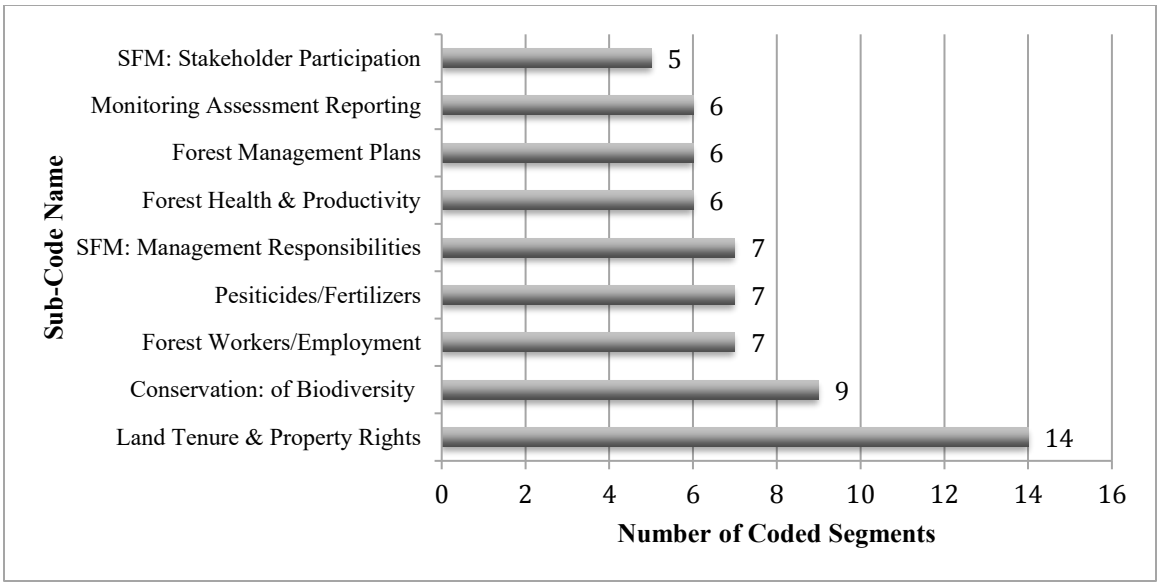

Figure 15. The ten most frequently used sub-codes of the miscellaneous regime complex documents.

Given that these documents are the peripheral members of the international forest regime complex it was of interest to explore what subject matter was not addressed within these texts. To begin, the Climate Change parent code was used in coding 9 segments, however, upon further inspection it becomes apparent that these segments were all related to REDD+ sub-codes and as such no other climate change issues were addressed. Furthermore, there was a notable absence of the National Level Support category, which in other document groupings was heavily addressed. This category is strongly connected to developing countries and technology support. Thus it was also relevant to note the low numbers for Indigenous Peoples/Local Communities as the issue areas of these categories can be quite integrated with each other. Along the same lines, there was also a considerable lack of Forest Governance sub-codes in these documents as there were only two coded segments, which related to partnerships and policy coordination.

In contrast to the previously explained results, there were seven sub-codes that were exclusive to this group of documents. From the Conservation category High Conservation Value Forest and Conservation of Soil and Water Resources were sub-code categories utilized exclusively within these miscellaneous documents and were used to code 1 and 2 segments of the documents, respectively. Within the Sustainable Forest Management category, sub-codes: Biodiversity: Stand/Landscape Structure and Forest Infrastructure were used to code 4 segments each. In the same category, Forest Management Plans was the topic used to code 6 segments. These 18 uses of the sub-codes were the only times that these topics were used in the entire content analysis. Furthermore, in the Forest Environment category, the two sub-codes Protective Function of Forests and Recreation Function were utilized 4 and 2 times, respectively and again they were only used for coding in these peripheral documents. As such, these results have highlighted which subject areas were exclusively referenced within the miscellaneous documents of the IFRC.

5.5 Temporal Trends

Given that the documents of the IFRC range in dates of origin from 1947 to 2015, it was also possible to look at the popularity of the different categories, within the documents, over time. Temporal trends aid assist in determining which topics were frequently utilized at the same time, possibly giving indications of overlap. In contrast it is also possible to see which topics were not addressed in certain time periods. As most documents of the IFRC were created after 1992, very little information from before this date is of use. However, it is interesting to note that *Forest Protection* and *Forest Conservation* were the two categories first addressed in the WHC of 1947. *Forest Conservation* topics continued to be addressed in the early documents and it peaked in documents in 2002, which was then followed by a drastic decline in interest in *Forest Conservation* topics. Other topic categories that followed a similar trend were *Forest Law and Monitoring* and *Forest Protection*, both of which also peaked in usage in 2002 before also dropping off. This temporal trend potentially indicates a relationship between these three categories.

Two categories that were addressed often from 1992 onwards and had very similar frequencies of usage were *National Level Support* and *Sustainable Forest Management*. These two categories followed the same trends in usage, specifically with high frequencies of use from 1997 to 2015. Given that there were almost identical amounts of use of topics within these categories during the specified time period, there is a strong indication of an overlapping relationship between them.

There were four categories: *Deforestation/Forest Degradation*, *Forest Governance*, *Indigenous Peoples/Local Communities*, and *Trade/Economy* that had high frequencies of use from 1992 onwards. These categories were all similar in that they were used often in the documents from 1997, 2000, and 2002. In general, these categories maintained high usage through the most recent documents of 2015. The similar peaks in usage for these four categories suggests that the use of their topics is interconnected in some manner.

One outlier was the *Climate Change* category, like many others was found first in 1992, after UNCED and the flood of documents that followed. However, this category differs in that it does not experience any drastic peaks in usage in the following years. Rather, *Climate Change* topics are consistently referenced through time. This occurs likely because forest-relevant climate decisions are made often, as decisions and documents arise at a constant rate.

A second outlier was *Sustainable Development* which maintained a high frequency of usage within the documents from 1992 to 2015. It was most frequently addressed in 2004 and 2015. The sustained use of topics in this category shows that it remains of importance and strongly connected to the forest issue area through time.

Lastly, *The Forest Environment* also did not follow a trend, however this category was a collection of loosely related topics and thus it naturally follows that no trends were apparent.

5.6. Interpreting the results: considering overlap and fragmentation

The primary goal of this study is to determine, within the IFRC, where the subject area fragmentation or overlap exists and to what extent. Simply explaining the results of the content analysis has revealed which issue areas are addressed and left out of the document groups and has set the stage for an analysis of the results. The inner forest regime is composed of the central elements of the IFRC and thus these documents are crucial for determining whether and in what capacities fragmentation exists within the regime complex. In this way, the existence of fragmentation can be determined by considering which subject areas are addressed in the inner forest regime, but are not considered in the other documents. Additionally, overlap and potential synthesis is detected by determining what subject areas are addressed in the inner forest regime and also in the other documents.

5.6.1. Sustainable Forest Management

As the largest of the parent code categories, *Sustainable Forest Management* contained twenty-three sub-codes, which were used to categorize 360 text segments, covering the numerous relevant aspects of sustainably managing forest resources. The sub-codes of this category were widely applied during the content analysis and consequently, five sub-codes, *A Link to Other Sectors, Biotechnology, Economic Factors, Enabling Environment for Investment, and National Forest Finance and Accounting* were singularly used in the inner forest regime document group. Also, it was necessary to create four novel sub-codes to attend to new topics of the outer forest regime, as shown in Table 6. None of the sub-codes were completely integrated as the entire *Sustainable Forest Management* category was excluded from the conservation regime documents. However, there was one sub-code, *Criteria and Indicators* that was present in all four other document groupings. The *Criteria and Indicators* topic considered their role in Sustainable Forest Management and its use in coding can be exemplified by this portion of the CBD's Expanded Programme of Work on Forest Biological Diversity: "Advance the development and implementation of international, regional and national criteria and indicators based on key regional, subregional and national measures within the framework of sustainable forest management" (p. 21). As such, this was the most integrated topic.

Furthermore, there were also six sub-codes that were overlapping in three document groups as well as seven other sub-codes overlapping in two document groups. This left also nine sub-codes that were only found in one document group each. Therefore, it can be seen that this vast category displays varying levels of overlap in fragmentation depending on the subject matter in question and thus further investigation is required.

Of the six topics that are found in three document groups, there is a general focus on the importance of a cooperative approach to sustainable forest management. These six sub-codes are *All Types of Forests, Regional/National/Global Levels, Management Responsibilities, Stakeholder Participation, National Forest Programs, and the Ecosystem Approach*. Of these six sub-codes *National Forest Programs* was used quite extensively in the coding of documents.

From the inner forest regime, 42 segments were coded with this topic, one of them being this section of the IPF Proposals for Action: “The Panel called for improved cooperation in support of the management, conservation and sustainable development of all types of forests, and urged all countries to use national forest programmes, as appropriate, as a basis for international cooperation in the forest sector” (p.1). This topic was also addressed in the UNCED regime documents and one instance is shown in this objective from UNFCCC Decision 4/CP.15: “Recognizing the importance of promoting sustainable management of forests and co-benefits, including biodiversity, that may complement the aims and objectives of national forest programmes and relevant international conventions and agreements,” (p. 6). Lastly, the third document group in which National Forest Programs is included is the Trade regime elements. An example from this group focuses specifically on national programs for tropical timber but is still relevant to the category. In this way, the following is an objective from the 1994 ITTA: “To encourage members to develop national policies aimed at sustainable utilization and conservation of timber producing forests and their genetic resources and at maintaining the ecological balance in the regions concerned, in the context of tropical timber trade” (p.16). These examples highlight the connectivity of the topic across the three document groups and thus overlap exists when considering the importance of national forest programs for successful sustainable forest management. Likewise, for the other five sub-codes that were found in three document groups, the similarity between the coded segments supports the conclusion that there was considerable overlap amongst the texts on these sustainable forest management topics.

When considering overlap between two document groups, there were seven sub-codes that fulfilled this criterion. These seven sub-codes are *Capacity Building, Financing, Forest Inventory, Innovation, Multiple Roles of All Types of Forest, Political Commitment, and Tropical Forests*. The most dominant of these topics was Financing for sustainable forest management, which resided in the inner forest regime and miscellaneous regime element document groupings. For instance, one action from UNFF10 of the inner forest regime was: “Enhancing mobilization of financial resources for the sustainable forest management strategy in the sixth and subsequent replenishment periods” (p. 13). Similarly, one objective of the Sustainable Development goals speaks directly to financing sustainable forest management: “mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation” (p. 21). Thus, even between very different documents there is overlap when considering financing for sustainable forest management.

Another topic that was located in two document groups and frequently used for coding segments was *Political Commitment*, which concentrated on the necessity of achieving committed governments and actors in order to have sustainably managed forests. The requirement of strong political commitment was considered to be essential from the outset of the UNFF as it was included in the first sessional text: “Clear strategic direction and

strong political commitment to sustainable forest management are key to the successful fulfillment of every aspect of the mandate of the Forum" (p.8). From the ITTA of 1994, the need for political commitment is included through the following statement: "Those States which have already achieved a high standard of sustainable management of their forests commit to maintain and enhance the sustainable management of their forests" (p. 10). Again, for these seven sub-codes, even when observing only two document groups there is still noticeable amounts of overlap amongst the texts of the IFRC.

Within this large category, fragmentation was also present as nine sub-codes were addressed only within one document group, occupying a segregated position. The ten topics that were addressed only within one group are *A Link to other Sectors, Economic Factors, SFM to Enhance Carbon Stocks, Enabling Environment for Investment, Biotechnology, Biodiversity: Stand/Landscape Structure, Forest Infrastructure, Forest Management Plans, and National Forest Finance and Accounting*. As previously explained, there were five sub-codes present only in the inner forest regime. Thus it is revealed that, in general, financial and economic issues related to sustainable forest management are important only within the core texts of the IFRC and not within any other relevant documents. From the UNCED regime document group, *SFM to Enhance Carbon Stocks* was the one sub-code found exclusively amongst these documents. Finally, amongst the miscellaneous regime elements, three sub-codes, *Biodiversity: Stand/Landscape Structure, Forest Management Plans, and Forest Infrastructure*, are solely found amongst these documents. These three sub-codes all relate to forest management and thus it is apparent that this topic is of importance amongst the peripheral IFRC texts, but not within the core documents. In general, each of the document groupings previously mentioned has a specific subject area, within the broader category, that is of unique importance. Consequently, fragmentation exists as there is no overlap or integration occurring for these topics.

5.6.2. National Level Support

The *National Level Support* category was a rather large grouping, containing twelve sub-codes and 249 coded segments that considered the multiple ways in which support can be provided to nations, specifically developing countries, such as through financial support or training and education programs.

First, within the documents of the inner forest regime, all twelve sub-codes are used for coding at least some portion of the texts. As such, National Level Support is not found in Table 6, as it was not necessary to develop any new sub-codes for the outer forest regime documents. However, as shown in Table 7, there were four sub-codes that were solely utilized in the inner forest regime coding and these sub-codes were *Debt Reduction/Relief Programmes, Developing Country Support, Official Development Assistance, and Sovereign Responsibility*. The exclusive use of these sub-codes shows that these topics were specific to the inner forest regime documents.

Considering the other eight sub-codes that were found in the outer forest regime documents, *Technology Transfer's Training/Education Programs* was the most pervasive topic. This sub-code was included in documents in the, inner, UNCED, conservation, and trade regime elements. From the inner forest regime, UNFF7 contains many examples of this sub-code, such as this statement: "Promote and encourage access to formal and informal education, extension and training programmes on the implementation of sustainable forest management" (p. 7). In the Expanded Programme of Work on Forest Biodiversity, Goal #3 is simply to: "Increase public education, participation, and awareness" (p. 19), which then goes on to recognize the importance of programs and activities to increase forest education and awareness.

The remaining sub-codes are well represented in the UNCED regime elements, but not within the conservation, trade, or miscellaneous regime documents, revealing some fragmentation. The only sub-code included in the miscellaneous regime elements is *Information Sharing and Support*. For example, in the PEFC Standards, the following relevant criteria is included: "Forest managers, contractors, employees and forest owners shall be provided with sufficient information and encouraged to keep up-to-date through continuous training in relation to sustainable forest management as a precondition for all management planning and practices described in this standard" (p. 13). A comparable statement was made in Chapter 11 of Agenda 21: Collecting, compiling and regularly updating and distributing information on land classification and land use, including data on forest cover, areas suitable for afforestation, endangered species, ecological values, traditional/indigenous land use values, biomass and productivity, correlating demographic, socio-economic and forest resources information at the micro- and macro-levels, and undertaking periodic analyses of forest programmes" (p. 5).

In summary, there was a varying level of overlap and fragmentation on topics in this grouping. More specifically, subject matter related to *training/education and information exchange and support* was pervasive throughout four document groupings. Two other topics, *Financial Support and Technology Transfer* were overlapping across three document groups while five other topics were exhibited overlap across two document groups. However, some fragmentation can also be found in this category as three remaining topics, were not represented in the conservation, trade, and miscellaneous regime elements. Overall, this category contained instances of both fragmentation and overlap amongst the documents of the IFRC when considering the many issues that were addressed.

5.6.3. Forest Law and Monitoring

The Forest Law and Monitoring category contained 13 sub-codes that described ways in which forests can be monitored or assessed, including enhancement of forest-relevant laws. Under this heading, 231 coded segments were accorded to this category. *Voluntary Progress Reporting and Certification Schemes* were the two sub-codes in this category only utilized in the inner forest regime. Furthermore, it was necessary to develop two new sub-codes in the outer forest regime documents, which were: *Assessing/Monitoring*

Biodiversity, and Forest Biodiversity Programs. Overall, there was one topic, *Forest Law Enforcement Efforts*, which was present in all five of the document groups. Furthermore, *Land Tenure and Property Rights* was the one topic found in four of the document groups. Four other topics were located in three different groups and three topics could be found across two of the document groups. Therefore, this left four topics that were only considered in one grouping, showing some fragmentation. However, with nine topics exhibiting varying amounts of overlap, there is some level of integration amongst regime groupings on forest-relevant law and monitoring topics.

Despite the existence of some fragmentation in the previously mentioned specific subject areas, there was also considerable overlap on other subjects within the *Forest Law and Monitoring* category. *Forest Law Enforcement Efforts* was found across all document groups. In UNFF 5, one objective that addressed this topic was: "Enforcing forest legislation and promoting law enforcement and governance" (p.7). Another instance where this topic was found was in the ITTA of 2006 where the following statement was made: "Also recognizing the importance of such collaboration for improving forest law enforcement and promoting trade from legally harvested timber" (p.2). Furthermore, this topic is also addressed in the UNCED regime elements, one example being from the CBD's Expanded Programme of Work on Forest Biological Diversity. This activity states that the goal is to: Facilitate and support a responsible private sector committed to sustain- able harvesting practices and compliance with domestic laws through effective development and enforcement of laws on sustainable harvesting of timber and non-timber resources" (p. 11).

Land Tenure and Property Rights as well as *Forest Science, Policy, and Research* were two sub-codes that were used frequently in the inner forest regime documents, as indicated in Figure 7. As shown in Figure 9, *Land Tenure and Property Rights* was the second most frequently cited sub-code in the documents of the outer forest regime as well. Again, even more specifically, *Land Tenure and Property* Rights is the top sub-code of the miscellaneous regime elements (Figure 15). Even when not appearing in the figures showing top ten sub-codes, *Land Tenure and Property Rights* as well as *Forest Science, Policy, and Research* are located in UNCED regime elements and trade regime documents. To substantiate the overlap for these two sub-codes, document segments assist in showing the congruency between different texts. From the inner forest regime, the IPF Proposals for Action contain the following statement: "The Panel also encouraged countries to undertake, as needed, to formulate policies aiming at securing land tenure for local communities and indigenous people, including policies, as appropriate, aimed at the fair and equitable sharing of the benefits of forests" (p.2). The consistency is obvious when looking at this segment from the 2010 PEFC Standards, which states: "Property rights and land tenure arrangements shall be clearly defined, documented and established for the relevant forest area. Likewise, legal, customary and traditional rights related to the forest land shall be clarified, recognized and respected" (p. 12). These quotes highlight just one

example where very different documents in the IFRC are delivering the same message and are thus overlapping. In regard to the Forest Science, Policy, and Research sub-code, there are many coded segments from various documents and in one example, UNFF7 includes the statement: "Strengthen the contribution of science and research in advancing sustainable forest management by incorporating scientific expertise into forest policies and programmes" (p. 7). A similar quote from the 1983 ITTA of the trade regime is: "to promote and support research and development with a view to improving forest management and wood utilization" (p. 8). Thus these similar quotes support the overlap on a subject matter between documents of different primary focus but still of importance within the IFRC.

Unmistakably the issues addressed within the Forest Law and Monitoring category are exhibiting overlap amongst the various subgroups within the IFRC documents.

5.6.4. Forest Governance

In total, the *Forest Governance* category contained eight sub-codes and was used to code 169 segments of the fifty documents. All eight sub-codes in this category were utilized extensively in the texts of the inner forest regime and it was not necessary to create any new sub-codes for the outer forest regime documents. However, as shown in Table 7, there were four sub-codes that were singularly used in the inner forest regime texts and in no other documents, showing some fragmentation on these issues. Interestingly, two of these sub-codes were (1) *Considering the legally binding instrument on all types of forests and (2) Role of existing forest instruments*. These two issue areas are specifically focused on the structure and functioning of the international forest governance arrangement for forests. Their exclusive use in the inner forest regime texts highlights the prevalence of these topics within the central texts of the IFRC.

As has been noted previously, the conservation and trade regime documents, in general, are quite segregated from other documents in the IFRC. In regard to the Forest Governance topic, it is completely absent from the conservation regime element documents but not from the trade regime documents. Accordingly, there are some sub-codes within this category that were present in the inner forest regime texts as well as those from the UNCED regime document group, the trade regime documents, and also the miscellaneous regime elements. The most pervasive topic in this category was *Mechanisms for policy formulation/coordination*, which was found in four different document groups. *Mechanisms for policy formulation/coordination* was used to code text segments such as this, from the IPF Proposals for Action: "71 (a) The Panel called for enhanced coordination, collaboration and complementarity of activities among bilateral and multilateral donors and among international instruments related to forests" (p. 10). Further support is provided by the Montréal Process document whereby criterion 7.1.b is focused on policy and programme coordination and states "Cross sector coordination of forest and non-forest related policies and programmes can promote improved forest management by helping to

minimise adverse impacts and by strengthening the ability of countries to respond to national and global issues" (p. 23).
As such, it is evident that the Forest Governance category is well developed within the inner and outer forest regime documents. Specifically, there is a strong case for overlap on the subject matter of policy formulation and coordination.

5.6.5. Sustainable Development

Sustainable development, as a concept, is built on three pillars, which are environmental, social, and economic components of development. This parent code category contained eleven sub-codes, which were assigned to 160 document segments. First, considering the inner forest regime documents, nine of the eleven sub-codes were used in the coding of document segments. As such, only two new sub-codes had to be created to address additional topics in the outer regime documents, these being *Sustainable Use of Biodiversity and Green Climate Fund*. There were also three sub-codes that were only made use of in the inner forest regime documents, which were *Forests and Island/Coastal States, Global Environment Facility, and Global Forest Fund*. *The Role of Forests for Development Goals, Forests and Poverty Relief, and Forests and Livelihoods* were three extremely persistent sub-codes that were applied to text segments within the various document groups. Even within the usually limited conservation regime documents, the sub-code *Forests and Poverty Relief* was present. Similarly, within the trade regime documents, the *Role of Forests for Development Goals, Forests and Poverty Relief*, as well as two other sub-codes related to the economic aspects of sustainable development were found.
Comparable results could also be found in the miscellaneous regime elements where some of the same sub-codes were also applied. For example, the New York Declaration on Forests is a peripheral document of the IFRC and though it is non-legally binding it is still an important political statement. When considering the role of forests in reaching the development goals, one of the collective commitments that is relevant states the following: "Include ambitious, quantitative forest conservation and restoration targets for 2030 in the post-2015 global development framework, as part of new international sustainable development goals" (p.3). A like-mindedness is apparent in the trade regime as the ITTA of 2006 includes the following declaration: "Also recognizing the importance of the multiple economic, environmental and social benefits provided by forests, including timber and non-timber forest products and environmental services, in the context of sustainable forest management, at local, national and global levels and the contribution of sustainable forest management to sustainable development and poverty alleviation and the achievement of internationally agreed development goals, including those contained in the Millennium Declaration" (p.2). Additionally, many analogous assertions are made in the inner forest regime, such as this one from UNFF7: "To enhance the contribution of forests to the achievement of the internationally agreed development goals, including the Millennium Development Goals, in particular with respect to poverty eradication and environmental sustainability" (p.4). Even from comparing results for just one sub-code it

is apparent that there is a strong connection on this issue across the document groups. In general, the Sustainable Development category displays substantial overlap as many sub-codes are addressed throughout the various documents.

The only areas that do not display overlap are the lesser-used sub-codes that address minor, more focused issues such as particular *sustainable development funding mechanisms, or the sub-code considering island/coastal states*. For instance, in UNFF4, *Forests and Island/Coastal States* was used to code this segment of the text: "There is much recognition of the importance of forests for the sustainable development of small island developing States. Forests and trees outside forests play a significant role in the preservation of biological diversity, food security, soil conservation, wood and non-wood forest products, water management, coastal protection and the diversification of economic development in island ecosystems, among others" (p. 27). As can be seen from this excerpt, this is a highly specialized issue area and thus has been considered in a very limited scope.

Overall, this category is highly overlapping and exhibits only minor instances of fragmentation.

5.5.6. Trade and Economy

In the category, *Trade and Economy*, the fifteen sub-codes considered forestry matters related to markets and valuation methods. Within these fifteen sub-codes, 150 text segments can be found. Referring again to Table 7, five topics were addressed solely in the inner forest regime, those being *Forest Products and Processes, Green Economy, Illegal Trade, Valuation Techniques, and Non-market based Approaches*. Alternatively, it was necessary to develop three new sub-codes in the outer forest regime (*Producer/Consumer Country Cooperation, Improve/Expand Tropical Timber Trade, and CITES Species ID/Measurement*) in order to properly address extremely specific topics. Besides these three additional topics all other sub-codes were utilized quite often for coding within the inner forest regime documents. The strongest overlap in this category is between the inner forest regime, UNCED regime, and trade regime documents. In contrast, the conservation and miscellaneous regime elements are generally fragmented, as they do not focus on issues of the Trade and Economy category. The conservation regime documents only incorporated *Trade Liberalization*, which is also addressed in the inner forest regime documents, showing overlap on this one specific subject area. Looking at the interactions, more specifically, there are three topics, *Markets for ES/NTFPs, Forest Workers/Employment, and Forest Sector Assessments* that can be found in three of the document groupings. One objective within the PEFC Standards that speaks to the topic of *Markets for ES/NTFPs* is: "Forest management planning shall aim to maintain the capability of forests to produce a range of wood and non-wood forest products and services on a sustainable basis" (p.10). Within the documents of the inner forest regime, UNFF2 includes a similar aim through the statement: "The opportunity to highlight the significance of non-timber products and their use, as well as the development of new markets for their commercialization, should be further encouraged" (p. 48). From these comparative

document segments, the overlap between the document groups is highlighted. There is also further overlap between the inner forest regime and trade regime elements on two topics, these being the *Role of Sustainable Forest Management in Trade* and the *Economic Importance of Tropical Timber*.

In summary, there are there are many topics that appear across two or three of the document groups, showing a high amount of overlap on forest-relevant trade or economic issues. Again, there are some subjects of this category that are located exclusively within one document group, such as Illegal Trade of the inner forest regime and CITES Species ID/Measurement of the Trade regime. As such, there is some fragmentation occurring, as these minor, highly specific issues did not exhibit any overlap. Besides, these small specific subjects, overall this category was well connected, displaying substantial overlap.

5.5.7. Deforestation and Forest Degradation

The *Deforestation and Forest Degradation* parent code was used to categorize 130 document segments and resulted in the development of eleven sub-codes. The issue addressed in this category ranged from addressing the underlying causes of deforestation to considering many different possibilities and programs for combating deforestation. Table 6 shows that it was only necessary to create one new sub-code (*Forest Conversion*) in the outer forest regime documents to characterize issues relevant to deforestation. Similarly, this category is not shown in Table 7 as there were no sub-codes, which were exclusive to the inner forest regime. These results indicate that there is substantial overlap on *Deforestation and Forest Degradation* between the inner and outer forest regime documents. The two sub-codes within this category that were pervasive throughout the entire regime complex were *Combatting Deforestation* as well as *Deforestation and Poverty*. The *Combatting Deforestation* topic was represented by twenty-two document segments in the inner forest regime, one example being this excerpt from UNFF5: “The alarming rate of deforestation continues to warrant international attention and there is a need to renew the pledge to combat deforestation, restoring the forest functions in degraded landscapes and improve the livelihoods of poor people living in and around forests worldwide” (p. 27). From the New York Declaration on Forests, the Combatting Deforestation topic is addressed in many statements, such as: “We share the vision of slowing, halting, and reversing global forest loss while simultaneously enhancing food security for all” (p. 3). A similar assertion was made in the Sustainable Development Goals, whereby Goal 15 states “Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss” (p. 21). In a similar fashion, overlap was also apparent on the topic of Deforestation and Poverty. One such example is from UNFF10 where the following assertion is made: “Stressing that, despite concerted efforts over several decades, forests continue to be lost and degraded at an alarming rate, threatening the achievement of sustainable development and poverty eradication” (p. 9). Again, this

topic is also addressed in the New York Declaration on Forests which discusses how to reduce deforestation an attempt to eradicate poverty, as shown in this example: "Support alternatives to deforestation driven by basic needs (such as subsistence farming and reliance on fuel wood for energy) in ways that alleviate poverty and promote sustainable and equitable development" (p. 3). As such, when considering topics focused on *combatting deforestation*, especially related to poverty, there is overlap across the inner, UNCED, and miscellaneous document groups. In general, overlap exists to some extent on all of the topics in this category as every topic can be found in at least two document groups. However, one area in which *Deforestation and Forest Degradation* subject matter is fragmented is amongst the conservation regime elements where it is completely excluded and in the trade regime where use of these topics is limited. As has been previously explained, these nine documents that make up the conservation and trade regimes are specifically focused on addressing certain issues and thus exhibit little overlap with other categories, showing considerable fragmentation.

5.5.8. Forest Conservation

The nineteen sub-codes that were created in the Forest Conservation parent code category were used to code 136 segments that described different aspects of conservation in forest systems. Table 7 shows that there were four Conservation sub-codes, *Finance/Information Support, Landscape/Ecosystem Approaches, Low Forest Cover Areas, and Mechanisms* that were only used within the inner forest regime documents. Within the inner forest regime, *Conservation of Low Forest Cover Areas* was the most frequently addressed topic of the Conservation category. Alternatively, it was necessary to develop seven new sub-codes to describe relevant issues that were not addressed in the documents of the inner forest regime, as shown in Table 6. As such, it can be seen that the inner forest regime documents did not address forest conservation topics in a completely comprehensive manner. In this way, of the twelve conservation topics included in the inner forest regime documents, there is a prominent focus on topics that consider ways to aid conservation efforts. This become apparent simply by looking at which topics are prevalent in the inner forest regime such as, *Finance/Information Support, Landscape/Ecosystem Approach, Land Restoration, and Mechanisms* (for conservation). For example, from the IFF Proposals for Action, one portion of the text falling into the Mechanisms topic was: "The Forum encouraged countries to develop and implement forest management mechanisms, as appropriate, that provide for partnerships and the participation of forest owners and of indigenous and local communities in support of forest conservation initiatives for sustainable forest management within the legal framework of each country" (p.27). In contrast, forest conservation topics in the outer forest regime documents had a focus on the different types of forest-focused conservation efforts. For example, some of the prevalent topics were *Conservation of Natural Heritage, Conservation of Soil and Water Resources, Conservation of Species, and High Conservation Value Forest*. For example, the *Conservation of Soil and Water Resources* topic can only be found in the miscellaneous

regime document group, within the Montréal Process and FSC Principles. The Montréal Process contains an entire criterion focused on the conservation of soil and water resources. Then within the FSC Principles, this same topic is contained within the following segment: "Forest management shall conserve biological diversity and its associated values, water resources, soils, and unique and fragile ecosystems and landscapes, and, by so doing, maintain the ecological functions and the integrity of the forest" (p. 6). This separation of forest-focused conservation topics is further supported by the fact that ten of the nineteen sub-codes were found only within one document group and thus exhibit fragmentation.

When considering the forest conservation topics in the specific regime document groups, Figure 10 first showed that this category was of some importance amongst the UNCED regime elements and their successor documents. However, looking more specifically, it becomes clear that a sizable amount of the coded segments fall into the category of *Conservation of Biodiversity*. This sub-code was used to define segments such as this piece of text from the CBD's COP2/19 text: "The maintenance of forest ecosystems is crucial to the conservation of biological diversity well beyond their boundaries, and for the key role they play in global climate dynamics and bio-geochemical cycles" (p. 14). Thus, while there was some overlap between conservation-relevant issues between the inner forest regime and UNCED regime documents, the primary area of focus within the conservation category was different. Contrary to its name, the conservation regime element documents did not explicitly address many issues that were defined with the *Forest Conservation* category. The only sub-code utilized here was *Conservation of Natural Heritage*. This topic was made reference to on two occasions, in the entire content analysis, both of them in this document grouping, highlighting its secluded position. Therefore, while the overall broad theme of these documents is certainly conservation, when explicitly addressing forest issues, the documents instead focus on topics relevant to *Forest Law and Monitoring*.

Similarly, the trade regime documents also occupy a secluded position on conservation topics. Amongst these documents conservation is referenced in relation to forests as natural resources and other sub-codes emphasizing tropical forests. The final document grouping to consider was that of the miscellaneous regime elements. As shown in Figure 14, *Conservation of Biodiversity* is also referenced quite often within these documents, showing that there is some existing overlap. Overall, the *Forest Conservation* category, in general is prevalent within the majority of the texts of the IFRC, specifically shown in Figures 6, 8, 10, 12, and 14, and thus indicates overlap.

However, it has been revealed on further inspection that the topics of this category are in general unique to document groups, not overlapping, and indicate towards the existence of fragmentation within the regime complex on forest conservation topics.

5.6.9. Climate Change

The *Climate Change* is composed of fourteen sub-codes that were applied to 120 document segments. Referring back to Table 7, within the Climate Change category there was two topics, *Adverse Impacts and Forest Health*, which were utilized solely within the inner

forest regime and not in any of the outer regime documents. Table 6 has shown that there were many topics not addressed within the inner forest regime, and thus it was necessary to create eight new sub-codes to define these topics. In general, there was a limited amount of overlap within this category as only one topic was considered in three document groups. Additionally, six topics were found in only two document groups, which left seven topics in a segregated position, found in just one document group each. Four topics (*Forest Reference Levels, MRV, Negative Impacts on Biodiversity, and Safeguards*) could only be located in the UNCED regime documents and successors group, which includes, amongst other documents, the UNFCCC text and subsequent UNFCCC decisions. While there was many instances of overlap, as has been previously described, it was also possible to locate overlap amongst the IFRC documents on climate change topics. The Climate Change category topics were minimally used in the miscellaneous regime documents and completely absent from the conservation and trade regime documents. Consequently, forest-relevant climate change issues are of predominant interest within the bounds of the inner and UNCED and successors regime documents. More specifically, within the UNCED and successors regime document group, forest-relevant climate change topics are predominantly considered within the UNFCCC text and the subsequent UNFCCC decisions. Four topics (*Financial/Technical Support, Forest Reference Levels, REDD+, and the Role of SFM via Mitigation/Adaptation*) were considered exclusively within these two document groups. The climate change topic considering the role of SFM was interesting in that it focused on the potential of sustainably managed forests to contribute to either climate change mitigation or adaptation activities. UNFF sessional reports made many references to the potential of sustainable forest management to address climate change. These statements are then put into action via UNFCCC decisions, such as a portion of Decision 1/CP.16 that reads: "Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries" (p. 8). This topic is then pursued in later UNFCCC text such as Decision 10/CP.19 "Exchange information on the development of different approaches, including joint mitigation and adaptation approaches for the integral and sustainable management of forests" (p. 26). Similarly, *Forests as Sinks* was another topic found in both the inner and UNCED document groups. From Chapter 11 of Agenda 21, a document segment on revegetation also addresses this topic: "…while also taking into account the role of forests as national carbon reservoirs and sinks" (p. 8). Forests are also included again in a similar statement from the text of the UNFCCC: "Promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all greenhouse gases not controlled by the Montreal Protocol, including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems" (p. 11).

Despite these instances of overlap, it is also important to consider, in more detail, where the fragmentation lies and on what topics these two document groups do not align. The two

topics considered only in the inner forest regime are *Adverse Impacts and Forest Health*, thus both address the ecological ramifications of climate change on forests. In contrast, the topics that were exclusively contained in the UNCED documents and successors (including the UNFCCC text and decisions) focused on the financial and human dimensions of climate change issues with topics such as *Involving Indigenous Peoples/Local Communities, Positive Incentives, Results-based Finance, and Safeguards*. In providing an example, UNFCCC Decision 4/CP.15 is centred on methodological guidelines for REDD+ and incorporates the Involving IP/LC sub-code: "Recognizing the need for full and effective engagement of indigenous peoples and local communities in, and the potential contribution of their knowledge to, monitoring and reporting of activities" (p. 6).

In summary, the forest-relevant climate change topics are primarily of interest within the inner and UNCED document groups, as they are completely excluded from the conservation and trade regime document groups. Within these two groups, some topics were overlapping but many were located in only one document group. The inner forest regime documents presented a general focus on the environmental side of climate change issues while the UNCED regime group was focused on the financial and human dimensions. These results have provided insight into fragmentation within the broader climate change category.

5.6.10. Indigenous Peoples/Local Communities

The *Indigenous Peoples/Local Communities* category contained 92 coded segments within 7 sub-categories. The subject matter within this category was focused on issues related to women and youth in forestry and the importance of traditional forest-related knowledge. All of the seven sub-codes are utilized within the inner forest regime documents and furthermore no new topics were addressed in the outer forest regime documents. There were, however three topics located only in the inner forest regime, showing some fragmentation on these issues. The topics that were exclusive to the inner forest regime documents, as shown in Table 7, were *Role of Women, Strengthening Women/Youth Participation/Education, and TFRK Research and Planning*. The strongest connection to be found in this category was between the inner forest regime and UNCED regime documents. While all seven topics are addressed in the inner forest regime, three of the same are also considered within the UNCED regime documents, these being: *Traditional Knowledge, Trade and Market Access, and Biodiversity Benefit Sharing*. Again, the conservation and trade regime documents were completely segregated, as they did not address any of the relevant subject matter. While *Traditional Forest-Related Knowledge and Intellectual Property Rights* were the two sub-codes employed amongst the miscellaneous regime elements.

In text, *Traditional Forest-Related Knowledge* coded segments such as this statement from the IPF Proposals for Action: "Recognizing that indigenous people and forest-dependent

people who possess TFRK could play an important role in sustainable forest management" (p.3). From the CBD's COP Decision 2.19, the section addressing TFRK states that: "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 biological diversity, as well as the need to protect and encourage customary use of biological resources in accordance with traditional cultural practices" (p. 14). Similarly, from the PEFC Standards "Forest management practices shall make the best use of local forest-related experience and knowledge, such as those of local communities, forest owners, NGOs and local people" (p. 13).

As can be seen from these examples, there was a strong connection, generally, amongst the documents on traditional knowledge. When considering all of the topics there was a strong connection between the inner forest regime and UNCED regime documents, thus indicating overlap on topics relevant to the indigenous peoples or local communities. As has been seen with other categories, the fragmentation occurring here is the separated position of the conservation and trade regime elements, which do not incorporate any of the sub-codes. In this way, the Indigenous Peoples/Local Communities category exhibits overlaps among some regime documents and fragmentation among others.

5.6.11. Forest Protection

Forest Protection was the smallest of the parent code categories with only 55 coded segments and five sub-codes. *Forest Protection* has been omitted from Table 7 because it did not contain any sub-codes that were used exclusively in the inner forest regime. However, one sub-code was developed when coding the outer forest regime documents because *Protection of Threatened/Endangered Species* was not addressed in the inner forest regime. Similar to what has been shown in other categories, the conservation regime documents did not contain any coded segments from the *Forest Protection* category. Regardless, the most prevalent of the topics was *Protected Areas/Protected Forests*, which was considered in the inner, UNCED, trade, and miscellaneous document groups. An inner forest regime example of coded segment for this topic is this objective from UNFF7: "Create, develop or expand, and maintain networks of protected forest areas, taking into account the importance of conserving representative forests, by means of a range of conservation mechanisms, applied within and outside protected forest areas" (p. 7). Along similar lines, Chapter 11 of Agenda 21 includes the management activity goal of: "Establishing, expanding and managing, as appropriate to each national context, protected area systems" (p. 7). Three of the other topics (Genetic Diversity, Protection of Threatened/Endangered Species, and TFRK) were also quite overlapped as they were each found in three different document groups. For example, one objective from the Expanded Programme of Work on Forest Biodiversity directly connects to Protection of

Threatened/Endangered Species: “Promote forest management practices that further the conservation of endemic and threatened species” (p.10). Connections can be drawn through the FSC Principles, one example being: “Safeguards shall exist which protect rare, threatened and endangered species and their habitats” (p. 6).
Overall, despite being a small category, subject areas within the Forest Protection parent code category exhibited considerable overlap.

5.5.12. The Forest Environment

The *Forest Environment* category was composed of miscellaneous sub-codes that all relate to the functioning of forests in multiple roles. Seven sub-codes were created that were used to code 36 segments in the documents. Only four of the sub-codes, *Urban Forests, Forest Health and Productivity, Transboundary Pollution, and Wildlife Management* were used in the coding of the inner forest regime documents. While in the outer thirty-five documents five of the seven sub-codes were utilized, in some capacity, to code some segments. When considering the specific document groupings within the outer forest regime, none of the topics of this category were addressed in the UNCED, conservation, or trade regime elements. Therefore, these topics were only considered, in the outer regime, amongst the miscellaneous regime documents, these five sub-codes were: *Wildlife Management, Recreation Function, Protective Function of Forests, Forest Health and Productivity, and Pesticides/Fertilizers*. Fragmentation within this category likely exists because of the specificity of each of these topics. These topics are all very unique and consider various specific issues. Therefore, these issues do not span across different document groups, thus indicating fragmentation. Therefore, the only connection to be considered here is between the inner forest regime and the miscellaneous regime documents that both, in some capacity, consider issues related to *Forest Health and Productivity as well as Wildlife Management*. From UNFF7, one instance of use for Forest Health and Productivity is: “Analyze the causes of and address threats to forest health and vitality from natural disasters and human activities, including threats from fire, pollution, pests, disease and invasive alien species” (p. 7). A similar objective is included in the PEFC Standards: “The monitoring and maintaining of health and vitality of forest ecosystems shall take into consideration the effects of naturally occurring fire, pests and other disturbances.” (p. 9).
Besides instances of overlap on two topics, in general, the specificity of the topics contained within the Forest Environment led to very fragmented results.

5.7. Results Summary: Considering fragmentation and overlap

By exploring the multiple interactions between document groups, subject categories, and specific forest-relevant topics, much information has been revealed about the existence of fragmentation and overlap within the IFRC documents. Each subject area has displayed different results, thus helping to reveal exactly what topics have experienced fragmentation and what other ones are overlapped.

To begin summarizing these findings, the *Sustainable Forest Management* category was quite large, addressing the many facets of sustainably managing forests. Given the size and breadth of this category both fragmentation and overlap were present, depending on the topics in question. Therefore, in general, economic issues of SFM were addressed exclusively in the inner forest regime documents while management issues were addressed in the miscellaneous regime documents. Overlap occurred between the inner and UNCED regime documents on climate and carbon focused SFM topics. Further overlap was found between the inner and trade regime elements on SFM topics addressing trade and tropical forests. Lastly, there was also some overlap between the inner and miscellaneous regime documents on financing SFM activities. Therefore, it becomes clear that overlap in this category is specific to the topic or subject area being considered.

The topics included in the *National Level Support* category exhibited various amounts of overlap. The training, education, and information exchange subject areas were very well integrated. However other topics, focused on financial and technological assistance, were fragmented, found only in one document group.

From the *Forest Law and Monitoring*, it was straightforward that there was overlap on these topics amongst the IFRC documents. The thirteen topics addressed in this category, in general, were found in multiple document groups and there did not seem to be any apparent divisions along subject matter lines.

The *Forest Governance* topics were well represented within the inner forest regime documents as well as the UNCED regime documents. These topics are completely absent from conservation regime elements but addressed within the trade and miscellaneous regime elements. There is a general focus on forest-relevant policy formulation and coordination within this category and these topics are considerably overlapping.

The topics included in the *Sustainable Development* category exhibited straightforward results with most topics displaying overlap. The fragmentation that did exist was only found amongst topics that were very specialized and thus only addressed in specific document groups.

Within the *Trade and Economy* category overlap amongst the inner, UNCED, and trade regime documents on the topics addressed. The conservation documents only included the Trade Liberalization topic and thus there was some limited overlap here with the inner forest regime. Also, there were a few highly specialized topics that were only addressed in one document group. Yet, in general, this category was dominated by instances of overlap.

The *Deforestation and Forest Degradation* included eleven relevant topics within the category and these topics were highly overlapping in the IFRC documents. Despite being completely excluded from the conservation regime elements, the topics of this category exhibited considerable overlap amongst the other four document groups.

In the *Forest Conservation* category, there was a strong divide between forest-relevant conservation topics of the inner forest regime and those found in the more peripheral documents. Within the inner forest regime documents, the popular topics addressed, in

general, conservation mechanisms and other ways to aid conservation efforts. In contrast, within the outer forest regime documents there was focus on the different kinds of forest conservation that could occur. Despite some minor overlaps, forest conservation topics are fragmented amongst the IFRC documents.

The situation presented in the *Climate Change* category was more complex than others. Here, forest-relevant climate change topics were considered extensively within the inner and UNCED document groups but were excluded completely from the conservation and trade regime elements. The miscellaneous regime elements indicated some minor instances of overlap. However, the most striking results from this category were that despite general overlap occurring between the inner and UNCED document groups, the specific focus areas were different. The inner forest regime documents directed attention mainly to environmental and ecological considerations of climate change while the UNCED and successor documents focused on financial and human dimensions. Therefore, while overlap existed, fragmentation was also prevalent in this category.

From the *Indigenous Peoples/Local Communities* category, all of the seven topics were excluded from the conservation and trade regime document groups, showing fragmentation amongst these documents. However, between the inner forest regime, UNCED, and miscellaneous document groups, the topics were overlapping and well connected. In particular, the strongest overlap in this category was on topics related to traditional knowledge.

The small *Forest Protection* category was a collection of five topics that in general were quite overlapping as three of the five topics were found in multiple document groups. Especially the *Protected Areas/Protected Forests* topic, found in three document groups, was frequently used and was a very popular topic.

Lastly, the *Forest Environment* category was a gathering of miscellaneous forest-relevant topics. Given that the topics addressed in this category were highly specific, they were often only considered within one or two of the documents within the IFRC and thus these topics were quite fragmented.

In summary, the breadth of the topics addressed in these multiple document groups causes the development of complex results. It can be concluded, in general, the issues addressed in the *Deforestation and Forest Degradation*, *Sustainable Development, and Forest Law and Monitoring* categories were the best integrated and overlapping within the IFRC. In contrast, the *Climate Change and Forest Conservation* categories revealed the greatest amount of fragmentation. As has been previously explained, in the remaining eight categories, the existence and extent of fragmentation and overlap depends on the specific topic under consideration within the category. In summary, below, Figure 16 displays an illustrative overview of the subject areas that displayed fragmentation and overlap. On the left-hand side of Figure 16 the overlapping subject areas are shown. Again, *Deforestation and Forest Degradation, Forest Law and Monitoring,* and *Sustainable Development,* exhibited the highest amount overlap and thus it was not necessary to further indicate which

particular topics revealed overlap. For the remaining categories that displayed overlap, the more specific areas of overlap are shown. Similarly, on the right-hand side the subject areas exhibiting fragmentation are shown. As explained earlier, in some categories there were specific topics that were fragmented and these are shown in the diagram below.

Overall, the results have revealed a substantial amount of information on the state of subject area fragmentation and overlap in the IFRC. However, the results have examined where the overlap and fragmentation occurs but have not considered why it exists. Therefore, it is necessary to explore theories that assist in explaining some of the instances of subject area fragmentation and overlap. Furthermore, being aware of the state of subject area fragmentation and overlap in the IFRC is just the first step towards fostering stronger ties or improving fragmented areas. As such, in the discussion section below, three regime coordination theories are utilized in order to develop a greater understanding of the IFRC fragmentation and overlap and also consider possibilities for enhancing regime coordination and integration.

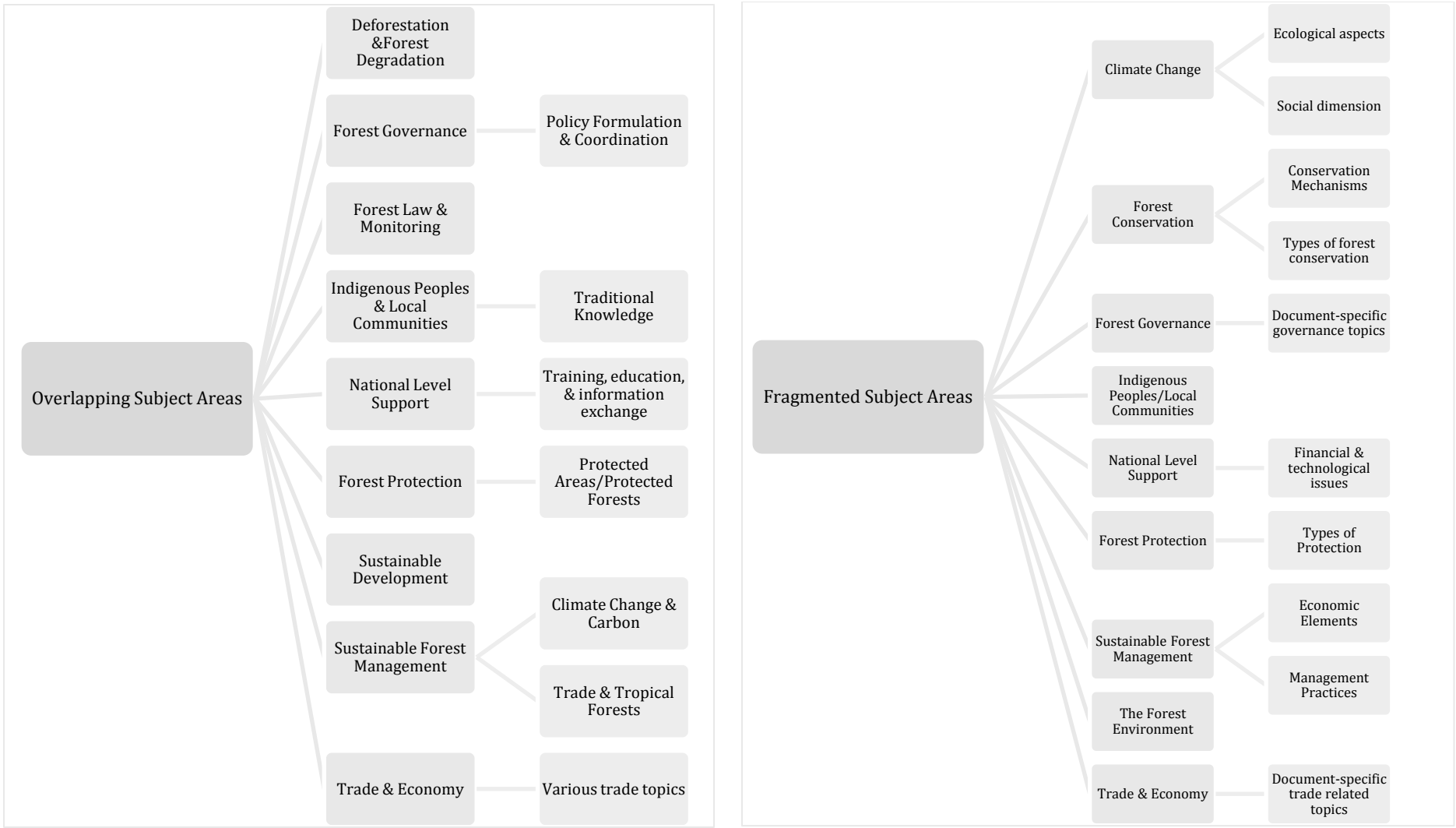

Figure 16. A diagrammatic summary of the subject area overlap and fragmentation in the international forest regime complex.

6. Discussion: Connecting the theoretical and empirical: what can we learn?

As the fourth research objective of this study was to assess fragmentation levels, the results from this text content analysis study have contributed to meeting this objective by revealing a host of information about the state of fragmentation and overlap in the international forest regime complex. In general, the results have shown that the fifty texts that make up the regime complex exhibit considerable amounts of overlap amongst subject areas as well as some fragmentation. Though, unlike previously existing theories that have primarily addressed institutional fragmentation and fragmentation of objectives, the focus of this study was on outputs. The overlap and fragmentation displayed in the results is overlap of outputs and fragmentation of outputs. Therefore, while the IFRC may be institutionally fragmented, the results here have exposed that it is still possible to have overlapping outputs. However, overlap does not equate directly to synthesis nor does it explain fully while there is also fragmentation of outputs for certain subject matter. Therefore, it is necessary to explore further the cases of overlap and fragmentation in an attempt to better understand it through the use of theories. Thus, with a complete understanding of the results the next step is then to investigate opportunities for synergy in order to avoid duplication of efforts and outputs of the IFRC. Synergy occurs when institutions or regimes are working towards the same objectives, are mutually reinforcing, or where coordination efforts are occurring in order to avoid unnecessary duplication (Rosendal, 2001). Therefore, in order to understand if overlap has the potential to result in integration or coordination, it is necessary to explore an applicable existing theory of regime coordination and how it relates to overlap.

6.1. Exploring Issue Area Overlap in the IFRC

6.1.1. Overlap and Spillover Theory

As described earlier, there are various theories that can be used to categorize fragmentation and others that describe regime coordination or integration. As the results from this study consider regime outputs, the most useful coordination theory is Johnson and Urpelainen's (2012) Spillover Theory. To refresh, the type of spillovers that encourage cooperation are negative spillovers whereby actions taken in one issue area negatively affect the fulfillment of objectives or creation of outputs in a second issue area. In such a situation, the two groups have an incentive to coordinate to avoid further negative impacts. Two categories whose topics are highly overlapping throughout the IFRC are *Deforestation/Forest Degradation* and *Sustainable Development*, as the topics within each category are pervasive throughout the different regime groups. In exploring further, the subject areas within the *Sustainable Development* category widely address the ways in which forests can contribute to achieving sustainable development goals. While these issue areas do not call

for exploitation of forest resources, they do consider the use of forest resources for social and economic development, through the utilization of timber and non-timber forest products as well as other environmental services. In contrast, the topics within the *Deforestation/Forest Degradation* category focus on combatting deforestation, using language such as "protect", "restore", and "reverse loss". While *Sustainable Development* is not encouraging exploitation, which would directly contrast the objectives and inhibit the outputs of the *Deforestation/Forest Degradation* issue area, there certainly is some negative spillover between these two issue areas. The *Sustainable Development* issue area is, to some extent, encouraging use of forest recourses, both timber and non-timber, as shown in the text examples in the results. Such objectives negatively impact the ability of the *Deforestation/Forest Degradation* issue area to create outputs which strongly protect the same forest resources that *Sustainable Development* are utilizing. Consequently, this situation of negative spillover encourages collaboration and cooperation between the two issue areas in order to synthesize objectives and outputs while avoiding further conflicts. Such cooperation, in practice, could occur through, for example, sustainable forest management practices which can simultaneously achieve the goals of both issue areas.

The Spillover Theory of Johnson and Urpelainen (2012) can also be used to explain another case of broadly overlapping categories amongst the IFRC documents. The results revealed that the *Forest Governance, Forest Law and Monitoring,* and *Trade and Economy* categories are mostly strongly represented in the inner forest regime and trade regime document groups. In general, these three categories all contain topics that consider ways to govern, regulate, monitor, assess, or control forests and all forest resources. Therefore, when considering the outputs produced here, each category is focused on regulatory mechanisms to fulfill certain objectives. For example, within the *Forest Law and Monitoring* category, two topics, (1) *Forest Law Enforcement Efforts* and (2) *Land Tenure and Property Rights* were the most embedded in the document groups. Both of these topics address issues of forest resource access and use. Similarities can be drawn to the *Trade and Economy* category where topics like *Illegal Trade* and *Valuation Techniques* are also ultimately focused on issues of forest resource control. Finally, at a higher level, *Forest Governance* also addresses ways to control or govern forest resources, but from a wider scope of policy formulation and coordination. Given that these three categories, that address similar topics, are highly overlapping in two regime groups, there is a strong case for negative spillover. The potential negative spillover that could happen between these categories would be the creation of laws, rules, policies, or other regulative mechanisms in one issue area that negatively impact another issue area. All three of these categories are attempting to control, monitor, or regulate some aspect of forest resources and therefore any possible interference from another issue area would likely have a negative impact on their achievement of objectives or creation of outputs. Consequently, overlap occurs between these regime groups that have the incentive to coordinate in order to avoid

negative interactions between the groups. Therefore, it becomes clear why there is such strong overlap amongst the *Forest Governance, Forest Law and Monitoring,* and *Trade and Economy* categories within the inner and trade regime groups.

6.1.2. Examining other relationships

Two other categories that are strongly overlapping, as revealed in the results, are *Forest Protection* and *Indigenous Peoples/Local Communities.* The topics addressed in these categories are strongly represented in the inner forest regime, the UNCED document group as well as the miscellaneous document group. There is no indication of negative spillover when considering these categories but rather the subject matter addressed within these categories is very similar, likely resulting in overlap or duplication. For example, both categories contain topics that consider traditional forest related knowledge, with *Indigenous Peoples/Local Communities* focusing on research and planning while *Forest Protection* addresses, appropriately, how to protect TFRK. Furthermore, given the strong connection between indigenous or local communities and the forests that they live in, these people are embedded in the protection of the forests that surround them. It therefore follows that the topics within these two categories, given the similarity of issues addressed, are highly overlapping. Not only are these two categories similar in their overlapping areas, they are also similar in their fragmentation. Both categories are completely absent from the conservation regime document group. Also, *Indigenous Peoples/Local Communities* does not have any topics found in the trade regime document group and the representation of *Forest Protection* is very limited in this same group. Such findings directly indicate where the regime boundaries lie for these topics. It is apparent that topics concerning indigenous and local communities as well as forest protection are of importance within the inner forest regime, UNCED and successor documents, as well as some miscellaneous forest regime documents.

Another overlapping relationship that existed was between certain topics of the *Sustainable Forest Management* and *National Level Support* categories. Specific topics within these two categories were overlapping in the inner, UNCED, and trade regime document groups. As will be explained below, fragmentation in the *Sustainable Forest Management* category aided in clearly defining some regime boundaries. However, the same category also exhibited instances of overlap with the *National Level Support* category on related topics. The overlap here exists because of similarities between the categories. The topics within *Sustainable Forest Management* that are very pervasive amongst the document groups focus on a cooperative approach to SFM. As most efforts to develop programs and enhance SFM are done at the national level it follows accordingly that some relevant topics in National *Level Support* are overlapping with SFM topics, such as *financial support* and *information exchange and support.* These topics are found in the same document groups because they are well-aligned and supportive of each other. Given that topics relating to

SFM are widespread in forest-relevant issue areas it makes sense that there would be overlaps with other topics that support the development of SFM at the national level.

6.2. Understanding and Explaining Fragmentation in the IFRC

The presence of fragmented topics in the IFRC, as revealed in the results, was largely useful in delimiting regime boundaries. The fragmented position of certain topics aided in understanding what subject matter was of importance in the different regimes that make up the larger forest regime complex. Based on the theory of Zürn and Faude (2013), as described earlier, fragmentation is productive not destructive. Within the bounds of this theory, fragmentation occurs in response to increased complexity as individual institutions fulfill specific roles (Zürn & Faude, 2013). As the focus of this study is on regime outputs, the most applicable aspect of the Zürn and Faude (2013) theory is functional fragmentation whereby sector-specific goals are pursued. In such a situation, individual regimes pursue specific goals to achieve specialized outputs, resulting in fragmentation on these topics within the larger regime complex. For example, within the *Sustainable Forest Management* category, financial and economic issues are only addressed within the inner forest regime, showing that such topics are important solely within the core elements of the IFRC. Similarly, SFM's role in enhancing carbon stocks was addressed only in the UNCED regime document group, drawing another regime boundary. Finally, amongst the miscellaneous regime elements, topics related to the practicalities of forest management. These divisions highlight the regime boundaries for topics within the *Sustainable Forest Management* category. Also, these cases are examples of individual regimes focusing on a specific issue area to achieve certain outputs. In such cases, fragmentation is not a negative outcome but is rather a result of individual regime initiative to address a certain topic.

The results also revealed many other instances whereby fragmentation of subject areas aided in understanding regime boundaries and regime-specific interests. For example, within the *National Level Support* category, topics considering assistance to developing countries (*Debt Reduction/Relief*, *Developing Country Support, and Official Development Assistance*) were only located in the inner forest regime documents, highlighting another regime boundary. In a similar fashion, from the *Forest Governance* category, two topics that addressed the structure and functioning of the international forest governance arrangement were solely utilized in the inner forest regime documents, again revealing fragmentation and regime boundaries. Most of the twelve categories contributed to defining the subject area scope of the core IFRC documents and *Sustainable Development* was no exception. From this category, three topics were addressed only within the core regime elements (*Forests and Island/Coastal States, Global Environment Facility,* and *Global Forest Fund*). Given the highly specific scope of these topics, they were extremely limited in their use. These instances of fragmentation showed that the importance of coastal forests and these two forest-relevant funding mechanisms were only considered in an extremely limited scope. However, fragmentation of this kind does not have to be framed

negatively as it simply indicates that objectives are being carried out by one regime grouping in order to achieve a specific, narrow output. Another category that contained topics addressed only in the core regime documents was *Indigenous Peoples/Local Communities*. In this category, topics addressing the education and participation of women and youth, as well as the importance of traditional knowledge were limited to the inner forest regime category, yet again demarcating a regime boundary. In contrast, the remaining topics addressed in the outer regime had an extremely different focus. Overall, these cases of fragmentation helped to delimit some of the focus-area boundaries of the IFRC, specifically indicating areas of high importance within the core regime elements. Furthermore, three categories: *Forest Conservation, Climate Change,* and *The Forest Environment,* were highly fragmented, displaying strong separation of topics addressed each category, as explained below.

6.2.1. Fragmentation & Forest Conservation

From the *Forest Conservation* category, there was a substantial amount of fragmentation when considering the topics addressed in each regime grouping. As explained in the results, four topics that broadly considered mechanisms for conservation were addressed solely in the inner forest regime documents. In contrast, the outer forest regime documents hosted the topics that considered the various types of forest conservation. As such, within this category there are strong boundaries separating the broad topics of forest conservation mechanisms and types of forest conservation. More specifically, the regime groups of the outer forest regime have even more specific focuses as the miscellaneous regime group solely addresses *Conservation of Soil and Water Resources* while the *Conservation of Natural Heritage* was found only in the conservation regime documents. From these examples, it is apparent that the fragmentation being displayed in this category is again functional fragmentation as the individual regime groupings are pursuing specified objectives within the broader *Forest Conservation* category to achieve particular outputs (Zürn & Faude, 2013).

6.2.2. Climate Change Regime Boundaries

One notable area of fragmentation within the IFRC was within the forest-relevant climate change subjects. There was a clear distinction as to which subject areas were addressed within each of the different document regime groups. This distinction is apparent from the results as the topics addressed in each regime document group are very different. As previously explained, within the inner forest regime documents there is a strong focus on the subjects within the *Climate Change* category that address the ecological and environmental aspects of forests and climate change. While, in contrast, the UNCED regime documents considered the financial and human dimensions of forests and climate change. Finally, from the trade and conservation regime document groups the *Climate Change* category was completely excluded and it had only limited representation amongst the miscellaneous regime elements. The subject area divisions as seen within this category

strongly indicate where the regime boundaries are located. It is apparent from the results that forests and climate change issues are addressed from an environmental or ecological standpoint strictly within the core elements of the IFRC. Financially and socially-focused climate change issues occupy the second layer of regime complex as they are solely found within the UNCED regime document group. Clearly, regime subject area boundaries exist within the *Climate Change* category and thus subject area fragmentation is extremely prevalent.

6.2.3. The Forest Environment

The *Forest Environment* category, like the *Climate Change* category exhibited another instance whereby regime boundaries were drawn based on subject matter. The *Forest Environment* category helped to clearly define the limits of highly specific topics within the IFRC. The subject areas covered in this category were only found within the inner forest regime and miscellaneous regime document groups, thus highlighting their exclusivity. This division shows clear fragmentation and also illustrates what topics are of interest amongst the different regime groupings. From the inner forest regime documents, the focus is on forest health while amongst the miscellaneous documents the focus is on the multiple functions of forests. As such, the fragmentation exhibited in this category reveals the regime boundaries on *Forest Environment* topics within the IFRC.

6.3. Fostering Interplay

6.3.1. Interplay & Existing Institutional Interplay Management

Overall, the previous section has focused on explaining the overlap and fragmentation of issue areas and their outputs in the IFRC. In order to further enhance forest-focused regime integration, build on existing overlaps, and counteract fragmentation, it is necessary to consider the broader concept of regime interplay and also interplay management. Interplay amongst regimes, as described earlier, refers to scenarios in which one regime (tributary regime) through its actions or objectives significantly affects outcomes or operations in a second regime (recipient regime) (Stokke, 2001). In this context interplay is often used interchangeably with other concepts like linkage, interaction, relation, and interconnection. Regardless of the term used, it is crucial to have an understanding of interplay because in the international arena there is an ever-increasing amount of agreements and forum that are overlapping in function and focus, thus it becomes necessary to comprehend the interactions occurring (Andersen, 2002). Stokke (2000) has described four mechanisms or causal pathways that lead to interplay, which are diffusion, political spillover, normative interplay, and operational interplay. Diffusion occurs when a regime influences the content of a second regime, political spillover exists when the interests or capabilities of a regime affect how a second regime operates, normative interplay is when the rules of one regime support or conflict with rules established in a second regime, and lastly, operational

interplay occurs when separate regimes coordinate in order to avoid any kind of duplication or conflicts (Stokke, 2000). Thus, it can be seen from these categories that regime interaction can be either unintended (functional) whereby interaction occurs without specific actor involvement or political as is the case when direct coordination efforts are addressed in order to foster joint problem solving or manage the interplay (Young, 2011). Regardless of the many ways in which interplay comes about, principally it is of interest because it fosters and supports coordination and synthesis.

Interplay, coming from four distinct causal pathways, can then be specifically directed in order to achieve certain interactive outcomes through interplay management. The term interplay management is defined as efforts by actors to recognize and improve their institutional interactions (Stokke, 2001). Additionally, in environmentally focused arenas such as the forest issue area, interplay management describes attempts to balance various environmental objectives that exist amongst the many different environmental institutions (Oberthür, 2009). Consequently, this practice of interplay management could be used within the IFRC. Given that it has already been shown that overlaps exist within the IFRC, managing the interactions and interplay is a mechanism for enhancing synergies.

The root of the fragmentation problem generally in international environmental governance can be attributed to institutional characteristics. The lack of a central authority that would act as the responsible decision making body results in the development of many independent regimes and organizations often causing institutional fragmentation but also gives rise to opportunities for more collaborative forms of governance and increased actor interaction (Oberthür, 2009). While it has already been argued extensively that the IFRC is institutionally fragmented, the focus in this study was on fragmentation and overlap of outputs. It was found that outputs from the IFRC do not exhibit much fragmentation and there is considerable overlap, though it depends on the issue area in question. However, regardless of whether the fragmentation and overlap are institutional or related to outputs, interplay management is still useful to encourage positive, fruitful interactions. In this way, management of these interactions can aid in directing actors and activities towards a certain outcome, such as enhancing synthesis through the utilization of existing overlaps, as is necessary within the IFRC.

Oberthür (2009) outlines four levels of coordination within interplay management, that can be organized from highest degree of coordination to the lowest, these levels are (1) overarching institutional frameworks, (2) joint interplay management, (3) unilateral management by individual institutions, and (4) autonomous management. The level that is likely most appropriate for the forest regime complex situation is joint interplay management. In joint interplay management, the institutions involved work actively to enhance interaction and coordination at a horizontal, cross-institutional level. As this situation involves the second highest level of coordination, activities under this type of interplay include strong communication channels, information exchange, and even the development of coordination structures between the institutions or regimes (Oberthür,

2009). These four levels are conceptual principles of interplay management, but given that the IFRC is a dynamic system in the field of international environmental governance, it is necessary to consider also arrangements for regime interaction.

Here, three pathways for institutional interaction are described, which are: (1) inter-institutional learning, (2) inter-institutional competition, and (3) synergy enhancement amongst overlapping institutions (Oberthür, 2009). In general, inter-institutional learning describes situations in which knowledge, ideas, and information are exchanged (Oberthür, 2009). Practically this could occur within the IFRC through secretariats revealing and exchanging information and going further to develop apparatus for sustained knowledge and information exchange. To date though, the existence of frameworks to promote inter-institutional interaction are lacking in international environmental governance structures in general (Oberthür & Gehring, 2006). As such, this area is one in which the forest regime complex can capitalize on the lack of existing frameworks in order to develop specific information coordination structures that suit the needs of the many sectors and issue areas involved in the vast forest regime complex. The second type of inter-institutional interaction, inter-institutional competition, is relevant to the IFRC specifically in the previously described cases of negative spillovers. In this type of interaction diverging objectives, rules, norms, or commitments give rise to conflict between issue areas (Oberthür, 2009). Therefore, some sort of coordination mechanism is required, whether it be through the creation of subject area boundaries or through cooperative efforts. Lastly, further inter-institutional interaction can be fostered through the enhancement of synergies amongst overlapping institutions. Such activities occur when the goals and objectives of the involved institutions are complementary, similar, or even identical, which allows for the enhancement of synergies as they arise (Oberthür, 2009). However, this kind of response is reactive whereby coordination occurs as overlaps arise instead of establishing a mechanism to avoid overlap and foster integration in a proactive manner. Such an approach is not widely used currently in international environmental governance and thus should be explored further.

6.4. Next Steps and Forests into the Future

6.4.1. Interplay Management of Regime Outputs

While Oberthür (2009) has developed an expansive theory of interplay management, the theory is limited in that it only applies to institutional interplay management. As has been seen throughout the course of this study, fragmentation and overlap are not limited to the institutions that make up a regime complex and their objectives but also extend to the outputs of the regimes. Given that fragmentation and overlap can in fact extend to outcomes it would accordingly follow that there should be an extension of theories to address interplay management of fragmented and overlapping outcomes. As previously described, Oberthür (2009) relies on four levels of regime coordination and also three pathways for interinstitutional interaction. However, this is the limit of the theory as there is no

consideration as to how best to address fragmentation or overlap of regime outputs. The theory extension could follow a similar structure whereby levels and types of interaction are defined, but instead of focusing on interaction of institutions the focus would be on the interactions of outputs by institutions. In this way, the argument that the IFRC is institutionally fragmented would no longer be a roadblock to improving the functioning of the regime complex. With institutional fragmentation out of the spotlight the focus could then turn to interplay management of outputs, guiding these interactions as a means to improving the operating and effectiveness of the IFRC. Therefore, the next step is to encourage theory to catch up to reality so that regime outputs can be successfully assessed and managed. Otherwise, we are left, at present, with the existing mechanisms to enhance regime integration through the use of existing coordination mechanisms.

6.4.2. Creating the Building Blocks for Synthesis

Despite the proposed frameworks for interplay management and specifically inter-institutional interactions, in practice there is a significant lack of existence and usage of such mechanisms. In general, the coordination mechanisms that do exist are developed reactively instead of proactively, responding to present overlaps instead of coordinating in advance to avoid unnecessary duplication. Furthermore, in international environmental governance there is no systematic approach to synergy enhancement (Oberthür, 2009). Therefore, mechanisms are developed as needed without a standard structure instead of through the use of a common framework (Skjærseth et al., 2006). In order then to intensify synthesis in the IFRC and more generally in environmental issue areas, the development of a systematic framework for coordination activities is required. Given that such mechanisms are considerably lacking ubiquitously across environmental regimes, there is substantial space to develop appropriate coordinative instruments. The three pathways of institutional interaction described by Oberthür (2009) provide appropriate examples for kinds of coordination mechanisms that are necessary to systematically foster synthesis. Such mechanisms are, for example, permanent communication channels for information exchange and knowledge sharing, regulatory mechanisms to avoid inter-institutional competition, or measures to enhance forum and secretariat cooperation and synthesis while avoiding needless overlaps. Thus, the next step necessary in order to enhance regime synthesis and avoid fragmentation is to establish systematic apparatuses that can be used universally in environmental regimes and specifically in the IFRC to promote coordination efforts.

7. Conclusion

7.1. Counteracting Fragmentation through Regime Synthesis

As has been seen through out this study and in related research there is widespread belief that institutional fragmentation has caused the forest regime complex to be ineffective.

Therefore, the logical next step would be to develop a solution to the fragmentation problem. One proposed resolution to the fragmentation debate is to continue to add elements to the regime in order to fill in the gaps. As described by Hewlett et al. (2010) this approach would focus on the development of policy patches to add to the existing elements. Such an approach is in direct contrast to the popular idea of developing one, new overarching forest convention. The argument for the patchwork approach is that given the complex and nested nature of the existing forest regime elements, an overarching treaty would add unnecessary complexity, overlap, and confusion (Biermann et al., 2009). Consequently, filling in the gaps would instead allow for synthesis and "interplay" amongst the existing elements (van Asselt, 2007). Interplay is often used to describe the relationship between regimes whereby one regime's actions or outcomes influence and affect another regime (Stokke, 2001). However, it is also possible to apply this definition to the elements within one regime, whereby enhanced interaction between the regime elements is the goal. Through interplay and the addition of patch elements it appears as though the regime would become more complex. However, there are existing arguments that complexity can be positive as it allows for the use of different approaches within the issue area while encouraging learning and adaptation amongst actors and institutions (Overdevest & Zeitlin, 2014). Additionally, it has been argued that a complex and patchy regime stems from failures to create an overarching framework and has consequently resulted in the development of individual regime elements which are able to focus on specific problems while still linking to the broader issue area (Keohane & Victor, 2011). Therefore, filling the gaps through a patchwork approach is a plausible solution for encouraging synthesis and counteracting fragmentation in the forest regime complex.

An alternative approach is to manage regime fragmentation while attempting to enhance synergies and foster deeper connections. Along this line of thinking, fragmentation is not framed in a completely negative light and as such should not be eliminated but instead managed and synthesized (Scott, 2011). As such, Scott (2011) proposes the use of linkages in order to deal with regime fragmentation and goes further to review six existing classifications of linkages. The first three types of linkage arise naturally due to inherent characteristics of the regime and these are embedded, functional or overlapping, and behavioural or commitment-related linkages (Scott, 2011). First of all, embedded linkage exists organically because of the underlying structure of regimes and society and these relationships result in interactions (Young, 1996). Linkages may also arise in a seemingly coincidental way because the elements focus on the same physical locations or socioeconomic ideas but may not be related in any other sense (Young, 1996). In this way, the linkage, at first glance may not seem useful as the regime elements may have completely separate or conflictive mandates but it is possible to use this coincidental connection for the development of a more fruitful relationship. The final type of linkage that can naturally arise is behavioural or commitment-related whereby the actions or

commitments of one regime element affect another, either in a supportive or conflictive manner (Young, 1996). The three remaining types of linkages to be described are deliberately developed with a specific goal in mind (Scott, 2011). First, there is cognitive interaction through which institutions or regime elements interact via the exchange of ideas and/or information (Oberthür & Gehring, 2006). Going further, it is possible that the institutions in a regime work together to coordinate activities or collaborate on programs, creating an instance of linkage known as joint interplay management (Oberthür & Gehring, 2006). The last form of linkage that is described is institutional nesting whereby institutions become situated or nested within a broader existing framework and are thus very much connected (Young, 1996). Consequently, despite being broadly described, these six types of linkages are applicable to fragmentation in the IFRC. By focusing on overlaps and thus potential synergies as well as exploring existing linkages it becomes possible to manage the fragmentation and develop a more coherent regime.

7.2. Study Review and Next Steps

While the above theories offer potential next steps for counteracting institutional fragmentation, this study moved beyond institutional fragmentation to explore fragmentation and overlap of the IFRC from a different angle. In understanding that the various elements that make up the IFRC come from diverse origins that shaped their focus and content, this study aimed to, among other objectives, collect all relevant documents and then understand the forest-relevant content within these various regime elements. The other objectives addressed in the study aimed to uncover trends amongst the subject matter and topics within the IFRC documents and also assess the areas of fragmentation and overlap within the IFRC documents. These four objectives, together, addressed the research question, which asked, given the complex international forest governance arrangement, in what forest-related issue areas is the content fragmented versus overlapping? There is need to address such a research question because of the current state of international forest governance elements which include hard, legally binding instruments, international soft law on forests, and international private legal instruments. The development of an intricate international forest regime complex eventually resulted in a widespread notion that the arrangement was ineffective due to institutional fragmentation. However, little exploration has been done into investigating the state of the content addressed and outputs from the regime complex. In this way, the regime complex may remain institutionally fragmented but if the content and outputs are succinct and overlapping then the complex may still be effective.

Upon the collection of fifty forest-relevant documents, it was possible to perform an analysis of their content using MAXQDA software and qualitative analysis techniques. The fifty documents were divided into categories, similar to those used by other authors such as Eikermann (2015). These divisions split the documents into (1) outcomes and successors of UNCED, (2) conservation-focused documents, (4) trade-focused documents,

and (4) other forest-relevant elements. Additionally, another category of crucial importance is the inner forest regime, composed of the highly pertinent forest-focused documents. Thus, with these fifty organized texts and an understanding of the current structural arrangement for the IFRC, it was possible to carry a content analysis. A directed qualitative content analysis, which built on existing theories was used to discover a vast array of relevant and interesting results about the state of fragmentation and overlap amongst IFRC content and outputs.

First, coding of the fifty documents, starting with the inner forest regime texts, followed by the other forty-five texts revealed what subject matter was addressed within the documents. From this content analysis, the most straightforward result was the development of 145 topical sub-codes within twelve broader parent code categories, which captured all of the forest-relevant topics addressed within the documents. The most basic results showed which topics were found in the different document groups and at what frequency, also showing which topics were excluded from certain groups. In addition, the results could be viewed from a temporal standpoint, considering trends in forest-relevant topics over time. The most useful and remarkable outcomes resulted from analyzing in what document groups different topics overlapped, where and in what topics there was no overlap, and from what document groups certain topics were completely absent.

Regime boundaries were drawn when there was the absence of a topic in one document group and the presence of it in another. The results exposed strong regime boundaries especially in the *Sustainable Forest Management* and *Climate Change* categories. In this way, financial and economic issues of *Sustainable Forest Management* were only of importance in the inner forest regime while other SFM topics were of specific focus in other document groups. Similarly, the regime boundaries in the *Climate Change* categories were clearly defined as these topics were of predominant focus only in the inner forest regime and UNCED document group. A third category, *Indigenous Peoples/Local Communities*, further revealed regime boundaries as the topics focused on women and youth were addressed only in the core regime documents. In contrast, another interesting result was the pervasiveness of the *Deforestation/Forest Degradation* and *Sustainable Development* categories which were highly overlapping and found across the various document groups.

The Spillover Theory of Johnson and Urpelainen (2012) was utilized to understand and explain two situations of overlap, between different topics, that were shown to exists in the IFRC. Most notably, the results revealed that there is extensive overlap amongst the topics addressed within the IFRC documents and it was possible to consider negative spillover to be one of the main contributors to the overlap. A negative spillover existed between the *Deforestation/Forest Degradation* and *Sustainable Development* categories, which were

highly pervasive through all document groups and extremely overlapping. *Forest Governance, Forest Law and Monitoring,* and *Trade and Economy* were three categories that were broadly overlapping amongst the document groups and more specifically in the inner forest regime and trade regime documents, due to a negative spillover situation whereby there was a positive incentive for interaction between these topics and thus overlap occurred.

Other results showed that there were overlapping relationships that could not be explained by spillovers but instead there were strong connections within the content of the categories. Such a relationship existed between topics in the *Forest Protection* and *Indigenous Peoples/Local Communities* categories. These two categories contained topics that were similar in content and were also frequently located together in the inner forest regime, UNCED and miscellaneous document groups. A similarly overlapping relationship exists between topics of the *Sustainable Forest Management* and *National Level Support* categories. These topics were found in the same document groups and were overlapping because they had similar focuses and are well-aligned and supportive.

The results were also able to show where fragmentation was present amongst the various topics. Fragmentation was extremely useful in delimiting regime boundaries. As previously mentioned, the *Sustainable Forest Management* category is very divided, with financial and economic issues of specific importance in the inner forest regime documents while other groups of related topics were localized in other document groups. Similarly, *Climate Change, Forest Conservation,* and *The Forest Environment* categories also exhibited large amounts of fragmentation whereby certain topics were addressed in different document groups with little to no overlap. Zürn and Faude's (2013) theory was useful in understanding this fragmentation. As such, this fragmentation could be described as functional fragmentation whereby actors are pursuing specific goals to achieve specialized outputs, causing segregation between the sector and thus their outputs. The theory of Zürn and Faude (2013) shows that, in this way, fragmentation is not necessarily negative but is rather the result of individual regime initiatives. Framing fragmentation in this way makes it more positive and thus it can be useful, rather than simply seeing it as a negative outcome of the regime complex's structure.

As was explored in the analytical portion of this study, there are many existing overlaps amongst topics and outputs within the IFRC elements. It is crucial to first note, as explained by Glück et al. (2010), that overlap between regime elements does not automatically result in synergies. Often overlap causes redundancies and inefficiencies; therefore, to develop regime synthesis, efficient connections and coordination need to be fostered between the elements (Glück et al., 2010). However, there are certain possibilities for synthesis between regime elements. Therefore, despite the heavy focus in literature on institutional

fragmentation in the IFRC, the results from this study have shown that institutional fragmentation does not automatically lead to fragmentation of content and outputs. This study has shown that it is possible for the international regime complex for forests to remain institutionally fragmented and still deliver overlapping content and outputs. Such findings are crucially important because now institutional fragmentation can no longer be used as a justification for regime ineffectiveness. Rather, it can now be seen that a seemingly ineffective regime complex can in fact still generate overlapping outputs. Furthermore, even when fragmentation of outputs does exist, the fragmentation is functional and thus is not a negative outcome but is a response by regimes, resulting in the creation of specific outputs.

7.3. Considering the Role of Regime Effectiveness

Ultimately, regimes and regime complexes should be functioning in a way that they positively contribute to solving the problems that exist within the focal issue areas. Furthermore, the problem solving should be occurring in a way that minimizes or avoids unnecessary complexity. Therefore, when performing regime analyses it is likely more pertinent to consider the broader dilemma of assessing the functioning of the regime rather individual characteristics of the regime, such as fragmentation levels. However, given that regime effectiveness is quite difficult to measure in a standardized, empirical fashion, it is understandable that indicators are often used, such as fragmentation levels, as a proxy for the overall regime effectiveness (Bernstein & Cashore, 2012; Young, 2011). The connection has been drawn between fragmentation levels and regime effectiveness because in general it has been seen that more integrated or coordinated structures are better able to create outputs that solve problems in a pertinent issue area (Biermann et al., 2009). It has been found from this analysis that even while the international forest regime complex remains institutionally fragmented, there is a substantial amount of overlap in terms of the content addressed and the subsequent regime outputs. While this is an encouraging conclusion to reach, it does not reveal the state of effectiveness within this regime complex. As such, further investigation in this specific area could consider other measures of regime effectiveness. Then it would likely be possible to determine what factors and how their interactions contribute to and affect the functioning of the IFRC. A more comprehensive analysis of the functioning of the IFRC would potentially contribute to a better understanding of how effective the forest regime complex is, going beyond an investigation into the areas of fragmentation and overlap. Furthermore, as previously explained, it would also be especially useful to the IFRC to have an extension of interplay management theories. Building on the interplay management theories of Oberthür (2009), the IFRC would benefit from an extension of the theory to consider the management of fragmented or overlapping outputs. Managing the interplay of regime outputs would alter improve the functioning and increased the effectiveness of the highly intricate international forest regime complex.

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9. Appendix

9.1 Content Analysis: Coding Category Hierarchy

Parent Code	Explanation	Sub-Code	Explanation	Sub-Code	Explanation
Climate Change	Contains codes detailing the various ways in which forests and climate change are connected.	Adverse Impacts	The overall negative effects of climate change on forests.		
		Emissions from Deforestation/Forest Degradation	Addressing discussion of emissions from deforestation activities.		
		Forest Health	The affects of climate change on forest health.		
		Forests as Sinks	Considering the role of forests as carbon sinks.		
		MRV	Monitoring, reporting, and verification of forest-relevant climate change activities.		
		Negative Impacts on Biodiversity	How climate change is negatively affecting biodiversity.		
		REDD+	Addressing climate change through the use of the REDD+ programs.	Forest Reference Levels	Benchmark measurements for changes to emission levels.
				Financial/Technical Support	Technical and financial assistance, institutional needs, MAR, capacity building, etc. for facilitating effective REDD+ programs.
				Safeguards	Measures to ensure that REDD+ is instituted in a transparent, respectable manner.
				Results-based finance	An approach where conditional payments are made if emissions are reduced from forest sources.
				Positive Incentives	The need for positive incentives to achieve desired results.

				Involving LC/IP	The need to involve local communities and indigenous peoples for effective implementation of REDD+ programs.
Deforestation and Forest Degradation	Considers the causes and results of global deforestation and degradation, also includes possible ways to reverse the trend.	Combatting Deforestation	Recognizing the need to counteract deforestation and forest degradation.	Programs to Combat Deforestation	Programs, goals, objectives, and other efforts to combat deforestation.
		Deforestation & Poverty	How deforestation contributes to global poverty issues and food security.		
		Underlying Causes	The ultimate, underlying causes of deforestation (globally, not just tropical).		
		Desertification Issue	Recognizing the relationship between drought, desertification, and deforestation.		
		Forest Conversion	Considering the conversion of forests to other land uses.		
		Natural Vegetation Regeneration	Combatting deforestation through the use of natural vegetation regeneration		
		Promote Lesser Used Species	Promote lesser used species as an attempt to slow deforestation of already popular species.		
		Reforestation/ Afforestation	Combatting deforestation through reforesting areas or afforesting areas that never had trees before.		
		Role of Planted Forests	The potential role of planted forests in reforestation but also recognizing the possible negative impacts.		
		Tropical Reforestation	Specific focus on the reforestation of tropical forest areas.		
Forest Conservation	Specifies multiple roles of forests and the many components of a forest system for which conservation efforts are necessary. The category also includes conservation mechanisms and financing.	Forests as Natural Resources	Viewing forests as a natural resource that could be used or exploited at some point and thus conserving forests for that reason.		
		Finance/Information Support	Providing the financial and informational support needed to carry out conservation efforts.		
		Impact of Trade	How trade in certain species could impact potential conservation efforts.		
		Land Restoration	Role of land restoration in forest conservation efforts.		
		Landscape/Ecosystem Approach	Ecosystem approach: considering the economic, social, cultural, and environmental components of forests and modeling conservation efforts after this approach.		
		Local/Traditional Involvement	Role of local people and traditional practices in conservation efforts.		
		Low Forest Cover Areas	The need to conserve areas at high risk such as though that already have low forest cover.		
		Mechanisms	Possible mechanisms for conservation activities.		

		…of Biodiversity	Specific focus on the conservation of biological diversity.	Drivers of Biodiversity Loss (Pressures)	Pressures on biodiversity and what factors are causing biodiversity to be lost.
		…of Carbon Stocks	The need to conserve forests because they are carbon stocks.		
		…of Natural Forests	Importance of conserving natural forests.		
		…of Natural Heritage	Recognizing certain forests as natural heritage sites that need to be conserved.		
		…of Soil and Water Resources	Conserving soil and water resources within forests.		
		…of Species	Specific focus on conserving forest species.		
		Old Growth/Primary Forests	Specific focus on conserving old growth forest.		
		Tropical Timber	Need to conserve tropical forests because they supply tropical timber.		
		Unique Forests	Conserve forests that are considered to be unique.		
		High Conservation Value Forests	Conserving a certain forest because it has been deemed to have a high conservation value.		
Forest Governance	Sub-codes in this category coded text discussing topics such as existing forest instruments and possibilities for policy formulation and coordination.	Considering the LBI on All Types of Forests	Discussions on the possibility of developing a legally binding international instrument on all types of forests.		
		Institutional/Instrumental Cooperation	Instances of cooperation between different instruments and institutions, often to avoid duplication of efforts		
		Mechanisms for Policy Formulation/ Coordination	Ways in which policy can be formulated and coordinated better	Supporting Implementation of Instruments/ Programs	Efforts to improve the effectiveness of existing instruments especially in the implementation phase.
				Enhancing Partnerships/ Synergies	Efforts to enhance various partnerships and promote synergistic relationships.
				Multistakeholder Engagement/Participation	Encouraging the participation of various stakeholders on forest issues.
		NLBI & Global Objectives	The role of the non-legally binding instrument on all types of forests.		

		Role of Existing Forest Instruments	The role that existing forest instruments play in international forest governance.		
Forest Law and Monitoring	Codes in this category describe ways in which forests can be monitored or assessed and options for enforcing forest-relevant laws.	Assessing/Monitoring Biodiversity	Ways to and the need for measuring and monitoring biodiversity.	Forest Biodiversity Programs	Programs with goals such as the maintenance and enhancement of forest biodiversity.
		Capacity Building for Forest Law Enforcement	Strengthening mechanisms for forest law enforcement.		
		Certification Schemes	Mechanisms for forest monitoring to deliver forest products of a certain standard.	Voluntary Certification	Voluntary process for obtaining a responsible practices standard in relation to forest operations.
		Environmental Impact Assessments	The role of performing environmental impact assessments to provide data and analyze potential impacts of projects or plans.		
		Ethics/Transparency	Addressing issues of ethics and transparency in forest trade, governance, and forest program interactions in general.		
		Forest Law Enforcement Efforts	Efforts to enforce the rule of law in forest ecosystems to prevent illegal activities.		
		Forest Science, Policy, & Research	Reviewing data/results and attempting to improve forest science and policy through research and exploration.		
		Illegal Logging	Concerns over the problems of illegal logging and possible solutions.		
		Land Tenure & Property Rights	Addressing issues of ownership, use, access, and tenure.		
		Monitoring Assessment & Reporting	MAR of achievement of targets and goals related to sustainable forest management.		
		Voluntary Progress Reporting	Voluntary reporting by countries on their progress on achieving sustainable forest management or other such related goals.		
Forest Protection	Codes focus on the many components of forest systems that require protection.	Protected Areas/Protected Forests	Establishing protected areas as a mechanism to protect forests.		
		…Against Threats/ Harmful Effects	Measures to protect forests against harmful invasive species, pollution, fire, and other such threats.		
		Genetic Diversity	The importance of protecting and maintaining genetic diversity.		

		…of Threatened/ Endangered Species	Efforts to protect threatened or endangered forest species.		
		TFRK	Rehabilitating and protecting traditional forest related knowledge.		
Indigenous Peoples & Local Communities	Contains codes addressing the ways in which local and indigenous people interact with forests and how they are affected by external factors and decisions.	…Against Threats/ Harmful Effects	Measures to protect forests against harmful invasive species, pollution, fire, and other such threats.	Intellectual Property Rights	Need to recognize and consider intellectual property rights.
		Genetic Diversity	The importance of protecting and maintaining genetic diversity.		
		…of Threatened/ Endangered Species	Efforts to protect threatened or endangered forest species.		
		TFRK	Rehabilitating and protecting traditional forest related knowledge.		
		Traditional Knowledge	Recognizing the important role of traditional knowledge of forests in management, conservation, and development of forests.	TFRK Research & Planning	Incorporate traditional knowledge into planning at a higher level.
National Level Support	Encompasses the multiple ways in which support can be provided to nations, specifically developing countries, such as through financial support or training and education programs.	Developing Countries: Capacity Building	Support of developing countries through capacity building efforts (i.e. human resource development, infrastructure etc.)		
		Developing Countries: Information Sharing & Support	Support of developing countries through information sharing and supporting information collection, updating, etc.		
		Debt Reduction/ Relief Programs	Exploring the possibility of mechanisms to help alleviate the debt from countries that are heavily indebted (i.e. debt for nature swap).		
		Developing Country Support	References to general support to developing countries.		
		Financial Support	Specific focus on supplying financial support to countries.		
		Official Development Assistance	References to official development assistance, often in relation to the need to improve ODA programs.		
		Regional Collaboration	Efforts to promote regional and sub-regional cooperation and collaboration on various forest-relevant efforts.		

		Sovereignty over Natural Resources	Recognizing that countries have the right to exploit and utilize their own natural resources.	Sovereign Responsibility	Recognizing that countries also have the responsibility to use their resources in a wise manner.
		Technology Transfer	Transferring technology from developed to developing in countries to support programs and/or provide economic boosts.	Training/Education Programs	Providing technology transfer via training and education programs to local level peoples.
				Environmentally Sound Technologies	Transferring environmentally sound technologies to developing countries, usually in promotion of sustainable forest management.
Sustainable Development	Considers how forests contribute to sustainable development through social, economic, and environmental channels.	Forests & Island/Coastal States	The vulnerable position of forests on island/coastal states and their struggle towards sustainable development.		
		Forests & Economic Development	The role that forests can play in achieving economic development.		
		Forests & Livelihoods	The role of forests in human livelihoods (food, employment, human well-being etc.)		
		Forests & Poverty Relief	How sustainable management of forests can help to alleviate poverty.		
		Role of Forests for Development Goals	How sustainable management can play a considerably positive role in achieving global development goals.		
		Social/Cultural Role of Forests	The considerable role that forests play in human social and cultural systems (i.e. spiritual importance).		
		Strengthening Forest Financing	Options for strengthening and improving forest finance, looking at possibilities and addressing gaps.	Green Climate Fund	A climate specific financial mechanism.
				Global Environment Facility	International, independent partnership that provides financing and funding to improve the global environment.
				Global Forest Fund	Fund to assist countries in the development of national capacities
		Sustainable Use of Biodiversity	Utilizing biological resources in a sustainable manner so as to not exhaust or deplete biodiversity.		

Sustainable Forest Management	Encompasses sustainable forest management in all its facets from criteria and indicators to stakeholder participation.	National Forest Programs	The need to develop national forest programs to help achieve country-level SFM.	Forest Inventory	Performing inventories to deliver data to national forest programs.
				National Forest Finance & Accounting	Creating national forest funds for activities such as national forest programs. Also accounting and recording national forest data.
		A Link to Other Sectors	How SFM connects to other sectors.		
		All Types of Forests	Recognizing the need to promote SFM for all types of the world's forests	Multiple Role of All Types of Forests	Recognizing that forests play multiple important roles.
		Capacity Building	Efforts to build capacity to enable SFM.		
		Criteria & Indicators	Criteria and indicators that define SFM practices.		
		Economic Factors	Economic considerations in SFM.		
		Ecosystem Approach	Considering social, economic and environmental pillars in SFM.		
		Enhance Carbon Stocks	Considering SFM's ability to enhance forest carbon stocks.		
		Financing	Ways in which financing for SFM can be improved and expanded.	Enabling Environment for Investment	Recognizing the important role of a stable enabling environment for investment in SFM especially from private sector sources.
		Innovation	Innovative ways to improve SFM practices.	Biotechnology	Potential of biotechnology to improve productivity, tree health, and thus change management practices.
		Management Responsibilities	Addressing the various responsibilities of forest managers.	Stand/Landscape Structure	Considering the importance of maintaining biodiversity at the landscape level.
				Forest Management Plans	Plans including something like a description of conditions, management objectives, AAC, scope of management etc.
				Forest Infrastructure	Roads, skid tracks, bridges, etc.

		Of Tropical Forests	Specific SFM practices for tropical forests.		
		Political Commitment	The need for strong political commitments for effective SFM.		
		Regional, National, Global Levels	Considering SFM activities at various levels.		
		Stakeholder Participation	Promoting inclusiveness in SFM planning and implementation.		
The Forest Environment	Is a category that contains miscellaneous codes that are still extremely relevant to forests, primarily from an ecological standpoint.	Forest Health & Productivity	Issues related to the maintenance of forest health and the negative impacts of threats such as pollution, pests, disease etc.	Transboundary Pollution	Issues related to the impact of transboundary pollution on forest health.
		Pesticides/ Fertilizers	Speaks to the restriction of toxic pesticides and other biological control agents and also when the use of fertilizers is appropriate.		
		Protective Function of Forests	Protection of infrastructure, protection from floods, erosion, and other hazards that could negatively impact society.		
		Recreation Function	The role of forests in fulfilling the recreation needs and wants of society.		
		Urban Forests	Forests found in urban settings and integration of these forests into urban planning.		
		Wildlife Management	The management of wildlife including cultivation of wild species.		
Trade & Economy	Includes codes that address trade and economic matters related to markets and valuation methods of timber, wood and non-wood forest products, and ecosystem services.	Economic Importance of Tropical Timber	Stating the importance of tropical timber to the economy at various levels.	Producer/ Consumer Country Cooperation	Attempting to achieve cooperation between tropical timber producing countries and those countries that consume tropical timber.
				Improve/ Expand Tropical Timber Trade	Options to expand the trade in tropical timber.
		Forest Products & Processes	Considering the many stages in the production of forest products as well as the importance of recycling and reuse.		
		Forest Sector Assessments	Measures and assessments of the forest sector and resources such as the GFRA.	CITES Species ID/Measurement	Lists of CITES species.
		Forest Workers/ Employment	Considering the rights of workers and the responsibilities of employers.		
		Green Economy	The potential of the green economy via biofuels, fuel wood, wood energy, etc.		

		Illegal Trade	Recognizing the need to address illegal trade in timber and other forest products.		
		Markets for ES/NTFPs	Considering the importance of markets for ecosystem services and non timber forest products.		
		Role of SFM in Trade	Conducting trade in a responsible manner, keeping with the environmental, economic, and social considerations of SFM.		
		Trade Liberalization	Removal of tariffs and other barriers to trade.		
		Trade: wood and non wood products	Considering the importance of international trade in wood and non wood forest products.		
		Valuation techniques	Ways to apply value to forest goods and services.	Non-market based Approaches	Valuation techniques that rely on non-monetary indicators of value.

Figure 2. Diagram exhibiting all members of the Collaborative Partnership on Forests

In the first years of meeting the UNFF failed to adopt any substantial decisions or make progress towards strengthening the existing framework for forests (Schwoerer, 2015). Progress occurred when at UNFF5 four global objectives were agreed upon, which was followed by the creation of a *Non-Legally Binding Instrument on All Types of Forests* (NLBI) at UNFF7 (UNFF, 2007). The NLBI was generated with the objective of enhancing cooperation and implementation efforts of SFM while also working to achieve the previously developed global objectives (Rayner et al., 2010). Most recently, the UNFF met in May 2015 to review the NLBI and consider the options for international forest policy instruments going forward. At UNFF11 (2015) the parties adopted "*The Forests We Want: Beyond 2015*" (UNFF, 2015). The goal of this declaration is to continue to improve implementation efforts of SFM and further enhance cooperation and coordination with the forest-focused arrangement (UNFF, 2015).

2.1.1F. UNCCD

Despite also being an outcome of UNCED in Rio, 1992, the United Nations Convention to Combat Desertification (UNCCD) was overshadowed by the highly publicized climate and biodiversity conventions. Officially adopted in 1994, the UNCCD operates with the goal of improving cases of drought and desertification with an emphasis on efforts in Africa (UN GA, 1994). In order to reach this goal, the UNCCD set out to utilize a multi-level, cooperative, and long term approach to improve the condition of the land and promote sustainable management (Wildburger, 2010). This convention is unique in that instead of focusing on the protection of an ecosystem or environmental element, it focuses on a major threat and the potential social and economic impacts (Eikermann, 2015). Forests fit in to the convention as the relationship between deforestation and desertification is recognized and so, the use of SFM to reduce the further desertification is one objective (UN GA, 1994).

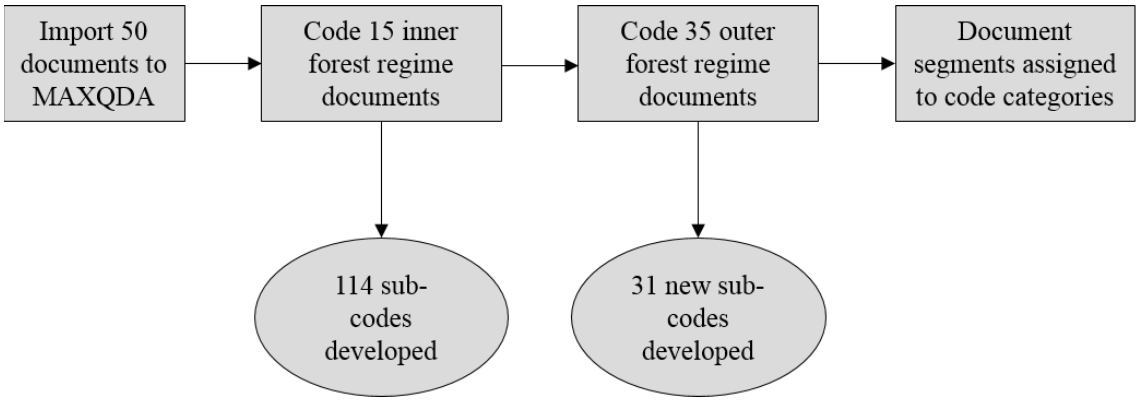

Figure 5. Illustrative display of the steps used in the methodological approach for text analysis.

The first step involved evaluating the documents of the inner forest regime. As previously mentioned, the inner forest regime is comprised of both the IFF and IPF and their Proposals for Action, the eleven reports from UNFF sessions, the Forest Principles, and Chapter 11 of Agenda 21. These documents are specifically focused on forests and thus make up the inner forest regime. After importing the documents of the inner forest regime into the MAXQDA program, the documents were coded in their entirety. Carefully reading through the text and coding each paragraph, decision, objective, goal, or other text elements in order to determine the main forest-focused topics that were addressed was how the coding of the inner forest regime documents was carried out. Therefore, the analysis involved analysing the central forest-focused idea identified in each section and thereafter developing a code for that topic. Then, if an idea was reoccurring in a document, each subsequent portion of the document was coded with the same relevant code that had already been developed before. Furthermore, during the analysis it was also possible to organize the codes into a hierarchy and therefore group related topics within a broader, umbrella coding category. This procedure, of developing relevant forest-centric codes was done for all of the documents making up the inner forest regime.

The second step of the methodological process was to perform a similar coding on all the remaining documents of the IFRC, thus the documents making up the outer forest regime. These thirty-seven documents were deemed relevant to the forest issue area in some way; they are however not always forest-focused and thus make up the broader, outer forest regime complex. As the goal of this study is to determine in what pertinent subject areas the forest regime complex is fragmented, this methodological portion provided the first possibility towards uncovering any fragmentation. In this way, remaining documents of the IFRC underwent a coding process, focusing on document sections that explicitly referenced forests. In order to only code text explicitly referencing forests the decision, goal, objective, or other document element had to include the word forest or some related

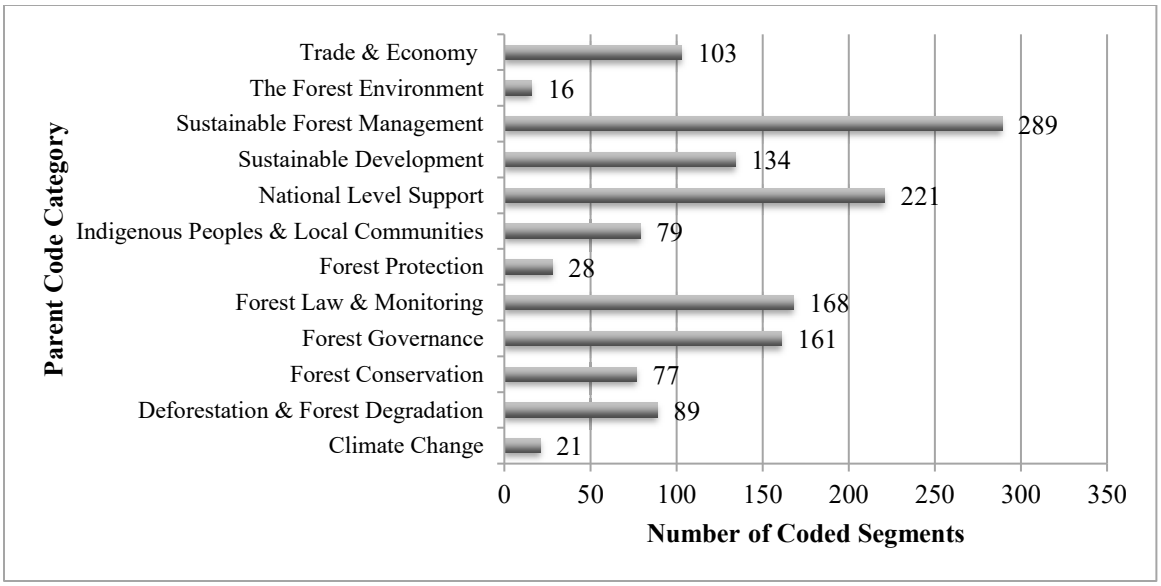

Figure 6. Number of coded segments, in the inner forest regime, assigned to each of the twelve parent codes.

Below, Figure 7 displays the ten most popular topics within the inner forest regime documents. In this context, popularity refers to the frequency of use of the topic, also referred to as sub-code, in the documents. These topics all fall into one of the larger parent categories and thus the results in in Figure 7 below relate back to Figure 6 as well. Figure 7 shows that Financing for Sustainable Forest Management was the most frequently used topic, located in 44 text segments. The second most popular topic had 42 instances of use, which was National Forest Programs, also within the Sustainable Forest Management category. In third, with 41 coded segments was Financial Support, found in the National Level Support category. Within the Sustainable Development parent code, the Role of Forests for Development Goals followed with 38 text segments. Sustainable Forest Management's Criteria and Indicators tied at 34 instances of use with two other sub-codes: Forest Science, Policy and Research and Supporting Implementation of Instruments. From the Forest Law and Monitoring category Land Tenure and Property Rights tied with Forest Governance's Institutional/Instrumental Cooperation with 33 coded segments each. To round out the top ten, Forests and Poverty Relief from the Sustainable Development category was used in coding 30 text segments. Further results from the inner forest regime are of interest in their relation to results from the outer forest regime and thus, exploring the results from these other documents next is crucial.

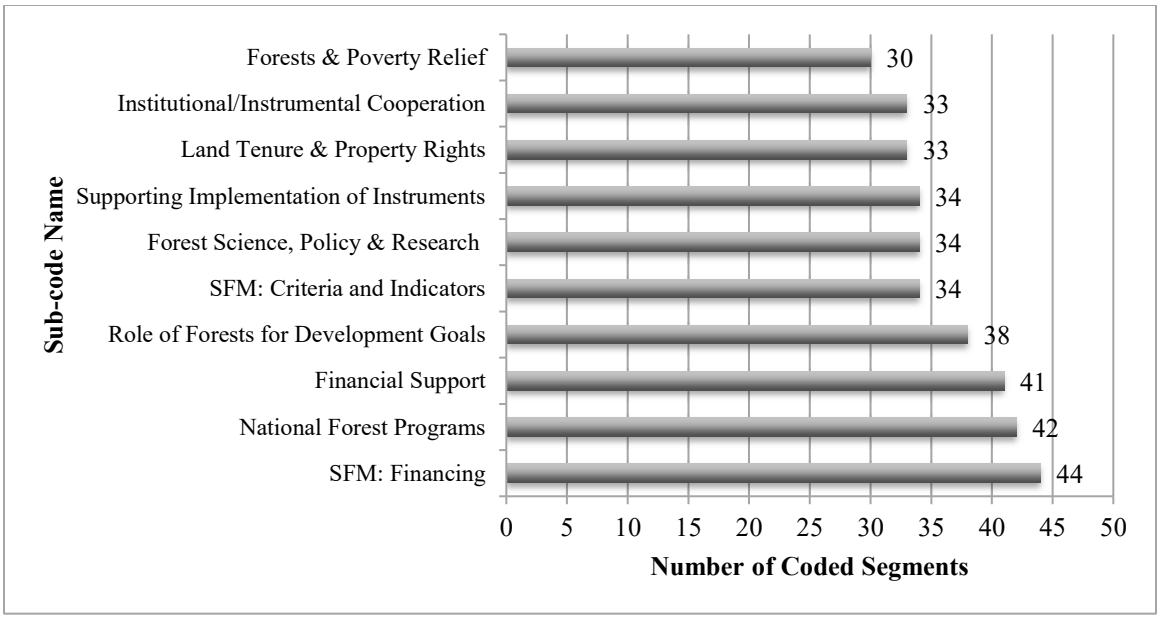

Figure 7. The ten most frequently used sub-codes within the inner forest regime documents, revealed during content analysis.

5.2 Results from the Outer Forest Regime

The content analysis of the outer forest regime was performed on the remaining thirty-five documents. These results revealed a lot of information about the content of the outer forest regime documents. Like with the inner forest regime, it was possible to first consider the popularity of the parent code categories based on their frequency of use in coding the documents.

Figure 8 shows the frequency of use of the parent code categories in the documents of the outer forest regime. These results showed that there is considerable difference in the primary focus of the outer than inner forest regime. Figure 8 reveals that Climate Change is the most frequently utilized parent code category in the outer forest regime with 100 coded segments. Where Sustainable Forest Management was by far the most popular parent code in the inner forest regime documents, here in the outer forest regime it follows in second with only 71 instances of use. Forest Law and Monitoring followed in third with 63 coded segments in the documents. Then, in decreasing order of coded segments, the use of parent codes was as follows: Forest Conservation (59), Deforestation and Forest Degradation (41), Trade and Economy (37), National Level Support (28), Forest Protection (27), Sustainable Development (26), Indigenous Peoples and Local Communities (13), and lastly Forest Governance (8). Here it is important to consider that when comparing these results, the order of parent code popularity is considered to be a more substantive result than the absolute value.

Despite including many more documents, the outer forest regime resulted in less overall segments being coded, because the documents were forest-relevant but not forest-focused. Therefore considerable parts of the documents did not address forests or did not relate to forests at all. As described in the methods section, the complete text of every inner forest

regime document was coded, because the entirety of every document referred to forests. However, in the outer forest regime documents, only those sections explicitly referencing forests were coded and thus the resulting number of coded segments was substantially less.

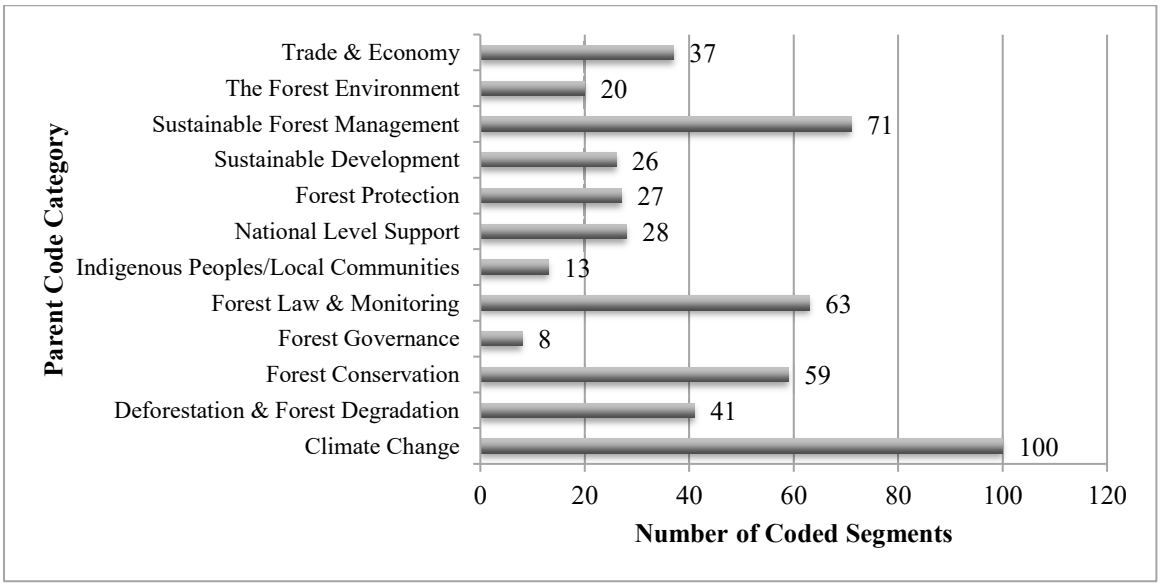

Figure 8. Number of coded segments, in the outer forest regime, assigned to each of the twelve parent codes.

Following the content analysis of the outer forest regime documents, the results regarding the popularity of sub-code usage were revealed. Figure 9 shows the topics that were most frequently addressed in the outer regime documents. From first glance it is already apparent that the areas of focus in the outer forest regime documents are very different from the inner forest regime documents. As shown in Figure 9, REDD+ Safeguards was the most prevalent topic addressed in the thirty-five outer regime documents, with 19 text segments. Furthermore, four of the ten sub-codes shown below fall into the Climate Change parent code, which aligns accordingly with the results shown in Figure 8. Land Tenure and Property Rights, Conservation of Biodiversity, and REDD+'s Results-based Finance each had 16 text segments per topic and were subsequently followed by Climate Change's MRV with 12 text segments. Forest Law Enforcement Efforts had 11 coded segments while SFM's Ecosystem Approach and REDD+'s Financial/Technical Support each had 9 text segments per topic. Lastly, from the Trade and Economy category Forest Workers/Employment and SFM's Management Responsibilities each were considered in 8 text segments.

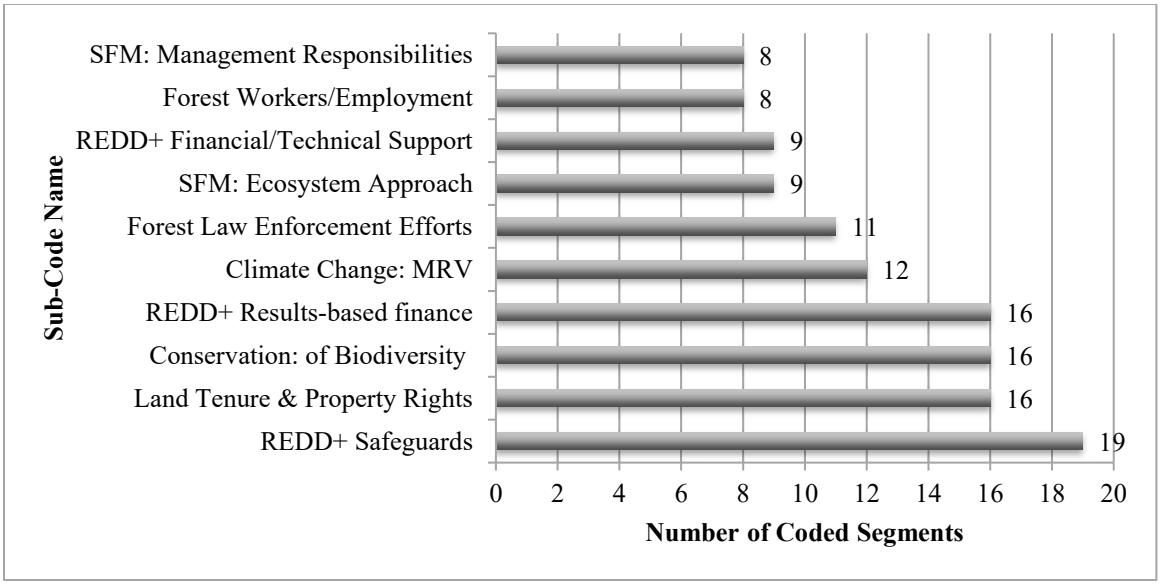

Figure 9. The ten most frequently used sub-codes within the outer forest regime documents, revealed during content analysis.

5.3. The Inner and Outer Forest Regimes: Comparative Results

In order to determine where the fragmentation and synthesis lies within the international forest regime complex it is essential to look at the results that also reveal the absence of certain forest-relevant topics. This can be done determining which topics are addressed only in the inner forest regime documents and not the outer, as well as the reverse, those topics found in the outer but not inner forest regime documents. Upon completing the coding of the outer forest regime documents, thirty-one new sub-codes had been developed. These new sub-codes, as shown in Table 6, were the result of the document analysis addressing forest-relevant topics that had not appeared previously in the inner forest regime documents.

Table 6. The new sub-codes created during the content analysis of the thirty-five outer forest regime documents.

Parent Code Category	New Sub-Code
Sustainable Forest Management	Enhance Carbon Stocks Stand/Landscape Structure Forest Infrastructure Forest Management Plans
Forest Law and Monitoring	Assessing/Monitoring Biodiversity Forest Biodiversity Programs
Sustainable Development	Sustainable Use of Biodiversity Green Climate Fund
Trade and Economy	Producer/Consumer Country Cooperation Improve/Expand Tropical Timber Trade CITES Species ID/Measurement
Deforestation and Forest Degradation	Forest Conversion
Forest Conservation	High Conservation Value Forest

eleven of the twelve parent codes are addressed means that more specific investigation into the use of sub-codes is needed to learn what issue areas were most frequently addressed.

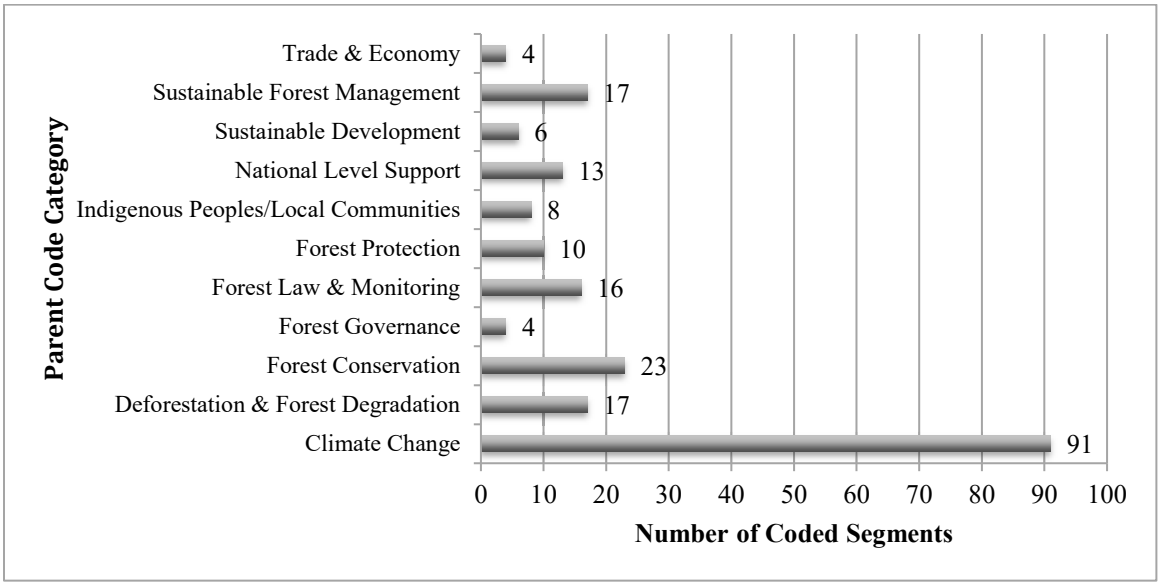

Figure 10. The distribution of coded segments amongst the twelve parent code categories within the UNCED regime elements and successors document group.

For more specific results regarding the focus of this document group, the ten most frequently considered topics were revealed, as shown in Figure 11. Congruent with the results shown in Figure 10, it can be seen below that the top four topics all fall within the parent code category of Climate Change. Furthermore, the most dominant topic here is REDD+ Safeguards, with 19 text segments. The next most frequently coded topics are REDD+ Results-based Finance and Climate Change's Monitoring, Reporting and Verification, each with 12 text segments. These two sub-codes are trailed by REDD+'s Financial/Technical Support with 9 text segments. Drivers of Biodiversity Loss and Climate Change's SFM Mitigation/Adaptation are each used 8 times within this document group. Conservation of Biodiversity, Deforestation: Underlying Causes, and REDD+'s Forest Reference Levels, each had 7 text segments. Lastly, to round out the top ten, with 6 uses, is Sustainable Forest Management's Enhance Carbon Stocks. These results revealed more detail about the focus of the documents showing that there is considerable emphasis on matters related to REDD+ while also addressing matters related to deforestation, sustainable forest management, and biodiversity loss and forest conservation. These results are useful to a greater extent once the same analysis is performed on other document groups and comparison is possible.

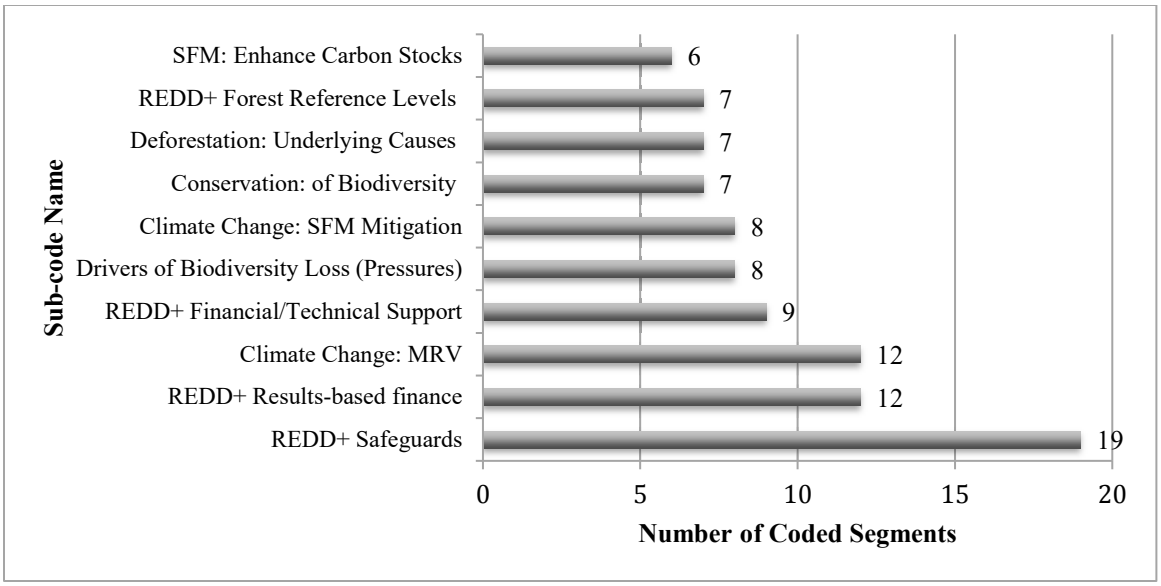

Figure 11. The ten most frequently used sub-codes of the UNCED regime elements and successors document group.

5.4.2. Exploring Issue Area Results: Conservation-specific outcomes

The document elements of the conservation regime are the Ramsar Convention text and subsequent Ramsar Strategic Plan (2009-2015), as well as the World Heritage Convention. With so few texts in this group as well as the fact that the documents are only forest-relevant not forest-focused means that only eight segments were coded. Consequently, not all of the parent code categories were represented. The Conservation, Forest Law and Monitoring, and Sustainable Development categories had two text segments each while National Level Support and Trade and Economy each had one text segment. More specifically, these text segments were assigned to the following sub-codes: Forests and Poverty Relief (2), Conservation of Natural Heritage (2), Training/Education Programs (1), Trade Liberalization (1), Monitoring, Assessment, Reporting (1), and Forest Law Enforcement Efforts (1). Standing alone, the results from this document group were quite limited. However, even in their limited scope, the results do show which areas were addressed in these documents, allowing for some comparison.

5.4.3. Exploring Issue Area Results: The Trade Issue

The trade regime elements of the international forest regime complex are CITES and its forest-relevant decisions, the WTO's GATT, and the three ITTAs.

The content analysis of these six documents resulted in 81 coded segments in total. Of the twelve parent code categories, nine were represented via text segments while Climate Change, Indigenous Peoples/Local Communities, and The Forest Environment were the three parent code categories that were not present. Figure 12 shows the nine parent codes that were represented in the documents of the trade regime. Accordingly, topics falling into the Trade and Economy category were coded most frequently with 19 segments. National Level Support and Forest Law and Monitoring followed with 13 and 12 coded segments,

respectively. Then in decreasing order of number of coded segments the results were: Conservation (10), Sustainable Forest Management (9), Deforestation and Forest Degradation (7), Sustainable Development (6), Protection (3), and Forest Governance (2). Thus, the overarching issue areas that are addressed most prominently within this document group are related to trade, economic matters, as well as legal and supervisory activities related to forests.

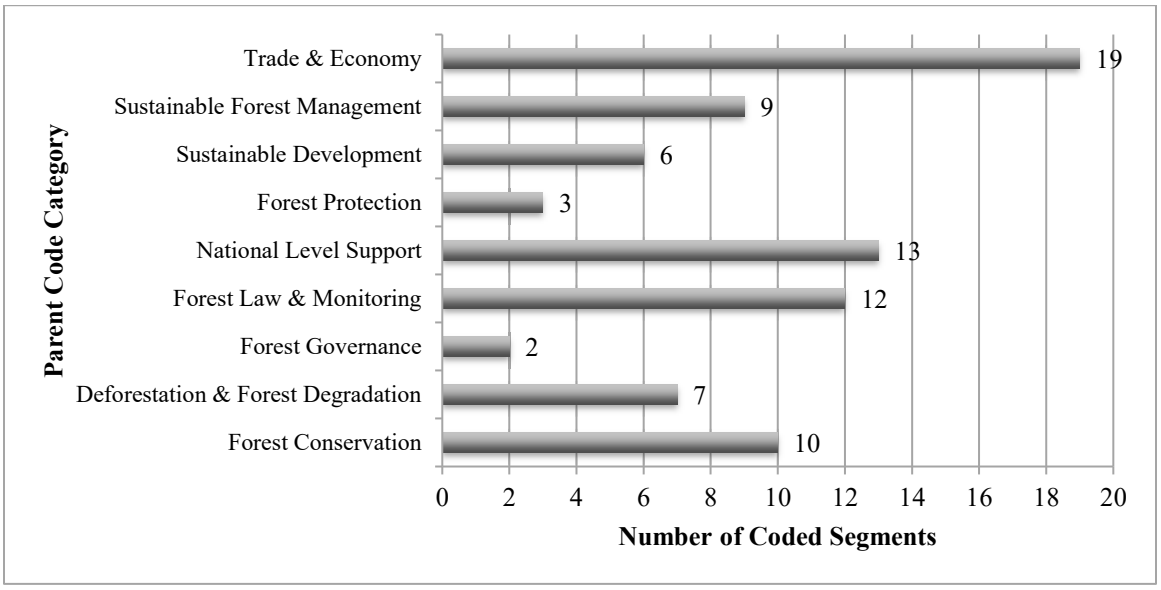

Figure 12. Number of coded segments in each parent code category within the trade regime documents.

Upon further analysis of the trade regime elements, through evaluating the sub-codes, it becomes apparent what the more detailed results are within this document group, as indicated graphically in Figure 13. Given that three of the texts were strictly focused on tropical forestry, there was a correspondingly high focus on tropical forest issues amongst the sub-codes. The topic that dealt with ways to improve or expand the tropical timber trade was most frequently utilized with 7 text segments. Another tropical-focused topic followed in second, Tropical Reforestation, with 6 segments. In third was Ethics/Transparency, which was used to code 5 segments. The Economic Importance of Tropical Timber, Technology Transfer, and Conservation of Tropical Timber were each utilized in coding 4 times. Lastly, four topics were addressed 3 times each, these being: Producer/Consumer Country Cooperation, Sustainable Forest Management of Tropical Timber, Sovereignty over Natural Resources, and Forest Law Enforcement Efforts.

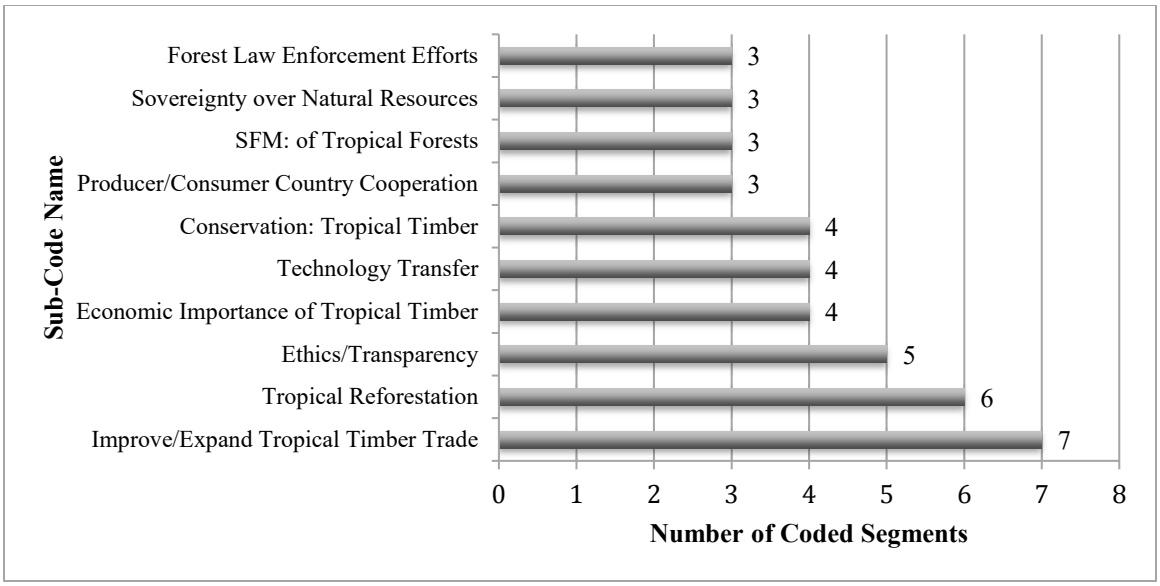

Figure 13. The ten most frequently used sub-codes of the trade regime elements and successors document group.

5.4.4. Results of the Miscellaneous Regime Elements

The remaining group of regime documents are not specifically related to each other but rather include all of the texts not included in the other categories. This grouping is comprised of the Sustainable Development Goals, UNDRIPS, PEFC and FSC Standards, the ILO Convention Concerning Indigenous and Tribal Peoples in Independent Countries, the New York Declaration on Forests, and the Montreal Process (5th Edition).

Despite the lack of relationship between the documents, the results from their analysis are still of interest because they reveal what subject matter is addressed outside of the already existing inner forest regime, UNCED, conservation, and trade regimes. As such, these results were explored in the same fashion as for the other document groupings, looking at which parent codes and sub-codes were most popular and which were absent.

There was considerable diversity amongst the elements of this document group and accordingly, each of the twelve parent codes was represented in some manner. Below, Figure 14 shows that number of coded segments accorded to each of the parent codes. Sustainable Forest Management topics are utilized most frequently amongst these documents as its parent code category had 45 segments. Forest Law and Monitoring came in second with 33 segments; it was followed by Forest Conservation with 24 segments. In contrast to the other document groups, the Forest Environment topics were used frequently as they had 20 segments. Then, in decreasing order of usage, the number of coded segments per parent code were: Deforestation and Forest Degradation (17), Forest Protection (14), Trade and Economy (13), Sustainable Development (12), Climate Change (9), Indigenous Peoples/ Local Communities (5), Forest Governance (2), and National Level Support (1).

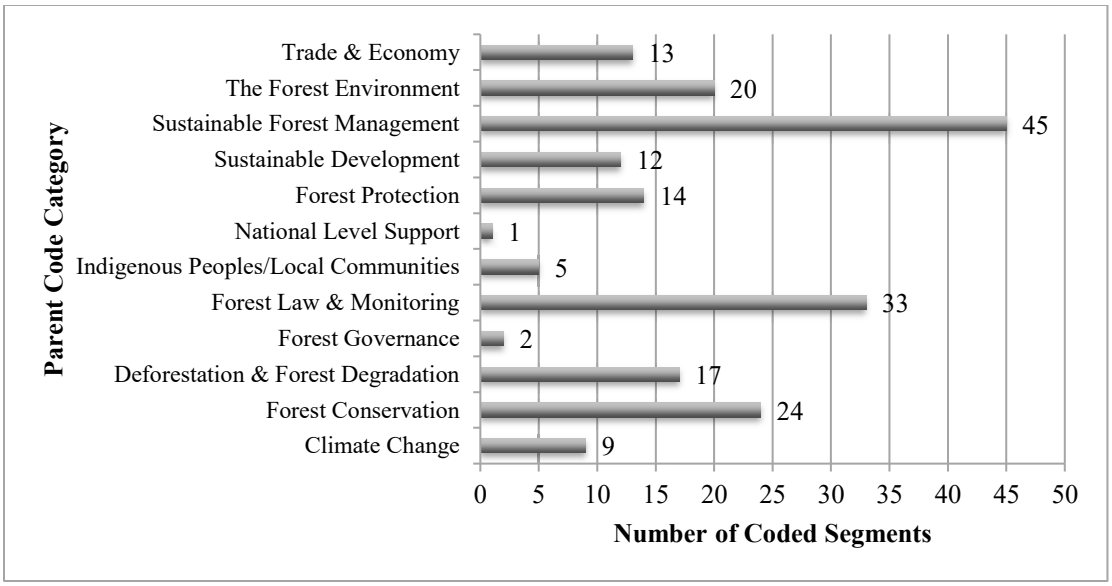

Figure 14. Number of coded segments in each parent code category amongst the miscellaneous regime complex documents.

When reviewing the sub-code frequencies from these documents, there were some interesting results to take note of. First of all, in all the other document groupings, the most frequent sub-code is one that is within the most frequently used parent code group. However, in this case, Sustainable Forest Management was the most frequently used parent code but the sub-code of greatest usage was Land Tenure and Property Rights of the Forest Law and Monitoring category, with 14 coded segments. Secondly, it was intriguing that the ten most frequent sub-codes, shown in Figure 15, were very different than the most frequent sub-codes of all other result groups. Land Tenure and Property Rights as well as Conservation of Biodiversity were the only two sub-codes that were also located in the top ten sub-codes of other results. Conservation of Biodiversity was the second most frequently utilized sub-code amongst the miscellaneous texts with 9 coded segments. Three topics, Forest Workers/Employment, Pesticides/Fertilizers, and Sustainable Forest Management's Management Responsibilities each had 7 coded segments. Again, three other topics had 6 coded segments each, which were Forest Health and Productivity, Forest Management Plans, and Monitoring Assessment Reporting. Lastly, Sustainable Forest Management's Stakeholder Participation had 5 coded segments.

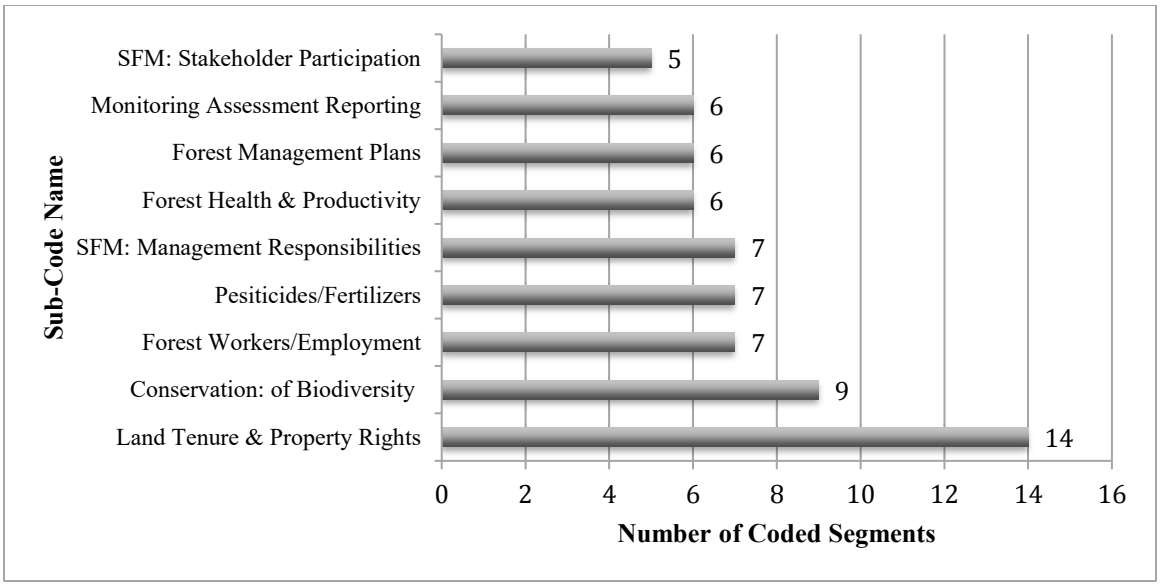

Figure 15. The ten most frequently used sub-codes of the miscellaneous regime complex documents.

Given that these documents are the peripheral members of the international forest regime complex it was of interest to explore what subject matter was not addressed within these texts. To begin, the Climate Change parent code was used in coding 9 segments, however, upon further inspection it becomes apparent that these segments were all related to REDD+ sub-codes and as such no other climate change issues were addressed. Furthermore, there was a notable absence of the National Level Support category, which in other document groupings was heavily addressed. This category is strongly connected to developing countries and technology support. Thus it was also relevant to note the low numbers for Indigenous Peoples/Local Communities as the issue areas of these categories can be quite integrated with each other. Along the same lines, there was also a considerable lack of Forest Governance sub-codes in these documents as there were only two coded segments, which related to partnerships and policy coordination.

In contrast to the previously explained results, there were seven sub-codes that were exclusive to this group of documents. From the Conservation category High Conservation Value Forest and Conservation of Soil and Water Resources were sub-code categories utilized exclusively within these miscellaneous documents and were used to code 1 and 2 segments of the documents, respectively. Within the Sustainable Forest Management category, sub-codes: Biodiversity: Stand/Landscape Structure and Forest Infrastructure were used to code 4 segments each. In the same category, Forest Management Plans was the topic used to code 6 segments. These 18 uses of the sub-codes were the only times that these topics were used in the entire content analysis. Furthermore, in the Forest Environment category, the two sub-codes Protective Function of Forests and Recreation Function were utilized 4 and 2 times, respectively and again they were only used for coding in these peripheral documents. As such, these results have highlighted which subject areas were exclusively referenced within the miscellaneous documents of the IFRC.