What Made the World's Largest "Final Backup" Facility Possible?

An analysis of the policy processes leading up to the establishment of the Svalbard Global Seed Vault

Sofie Løchen Smedsrud

Master' Thesis in
Peace and Conflict Studies

Department of Political Science
University of Oslo

Word Count: 33,942

Autumn 2021

What Made the World's Largest "Final Backup" Facility Possible? An analysis of the policy processes leading up to the Svalbard Global Seed Vault.

2021

http://www.duo.uio.no/

Abstract

This premise of this thesis is to explain the establishment of the Svalbard Global Seed Vault and the factors that facilitated the decision for implementation on the Norwegian government's agenda. To answer the research question, this thesis has employed a theory-guided, within-case analysis of the policy process from the signing of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) until the official opening of the Svalbard Global Seed Vault in 2008. The thesis is guided by a theoretical framework that aims to capture the transfer of influence in the policy process. The framework, consisting of the theories of entrepreneurship and policy transfer, investigates the research question on different levels of analysis. The findings indicate that while entrepreneurship provides significant explanatory power, the combined theoretical framework manages to capture factors and nuances on multiple levels of analysis. The empirical findings suggest that the networking strategies and trust-building measures were essential for the establishment of the Svalbard Global Seed Vault and for facilitating the decision of implementation on the Norwegian government's agenda.

Acknowledgements

To Regine Andersen, for crucial guidance and support, and if for who if I had not met this thesis would never have happened.

To Jens Jungblut, my fantastic supervisor, for your guidance, feedback, and critical help at critical stages.

To Stine, Anne Kari, and Anette, my incredible study group, who I objectively do not know what I would have done without.

I'm grateful to the Fridtjof Nansen Institute for providing a monthly stipend, an office, and a supportive academic community throughout the year. I'm also grateful to the University of Oslo for two great years and for financially supporting my field work at Svalbard.

A special thanks to Åsmund Asdal for inviting me to observe a seed deposit at the Seed Vault, and to Andreas Østhagen and Arild Underdal for helpful feedback and comments.

And at last, to my family and friends for supporting me throughout this strange and wonderful time – and not least for tolerating my many monologues about the often-overlooked, crucial importance of crop genetic diversity.

Any shortcomings and/or mistakes are entirely my own.

Sofie Løchen Smedsrud
Oslo, November 2021

Table of Contents

1 Introduction

Forced to flee, local staff evacuated the premises of the genebank at Tel Hadia, 33 kilometres outside of Aleppo as civil war broke out in March 2011. The genebank, the International Centre for Agricultural Research in the Dry Areas (ICARDA), is a non-profit agricultural research institute guarding and conserving some of the most important crop collections in the world. Located in the Fertile Crescent, known as one of the earliest origins of world agriculture and home to some of the world's most precious biodiversity, the loss of irreplaceable world heritage and genetic resources were at stake (Westengen et. al. 2020). But a back-up plan was already in place. Before civil war broke out, the genebank had already begun collecting, packing, and shipping more than a hundred thousand safety duplicates of its most important seed varieties to the other side of the world. ICARDA was in fact one of the very first depositors to deposit to the Svalbard Global Seed Vault, located at the island Spitsbergen in the Arctic Archipelago Svalbard, a global back-up facility for long-term storage of plant genetic resources. Just a few months before the Arab Spring had reached Syria, the Director-General of ICARDA and the Executive Director of the Crop Trust agreed by phone it would be for the best to deposit safely duplicates of seeds "just in case". And "just in case" is exactly why the Svalbard Global Seed Vault exists (Fowler 2016, pp. 147). As war continued to rage on, ICARDA managed to safety duplicate 80% of its unique seed collections by the time of its last deposit in 2014. The following year, having relocated its genebank headquarters to Morocco and Lebanon because of the war, ICARDA requested its seed collections – some of which are likely no longer found in the field – for a fresh start (Westengen et. al. 2020).

With nicknames ranging from the 'Doomsday Vault' to 'Noah's Ark' and the 'world bunker of the apocalypse', The Svalbard Global Seed Vault has been publicly praised as humanity's insurance policy in an end-of-the-world scenario. But while such slogans may have "captured the public's imagination", one of the pillars of the facility – a legally binding regulation for sharing crop genetic resources internationally – was not internationally agreed upon before 2001 and entered into force in 2004 (Fowler 2008). In other words, the international system which underpins the rescue operation above is not a given. Legal

frameworks, technical capacities, political cooperation, and not least effective international cooperation was needed for the rescue operation to be successful. The rescue operation above provides a terrifying glimpse into the potential consequences of world without a "plan B". But the road to what made the world's largest backup facility possible was not easy: it was accomplished through decades of scientific, organisational, legal, and political hurdles to overcome (Fowler 2008). Westengen et. al. (2020) emphasises the institutional and policy insights learned: the story of ICARDA and the Seed Vault is a story of *international cooperation*, they argue, that is essential for safeguarding the world's genetic resources (Westengen et. al. 2020). Moreover, it illustrates the "inextricable but complex links between climate change, food security and socio-political stability in fragile states" (Westengen et. al. 2020, pp. 1311).

While the "end of the world" scenario might be illustrated in the ICARDA case, however, the Seed Vault might also mean the opposite. The ICARDA example shows that the disaster the Svalbard Global Seed Vault guards against is not a singular apocalyptic "doomsday in a distant future, but rather an ever-present possibility already unfolding in the form of local catastrophic events" (von Verschuer 2021 pp. 53). Today, the rapid loss of plant genetic diversity all over the world represents a serious threat to global food security and the future of agriculture. Put simply, the importance of *diversity* in our crops essentially means *options* for the future (Fowler 2008). From a diversity of resources, it is easier to identify plants that are more resilient to pests, diseases, and a future with different climatic conditions than those we have today. With over a million samples from almost every country in the world, the Svalbard Global Seed Vault provides the world's largest collection of crop diversity (Crop Trust 2021). Since its opening in 2008, two other global seed facilities have been established, respectively in India in 2010 and in South Korea in 2016 (Pal 1018; Hae-Yeon 2021). While these facilities are important towards conserving the world's genetic resources, they are not a sufficient solution to the alarming genetic erosion that routinely takes place across the world (Fowler 2008)

While the Svalbard Global Seed Vault it is not a sufficient solution, it stands as a skilfully constructed institution to tackle the inevitable, global problem of future adaptation to climate change. The Seed Vault is the best solution devised for its time, if nothing less a demonstration of what can be accomplished when countries work together to construct "an insurance policy for a global system that doesn't quite exist yet" (Fowler 2008, pp. 191). The Svalbard Global Seed Vault – from now on referred to as the *Seed Vault* – can be considered as both a global and a national success. The idea and realisation of the first global back-up

institution for the world's genetic resources stands as an example of an architecturally innovative facility that was successfully promoted, managed, funded, and not least – as the example of ICARDA illustrates – is accessible, utilised, and useful for the global community. This leads to the question: how can the establishment of the Seed Vault be explained, and which factors made it possible? The theoretical framework for this thesis, which will be elaborated upon in Chapter 3, constitutes a dual theoretical approach to disentangle key events in policy process leading up to the establishment of the Seed Vault. It will evaluate the extent to which each theory can explain the research question, as well as evaluating the strength of the combined theoretical framework. The indicators, developed from the theoretical framework, will investigate the transfer of influence and the extent to which different factors played a part in implementing the proposal on the Norwegian government's agenda. The chosen research design is a within-case, theory-guided case study using semi-structured interviews supplemented with a document analysis to answer the overall research question.

1.1 Research Question

The objective of this thesis is to investigate the factors that made the Seed Vault possible. It will do so through describing, analysing, and ultimately explaining the factors which led to the Seed Vault. It will answer the following research question:

> *How can the establishment of the Seed Vault be explained, and which factors facilitated the decision by the Norwegian government?*

In order to answer the research question, two theoretical approaches will be combined into a theoretical framework which attempts to explain the factors that led to the establishment of the Seed Vault. The research question will be divided in four guiding questions that aim to capture key indicators in the theoretical framework:

1. What were the challenges in the policy process leading up to the Seed Vault and how were they resolved?

2. What can explain the motivation and commitment of the actors involved for establishing the Seed Vault?
3. To what extent did transnational factors play a role in the establishment of the Seed Vault?
4. How was the policy proposal for the Seed Vault framed, promoted, and presented?

To situate the research question within the framework of existing social scientific literature, the next sub-chapter will conduct a brief literature review.

1.2 Literature Review

This sub-section will synthesize some of the main contributions and overarching arguments in the literature, explain the research gap this thesis aims to fill, and outline its contribution to the literature. The case of the Seed Vault itself encompasses multifaceted dimensions and academic disciplines ranging from plant sciences, technology studies, political science, philosophy, and so forth. The perspective of its policy dimensions, however, remains a research gap. In this thesis, the overarching theme and wider universe of cases belongs to *policy innovation*, *international cooperation,* and the way in which efforts to *adapt to climate change* are taken. While the Seed Vault serves a technical and practical purpose for the world's common heritage of plant genetic resources, it can also be viewed as an architecturally innovative policy that is "unique in its potential ability to cross the political and cultural divide over the ownership and conservation of seeds and thereby promote the vital ecological need for both ex-situ and in-situ conservation" (Breen 2015, pp. 39). With its "unique mission and design", it is not only significant for questions of food sustainability, food resilience and food sovereignty (*ibid*), but also as a high-water mark for international cooperation. The purpose of this thesis is thus to look at the mechanisms through which this unique case occurred, which may help gain more insight into the international cooperation on policy innovation in climate change adaptation. First, it will provide a brief literature review on the topic of plant genetic resources. Second, it will provide a brief literature review on the theories which will ultimately form the theoretical framework. The latter, however, will be further explored in Chapter 3.

The political issue of access to plant genetic resources for food and agriculture (PGRFA) has been a widely controversial issue of "what some would say centuries of conflict over the status of biological diversity and how the benefits from this resource would be divided" (Fowler and Hodgkin 2004, pp. 144). Governments have negotiated throughout the years to formalise agreements clarifying and establishing frameworks for conservation, rules for access, and benefit sharing (*ibid*). In what Mooney (2011) characterised as the 'hundred-year seed war', people, actors and groups have been fighting for rights and politics related to seed (Mooney 2011). Literature within PGRFA has largely therefore been situated around policy, law, and access to its availability and use: among them is genetic resource control, conservation measures, the extent of possibility and commitment to conservation and utilisation of genetic resources, legal and rights-based approaches, and on how international agreements affect the management of crop genetic diversity resources (Fowler and Mooney 1990; Andersen 2008; Claeys and Lambek 2014). Within literature, however, there is a 'urgent need' for further research that integrates plant sciences with policy-relevant research, both to respond to key gaps and challenges in the literature and to contribute to current and future initiatives to the sustainability of agriculture and food systems (Zimmerer and de Haan 2017). In order to fill an important research gap, the policy dimension is central to this thesis. So far, there has been little research on how innovative ideas gain prominence on government agendas (Mintrom 1997).

Few studies, however, have focused on the policy dimension of the Seed Vault. While Qvenild (2006) compared the first Norwegian initiative to create an international gene bank at Svalbard in the beginning of the 1990s to its successful proposal in 2004. However, the scope of the thesis was mainly restricted to the dynamics and processes that occurred within the FAO arena and did not include the dynamics and processes in the Norwegian ministries (Qvenild 2006). Therefore, the research gap on the Norwegian side of the process remains unexplored and the research can still improve the answers that so far have been offered. Following previous literature on the subject, it will follow Mintrom's (1997) logic of looking at how actors articulate policy innovations onto government agendas and energise the diffusion process. On the one hand, it will unpack the policy transfer mechanism by analysing how the new policy was adopted. This transfer is assumed to take place on both sides: both the transfer from the international level through multilateral organisations, and the transfer from domestic entrepreneurs within Norway pushing for the policy. It follows the "mechanisms- and processed-based accounts" in political science literature which "explain salient features of episodes, or significant differences among them, by identifying within

those episodes robust mechanisms of relatively general scope" (Tilly 2001, quoted in Busch and Jörgens 2005, pp. 862).

Given the theory-guided approach of this thesis, a brief summary over the two theories applied in the theoretical framework follows. Further background to the two theoretical traditions will be provided in Chapter 3. The analytical framework arguably both address the process of *transference*. Dolowitz and Marsh (2000) argue that an increasingly complex global governance network of growing communications, more frequent bilateral and multilateral meetings between actors, emerging advocacy coalitions and epistemic communities, the role of policy entrepreneurs "sell policies around the world" contribute to what is "no doubt (…) there is a great deal of transfer. Moreover, and that this transfer has shaped policies" (Dolowitz and Marsh 2000, pp. 21). Central scholarly contributions within both and policy transfer studies are increasingly addressing the need to integrate the factors that may cause change in policy processes and the scope of analysis. For example, Petridou and Mintrom (2020) highlight the use of integrating entrepreneurship and policy transfer frameworks to contribute on three main research areas: (1) to further investigate the contextual factors that encourage the emergence of policy entrepreneurs; (2) by further specifying the strategies and therefore better measuring the impact of entrepreneurs on policy processes; and at last (3) to identify when policy entrepreneurs prompt change (Petridou and Mintrom 2020). Moreover, the combined theoretical framework both focus on and tie together aspects of international *influence* on multiple levels of analysis. This is in accordance with academic literature. Finnemore and Sikkink (19998) found that norms play a big role in political change – both in the ways in which they change, and the ways they change other features of the political landscape. In fact, they show that global norms and principles may gain influence before being set in stone in international agreements (Finnemore and Sikkink 1998). Entrepreneurship and policy transfer theories focus on the generation and dissemination of ideas through lobbying, collaboration, and networking activities – analysed on two different levels of analysis (Mintrom and Luetjens 2017). Finnemore and Sikkink (1998) argue that each stage of a norm cycle is governed by different motives, mechanisms, and behavioural logics, as well as characterised by different actors, motives, and mechanisms of influence (Finnemore and Sikkink 1998, pp. 895). The theoretical framework can show the transfer between national and international processes and entrepreneurship. While it does not write a definitive historical account, the theories constitute a strong framework to explain and answer the research question.

In summary, this thesis aims to fill the research gap and contribute to further understanding and insight into the wider universe of cases in international cooperation and climate change adaptation. The Seed Vault stands as an example of a facility which was established and used created despite of controversial, long-fought political and legal challenges. The question is *which factors* were central to the establishment. Therefore, the key contribution of this thesis is to look at the lessons learned from the policy- dimensions and processes that made an architecturally innovative, common-use storage facility for the world's common heritage possible.

1.3 Outline of the Thesis

This thesis consists of seven chapters which will lay the building blocks for answering the overall research question. The next chapter will provide a brief background on the context of the Seed Vault. It will outline the linkage between food security and peace, the conservation of biodiversity, Norwegian engagement in on the conservation on plant genetic resources, and introduce the Seed Vault. Chapter 3 presents the theoretical framework, which consists of the two political science theories *entrepreneurship* and *policy transfer*. First, it presents the overview and indicators for each theory. Then, a summary of the framework is provided to establish how the framework aims to guide the research question. Chapter 4 will present the research design and methods employed in this thesis. This thesis can be categorised as a theory-guided, within-case study. It will apply a triangulated approach of semi-structured interviews, field work, and document analysis. Chapter 5 is divided in two parts. The first part of the analysis *outlines* and *describes* the policy process towards the establishment of the Seed Vault, while the second part of the analysis will *analyse* and *explain* the empirical findings through utilising the indicators operationalised in the theoretical framework. Chapter 6 will discuss the empirical findings, assess the explanatory power of the theoretical framework, and what the findings might mean for the wider universe of cases. Chapter 7 concludes the thesis by summarising the main findings, highlighting theoretical and methodological implications, and at last outlining its limitations and further research suggestions.

2 Background

The Seed Vault guards some of the world's most precious biodiversity and unique crop genetic material, which is the foundation for all food production and global food security (Esquinaz-Alcázar 2005). First, it will provide a background on the linkage between food security and peace. Second, it will provide an overview of the conservation of biodiversity and genetic resources. At last, it will provide an overview of Norway's contribution to the world's genetic resources and present the Seed Vault.

2.1 Linkage between Food Security and Peace

Last year, an estimated 2.37 billion people in the world were without food or unable to have a healthy, balanced diet on a regular basis. This is an increase of 320 million people from the year before (SOFI 2021). Between 60 to 161 million of these are likely to have experienced hunger as a direct result of the Covid-19 pandemic (SDGs 2021). The key drivers of hunger and malnutrition around the globe, however, is conflict and climate change (FAO 2017a). In fact, all 19 countries classified as being in a state of "protracted food crises" today are all conflict-ridden countries (*ibid*). Conflict exacerbates conflict, food shortages deepen existing inequalities and grievances, and have profound effects on hunger, nutrition, and sustainable development overall (WFP 2019; FAO 2017b). Conflict can cause food insecurity, and food insecurity can trigger conflict and ultimately war (WFP 2020). People are more likely to resort to violence when their security is triggered. This emerging understanding between the relationship between conflict and hunger is widely known as the *hunger-conflict nexus*, which recognises that the world will never eliminate hunger without peace, and that peace will never be achieved without eliminating hunger (WFP 2019).

Therefore, interventions to improve food security and nutrition can be essential for conflict prevention and peacebuilding, which could save billions of dollars in humanitarian food assistance every year (FAO 2017b; WFP 2019). This is in the very heart of the 2030 agenda for the Sustainable Development Goals (SDGs), which makes explicit links between sustainable development and peace, calling for collaborative approaches to conflict prevention, mitigation, resolution, and recovery (FAO 2017b). Since its implementation in 2015, however, the second goal has received momentum in later years. Sectors of

humanitarian work, research is undergoing a "deepening awareness of how food security in one part of the world can influence social services, political systems and national security elsewhere" (FAO 2017b). The relationship between food and peace was acknowledged by the UN Security Council Resolution 2417, which asserts that hunger is both a direct and indirect underlying cause of conflict (FAO 2017b, pp. xiv). This emerging understanding of a holistic way of looking at peace was acknowledged further through awarding the Nobel Peace Prize for 2020 to the World Food Programme, further highlighting the vicious cycle of hunger and conflict. In short, the connection between food security and peace is becoming increasingly apparent. This thesis is anchored in the emerging proposition that food security is an important measure for securing long-term peace. While the strong links between conflict, food insecurity and peace are increasingly understood and acknowledged in the international community, there are large gaps remaining about *how* improvements in food security to prevent conflict and sustain peace can be made (FAO 2017b).

Questions of integrative approaches to addressing hunger, climate and food systems are tightly knit together. The term 'food security' is a flexible concept applied in different ways across contexts, but is defined here according to the widely applied World Food Summit 1996 definition: "food security exists when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO 2006). Within the larger umbrella of food security measures, agriculture is an important but often underestimated aspect of long-term food security (Sperling and McGuire 2012). In an era of climate change, increasing hunger, and poverty on the rise, agriculture should not be underestimated. Agriculture is the primary livelihood for most people living in fragile situations, crises, and conflict. In developing countries, small-scale farmers are increasingly exposed to crop failure, hunger, and poverty (FAO 2015; IPCC 2018). Moreover, climate change is widely recognised as an important factor for exacerbating poverty, particularly where poverty levels already are high (Leichenko and Silva 2014) Therefore, UN organizations stress the importance of increasing the priority of and support to agricultural development in such contexts, arguing that improving food security as a cornerstone for peaceful and inclusive societies (FAO 2017; WFP 2020). However, it is the interaction of a multitude of drivers that determine whether diversity is conserved (Zimmerer and de Haan 2017). Climate change is a global issue with unpredictable changes. It is important to maintain resilience in production systems to meet the needs of the human population, and the variety- and species level adaptations will depend on the strategic insertion of biodiversity in climate policies. To succeed, as much diversity as

possible must be conserved through complementary methods (Zimmerer and de Haan 2017). While most of the world's centres of crop origin are in domestic countries, today's world is completely interdependent on the world's plant genetic resources for food and agriculture. Therefore, a holistic multilateral solution is needed.

2.2 Conservation of Biodiversity and Genetic Resources

The world's common agricultural heritage has been cultivated through thousands of years by the hundreds of human generations before us. The diversity in plants we know, use, and eat today, is a result of a mutual adaptation, co-evolution, and conservation that took place between humans and the plants they grew, and between these plants and the environment, as they were handed forward (Esquinas-Alcázar 2005; Fowler, 2009). The technical term for crop diversity, plant genetic resources for food and agriculture, are the raw materials for plant breeding and development of agriculture and food production (NordGen 2021). Crop diversity points to the economic importance of biodiversity, which underpins all current plant-based food production and the necessary effort to build healthier and more environmentally sustainable food systems for the future. This biodiversity has evolved and shaped our societies and cultures for millennia through enabling the growth of "sophisticated cities and feeding the expansion of empires" (Westengen et al 2020, pp. 1311). This has led to an increasing demand on rapid growth of global food production, where priority often lies on food production to feed a population of billions, rather than giving priority to "reliable, diversified production" (Esquinas-Alcázar 2005, pp. 947). While food productivity might not have been very high 10,000 years ago, the steady-growing genetic diversity of plants and crops were maintained. Today, this is no longer the case: now, we are experiencing rapid genetic erosion lost at an alarming rate (Esquinas-Alcázar 2005). The increasing loss of the world's genetic diversity can be illustrated in the paragraph below:

> While many may ponder the consequences of global warming, perhaps the biggest single environmental catastrophe in human history is unfolding in the garden. Loss of genetic diversity in agriculture— silent, rapid, inexorable—is leading us to a rendezvous with extinction— to the doorstep of hunger on a scale we refuse to imagine (Fowler and Mooney, 1990).

No country today is self-sufficient or independent in terms of genetic resources. The average degree of interdependence among countries for its most important crops is 70% (Fowler and Hodgkin 2004). In other words, the rapid loss of genetic diversity is a global problem characterised by global dependence. Contrary to popular belief, the loss of biodiversity "is not really about the last individual dying (…) it's about species losing the ability to evolve" (Fowler, 2008). In its essence, diversity means having *options*, which is especially important in an era for climate change. This genetic erosion is the dark side of what is known as the "Green Revolution", which is plant breeding that developed improved varieties which rapidly increased agricultural production all over the globe and lifted many out of hunger. This centralisation also led to centralise control of agricultural goods to advance global free trade, which again increased vulnerability of farmers and increased the severity of food crises to come (von Verschuer 2021). Rather than living off thousands of species, the world today is estimated to depend on no more than 12 plant species. The importance of diversity within a single crop can be illustrated through the Irish Potato Famine in Ireland in the mid-1800s. Only a few clones of potato were introduced when the potato first arrived from the Andean region, leaving a narrow genetic base vulnerable to pests and diseases. When farmers' harvests were attacked by a blight in successive years, the harvest rotted in the soil. The lack of genetic diversity resulted in a slow recovery of crops, leaving over a million people to die of starvation (Cooper 2001). Without options, no alternatives could be developed. An example of a crisis that could be solved, however, is the maize crisis in the United States in 1970. More than half of the maize crop in the southern part of the country was destroyed due to its narrow genetic base. In this case, however, the problem was solved by using genetic resources from other parts of the world to breed resistant varieties (Esquinas-Alcázar 2005).

Paradoxically, however, most of the diversity in plant genetic resources are found in countries that are rich in terms of genetic diversity, but poor in economic terms, and not least *most* threatened by climate change (Esquinas-Alcázar 2005). The genetic diversity that saved the maize crises in the United States found in developing countries were not accidental. Rather, it was the result of "generations of traditional small-holder and peasant farmers who, in a world in which they are often ignored or seen as a burden, are the true guardians of most of the world's remaining agricultural biodiversity in the field. These are the people who continue to develop and conserve the raw material that is needed to deal with changing

environmental conditions and unpredictable human needs, and who make this material available to other farmers, professional breeders and biotechnologists" (Esquinas-Alcázar 2005, pp. 949).

In a future where there is likely to be rising temperatures, droughts, floods, pests and diseases, diversity of plant genetic resources is essential (Andersen 2008; Esquinas-Alcázar 2005). From a diversity of resources, it is easier to identify plants that are more resilient to climate change and can develop further through selection plant breeding. Global food production- and security depends on "the wise use and conservation of agricultural biodiversity and genetic resources", namely our ability for variability for adapting and changing new crop varieties and biotechnical techniques in response to environmental and demographic changes (Esquinas-Alcázar 2005). Moreover, the conservation of the wide diversity of plant genetic resources is also a measure to preserve culture. As Cherokee Nation's Senior Director of environmental resources told the Guardian: "As long as Cherokee plants exist, we exist (…) we consider our plants to be as genetically Cherokee as we are" (Lakhani 2020). Diversity is therefore the "bedrock for plant breeding and improvements" for protecting food production against disease, pests, and the negative effects of climate change (Andersen 2012). Furthermore, diversity in plant genetic resources enables us to "deal with shifting nutritional needs and the demand for more environmentally friendly agricultural production" (Andersen 2012, pp. 107).

The term *seed security* is often used in this context. Seed security is one of the most important preconditions for food security (McGuire and Sperling 2011). While it is mostly in relation to the humanitarian sector, it lies in the very heart of all crop production and food system resilience, and has a direct influence on agricultural production, diversity, and resilience (Westengen and Dalle 2020). However, the concept can be used to understand the importance of unpacking the complexity of seed systems by disentangling and providing measurable indicators for key dimensions such as availability, access, quality, varietal suitability, and diversity (Westengen 2021, pp. vi). FAO defines seed security as the following: "Seed security exists when men and women within the household have sufficient access to quantities of available good quality seed and planting materials of preferred crop varieties at all times in both good and bad cropping seasons." (FAO 2016b). This is highlighted through SDG 2 on achieving zero hunger, which has a sub-goal of maintaining: "the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant

banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed." (UN 2021).

Gene banks play an important role in conserving this diversity through conserving plant genetic resources in the form of seeds, multiplying and distributing genetic resources, investigating, and documenting characteristics and genetic values, and promoting the use of diversity (NordGen 2021). There is a large global network of gene banks world-wide, ranging from international, regional, national, and private. As of today, 1700 gene banks are registered in the United Nations Food and Agricultural Organization's (FAO)s system (FAO 2010). Traditionally, there are two approaches to agrobiodiversity conservation. In-situ conservation refers to the conservation of genetic resources in its natural habitats, such as farmers conserving and maintaining viable species populations in the field. Ex-situ conservation, however, is conservation of components outside their natural habitats (Bioversity n.d.a). For a long time, in-situ conservation was considered the most efficient way to conserve genetic resources because it can protect microbial- and evolutionary processes (Bioversity n.d.b). Today, an integration of the two is of increasing importance. We will return to discussion on this topic in Chapter 5. However, ex-situ conservation facilities such as the Seed Vault is an example of an approach that is used for researchers, farmers, and other actors to build more sustainable and equitable agri-food systems (Westengen et. al. 1312).

By 2050, it is estimated that global need for food will be doubled. This increase in food production, however, must occur "within the same amount of land area that we have today but with a reduced resource consumption of fertilizer and water (…) one of the most important things required if we are going to manage this feat is to intensify the search for genetic variation and tailor-design types for all geographic regions" (Hermansen 2013, pp. 151). This is particularly important in areas most affected by climate change. Therefore, "most of the efforts that are necessary to manage plant genetic resources can therefore only be carried out through international cooperation" (Esquinas-Alcázar 2005). This is where Norway comes in.

2.3 Norwegian Initiatives for the World's Genetic Resources

"We aim to be the best in the world when it comes to taking care of genetic resources," said former Minister of Agriculture and Food, Lars Peder Brekk, in 2011 (Andersen 2012). In the years since, it arguably has become so. On the international stage, Norway is seen as a "superpower in the conservation of plant genetic resources" through hosting the Seed Vault and being an important contributor to international work on biodiversity and genetic resources (Westengen 2021). Norway has a long history of development co-operation, with 1% of gross national income allocated for official development assistance (OECD 2008). Domestically, Norwegians largely supports a "do-gooder regime" with a "unique standing and legitimacy (…) and has regarded it as institutionalising the right moral response of the whole country to challenges of global development, peace, and poverty" (Tvedt 2007, pp. 621). This has mostly been channelled through funding, participating in international negotiations, and participating on international arenas. A short summary of Norwegian engagements in genetic resources and biodiversity from 2000 and onwards follows.

Norway continues to play a key role in international policy processes on the conservation and sustainable use of plant genetic resources, exemplified through active engagement in FAO's Commission on Genetic Resources for Food and Agriculture and the International Treaty for Plant Genetic Resources for Food and Agriculture, from now on referred to as the *Plant Treaty* (Westengen and Dalle 2020). It has also played an important bridge-building role in the policy area of the interface between intellectual property rights (e.g., patents) and genetic resources, as well as supporting FAO, the UN Convention on Biological Diversity, the World Intellectual Property Organization (WIPO), the World Trade Organization (WTO) and the research centres of the Consultative Group on International Agricultural Research (CGIAR) (MAF 2004). Norwegian long-term, international engagement in genetic resources and biodiversity has enabled it to continue the initiative "to go in the right direction" (*ibid*). The SDGs further contributed to an increasingly integrated approach in Norway's foreign- and development policies. Norway is internationally known as a country to actively engage in the shape of seed aid policy in humanitarian development assistance. In recent years, an upscaling of food security measures can be traced in Norwegian development assistance. In 2018, the Norwegian Ministry of Foreign Affairs (MFA) explicitly links its humanitarian development policy to an action plan for sustainable food systems in foreign policy and development cooperation. The government strategy, *Action Plan on Sustainable Food Systems,* states that:

> "Establishing sustainable food systems also entails limiting the negative climate and environmental effects of food production as far as possible (...) Global food production is based on a steadily decreasing number of crop varieties and livestock breeds. Introducing climate-resilient seed systems and enhancing species and genetic diversity are important for adapting agriculture to climate change. More needs to be done to ensure that good quality seeds are available to the poorest farmers. This can be achieved by breeding new varieties and promoting local seed production." (MFA, 2019, pp. 21)

Norway is a strong financial partner in the international system through funding humanitarian development assistance, core funding to key organisations, and international initiatives. Norwegian support to food security and agriculture increased to 1.1 billion NOK in 2019 (FAO 2019). It supports both ex-situ and in-situ conservation measures. In a White Paper on policy on the prevention on of humanitarian crises to the Norwegian Parliament in 2005, the Norwegian Ministry of Foreign Affairs (MFA) highlighted the need adapt seed and genetic resources, through contribution to the preservation of locally adapted seeds at a national level and through long-term storage of seed in the Seed Vault (MFA 2009, pp. 38).It is one of the top contributors to the Global Crop Diversity Trust's (Crop Trust) endowment fund, which provides support to ex-situ conservation, and a top contributor to the Benefit-Sharing Fund of the Plant Treaty, which is seen as a way to support farmers' access to genetic resources (Westengen and Dalle 2020). To the latter, Norway donates 0.01% of the total value of seeds and agricultural plants sold the previous year. This annual contribution has inspired other countries to do the same (Hermansen 2013, pp. 126). Moreover, Norway announced its 500 million NOK (USD 58 million) support as the sole funder for the Crop Trust's BOLD Project (Biodiversity for Opportunities, Livelihoods and Development), which is a 10-year project to strengthen food and nutrition through conservation and use of crop diversity (Crop Trust n.d).

Moreover, Norway is involved in many parallel and overlapping international policy processes. It is an active member through the implementation of the Plant Treaty at FAO, through mandates in Convention on Biological Diversity (CBD), the first legally binding international agreement to address the sustainable management of biological diversity

worldwide; and in negotiations about rights to genetic resources within Trade Related Intellectual Property Rights (TRIPS) (MAF 2004). In 2021, Norway was at the forefront of a 'game changing solution' in The United Nations Food Systems Summit (United Nations n.d). According to the Norwegian proposal, not only millions of smallholder farmers around the world can benefit from the investment, but also for global food production, global food security, and for the conservation of agrobiodiversity (Norway in the UN 2021). Moreover, Norway was a member of the United Nations Secretary-General (UNSG) Advocacy Group in 2020. As co-chair of the SDG Advocates – the 17 chosen "inspiring" and "influential people" to raise awareness around the global goals – Prime Minister Erna Solberg travelled to Svalbard to highlight and encourage efforts towards eradicating hunger and maintaining genetic diversity as a crucial step for reaching the SDGs (SDG Advocates n.d).

In terms of policy, international regimes have been established to ensure seed security through the conservation and sustainable use of crop genetic diversity (Andersen 2008). The Plant Treaty was adopted by FAO in 2001 and came into force in 2004. It established a global system for farmers, plant breeders and scientists to access plant genetic materials and share the benefits they derive from the use of the genetic materials with the countries where they originated (Crop Trust 2020). The Plant Treaty made 64 of the world's most important crops from over 130 countries available to farmers, plant breeders and scientists, which accounts for 80 % of humanity's food supply. The Treaty was an important precondition for Norway to establish the Seed Vault, in addition to its support for initiatives for financing the global system for crop conservation such as the Global Crop Diversity Trust (today known as Crop Trust) and CGIAR (MAF 2020).

However, the international environment before, during, and after the Plant Treaty was negotiated was characterised by increasing tension and worry in the community of genetic resources. Gene banks around the world were threatened by political instability and climate change disasters. In Burundi, its collections were destroyed during its civil war in the 1990; gene banks in Afghanistan and Iraq were destroyed during the war; as well as rebels in Albania to natural disasters in the Philippines (Fowler 2016). Gene banks are constructed to *protect* biodiversity, but the facilities themselves need protection in many ways, especially economically (Reddy 2017). The idea of a global seed back-up facility is therefore the culmination of ex-situ conservation, in other words 'the tip of the iceberg' of a large, interconnected global system of the "final backup" (Fowler 2016). It is directly connected to the international gene bank system, all the way down to farmer fields. Formally, it is

connected to the FAO and other centralised systems. It exists within a framework and must be adapted to it (Informant 7). This is further elaborated by von Verschuer (2021):

> "[The Seed Vault] cannot be understood as a facility in its own right but must be situated within the larger system of crop conservation. However, although the Seed Vault is a component of this "living, breathing system," it is the gene banks around the world that do the breathing, that is, collect, conserve, revitalize, and regenerate seeds. While they perform the active and processual work of conservation— including periodic revitalization, regeneration, and re-conservation—the purpose of the Seed Vault is to provide a secure storage space for the long-term conservation of backup samples." (Von Verschuer 2021, pp. 52)

With a global need for an international back-up facility and a legal framework for sharing plant genetic resources in place, a window of opportunity arose for those who had been advocating for a global seed facility for decades.

2.3.1 The Svalbard Global Seed Vault

While the Plant Treaty set the legal and policy framework for the Seed Vault, discussions of a building a Seed Vault proceeded it. It all began in the early 1980s in an abandoned coal mine outside of Longyearbyen, Svalbard, were a back-up seed storage by the then-known Nordic Gene Bank (now NordGen). Since then, the idea of establishing a worldwide back-storage gradually evolved (Svalbard Global Seed Vault 2021). This sub-chapter will briefly describe some of the main objectives of the Seed Vault, such as its objective, facility, and management. The policy processes that led to its establishment will be elaborated upon in Chapters 5 and 6.

The Seed Vault is located on the Svalbard archipelago in the Arctic Ocean, halfway between the Norwegian mainland and the North Pole. While Norway was granted territorial ownership and sovereignty over Svalbard, the Svalbard 1920 Treaty ensures economic interests of nationals from other countries that had already been active on the archipelago (Østhagen 2020). It has the capacity to store 4.5 million seed samples. Fowler (2016) argues

there is little wonder “the Svalbard Global Seed Vault has captured the public’s imagination more than almost any agricultural topic in recent years” (Fowler 2008, pp. 190). It ranked number six on Forbes’ most important advances of the year in 2008 and has gained international recognition and “celebrity status”, being quickly compared to innovations like Tesla and Bitcoin (Hermansen 2013, pp. 1399; Skjæraasen 2021). Despite of regularly receiving visitation requests from all over the world, the Seed Vault is closed for visitors. The Seed Vault fulfils the requirements as it is located as far away from conflict and natural disasters as possible, while at the same time being accessible by car (Hermansen 2013).

The objectives of the Seed Vault are to conserve duplicates of unique seed samples conserved in gene banks, and to contribute to public awareness about the importance of conservation and use of plant genetic resources. Situated between Norway and the North Pole, the Seed Vault is safely hidden 130 meters above sea level in Longyearbyen, Svalbard. The solid rock building, carved into a hillside, blends in with the natural environment on Mount Plateau. From afar, it is vaguely visible by the illuminated fibre optic art installation above its entrance, using highly reflective stainless-steel triangles of various sizes to reflect light and sunlight, which shines through in both day and night (MAF 2015). The permafrost naturally provides a temperature of -3°C to 4°C, but the Seed Vault is artificially maintained cold at the standardised temperature of long-term storage at -18 °C through electricity from the local power plant (Svalbard Global Seed Vault 2021).

As we will return to in Chapters 5 and 6, one of the key challenges for creating a global seed facility is the challenge of creating a trustworthy, functioning management system and agreement standard that countries will agree to sign. The Norwegian government is the owner, funder, and liable national authority; the Global Crop Diversity Trust is partly funding the Seed Vault operations as a part of the global conservation system; NordGen is responsible for the management of seed operations, and arranges and coordinates seed shipments- and deposits with the Crop Trust; Statsbygg, the administration agency of the public sector in Norway, is responsible for servicing and continuous surveillance; and the International Advisory Panel oversees the operation of the Vault (NordGen 2021). The Seed Vault is free of charge to depositors. It functions like a bank’s black-box system: there is no transfer of legal ownership and seeds can only be returned to its owner. Regeneration of seeds and viability monitoring rests on the responsibility of the depositor, however. The Standard Deposit Agreement (SDA) for depositing seeds in the Seed Vault is signed by the Norwegian Ministry of Agriculture and Food (MAF) and the depositing gene banks.

The Seed Vault has three opening occasions every year, where depositing gene banks are informed and invited to ship seeds. They are sent to Svalbard, where NordGen brings the seeds into the Vault. Then the deposit is confirmed to the depositing gene banks, and the Seed Portal database with information of all the seeds in the Seed Vault is updated (NordGen 2021). An International Advisory Council was appointed to increase transparency and confidence in the independent oversight of the operations. It consists of depositors, scientists, representatives of civil society organisations, FAO and others appointed by the MFA. It works on the provisions of the deposit agreement signed prior to sending seeds to the Vault, handles requests to deposit material that falls outside of the Seed Vault's management, and on the policy regarding visitation by the media and others to the Seed Vault (Fowler 2016).

Norway received a request from the CGIAR to consider the possibility of a Seed Vault in spring of 2004. A feasibility study towards assessing the feasibility of establishing a Svalbard Arctic Seed Depository for the International Community was commissioned in 2004 by the Ministry of Foreign Affairs (MFA) and MAF to the Nordic Gene Bank and Centre for International Environment and Development Studies (Noragric) at the University of Life Sciences (NMBU). After the study confirmed the feasibility of a global seed facility, the proposal was taken to the FAO Commission in Rome for final approval by the international community. Norwegian formal approval of the proposed Seed Vault came in May 2006 with the final contract for construction ready in November that year. More than 300,000 samples of seeds from all over the world arrived when the Seed Vault opened its doors on Tuesday February 26, 2008. As of October 2021, over 200 countries have deposited seeds and over 5,000 plant species are in the Seed Vault (Svalbard Global Seed Vault 2021). This process is the heart of the thesis and will be explored and analysed further in Chapter 5 and 6.

3 Theoretical Framework

3.1 Introduction

This chapter will present the theories that will be applied as the analytical framework for answering the overall research question. It will use two theories: entrepreneurship and policy transfer. It is therefore rooted in literature on policy innovation and its road to implementation, increasing prominence on government agendas. The background for choosing entrepreneurship as a theory is to uncover the traditional tale that is often used to explain the Seed Vault and analyse whether it stands. The theory of policy transfer is used to catch relevant factors beyond the individuals involved, as the multilateral framework of agreements, politics, and law is also often attributed to the creation of the Seed Vault. First, the theoretical framework by Boasson and Wettestad (2013) on entrepreneurship will be presented. Second, the theoretical framework by Busch and Jörgens (2005) on policy transfer will be presented. At last, a final sub-chapter will summarise the theoretical framework, show how it comes together and discuss the relevance of the proposed analytical framework to answering the overall research question.

Before we proceed to present the theories, a brief debate on why this thesis applies the term *policy transfer* follows. While policy transfer is a distinct research focus in its own right, the concept is often interchangeably used with policy *convergence* and policy *diffusion*. These are, however, analogous but distinct concepts in the literature on the spread and effects of international policy processes (Benson and Jordan 2011). Knill (2005) argues that this is due to scholars who have 'mixed up' the terms, used different definitions or treated the concept interchangeably, which has ultimately led to "heterogenous and partially inconsistent theoretical literature" (Knill 2005, pp. 765). While this project will apply Busch and Jörgens (2011) framework of policy convergence, Knill (2005) would in fact argue their discussion is about policy transfer. In presenting a literature review on the three traditions, Knill (2005) argues that while all three concepts share many similarities, three analytical frameworks have both distinct dependent variables and a distinct analytical- and empirical focus. The dependent variable for measuring policy transfer is 'the content and process of policy transfer' as opposed to "the underlying causes and content of a singular process (…) a

development that might, but need not, lead to cross-national policy convergence" as described with convergence (Knill 2005, pp. 767-768). This debate is of great importance to this thesis, because the theory of which will ultimately become part of the theoretical framework is based upon the foundations of policy *transfer* while being identified as belonging to policy *convergence*. For the purpose of this thesis, however, the typology by Busch and Jörgens (2011) are superior for two reasons: first, the conceptual framework for measuring *motivation* and diffusion is further developed in the latter typology.

3.2 Policy Transfer

Today, it is easier for policymakers to look abroad to observe, emulate, learn from, and communicate policies than ever before. In fact, several studies show that policymakers are increasingly looking to other systems of knowledge and ideas to learn about their work (Liefferink 2013). But with the new tools globalisation and rapid technological change has to offer, new pressures and practices come with it. Research on the spread of policies between geographically, culturally, or economically related countries have shown that countries *do* adjust their policy goals, instruments and even levels of ambitions at surprisingly high levels. This suggests that processes of imitation and learning are becoming increasingly important for any country's capacity to address problems needing policy solutions (Liefferink et. al. 2013, pp. 4). The increasing amount of information available to policymakers today, has posed the question of *how* ideas and policies spread. Over the last couple of decades, political science researchers have tried to systematise the ways in which this transfer of international processes may affect domestic policymaking. The concepts mentioned above, such as lesson learning/drawing, imitation, and policy adjustment, are all rooted in a long, traditional branch of research on political contexts and processes: *policy transfer* (Benson and Jordan 2011).

The term policy transfer term is usually cited in accordance with Dolowitz and Marsh' (2000) definition: "processes by which knowledge about policies, administrative arrangements, institutions and ideas in one political system (past or present) is used in the development of policies, administrative arrangements, institutions and ideas in another political system" (Dolowitz and Marsh 2000, pp. 5). The underlying logic is that governments do not learn about policy practices randomly, but rather through common affiliations, negotiations, and institutional memberships, which requires that actors are informed about the policy choices of others (Knill 2005, pp. 767).

Since policy transfer studies experienced a boom in the 1990s and then later in the 2010s, the analytical framework has grown, developed, and taken several different research paths. Originally, 'hard' transfer of policy instruments, institutions and programmes between governments were the common unit of analysis. But in recent scholarship, the importance of the 'softer' transfer of ideas, ideologies and concepts that circulate freely among state and non-state actors under the conditions of greater globalisation has gained more prominence (Benson and Jordan 2011). Moreover, recent findings in studies on policy transfer suggests that lessons, policy ideas and norms are transferred between venues that span across multiple spatial and temporal scales: and it is shown to occur within horizontal and vertical actor networks across governance scales, all the way from below the state, within-state and across border (Benson and Jordan 2011, pp. 371). Consequently, there are many ways to systematically analyse policy transfer: whether it is what drives transfer, what transferred and how, and what the impacts are 'on the ground' (Benson and Jordan 2011). In short, policy transfer is an iterative and complex process spanning across several different nations, levels and the role specific individuals and institutions play within this process (Dolowitz and Marsh 2000, pp. 6). This thesis will focus on one actor group: *policy entrepreneurs,* otherwise known as experts, within *policy innovation*. Now, we will turn to the typology by Busch and Jörgens (2005) which will form an important part of the analytical framework for answering the research question.

3.2.1 Overview

A policy process is long, in which several mechanisms are assumed to have taken place along the way. Busch and Jörgens (2005) argue that international actors, processes, and institutions are increasingly affecting domestic policymaking (Busch and Jörgens 2005). To identify such mechanisms and to what extent they have influenced a policy process, the authors developed a typology to assess and categorise how – and through *which* – mechanisms policies may transfer across countries. While some literature on policy transfer have often operated within the Dolowitz and Marsh (2000) 'lesson-drawing to coercive transfer' continuum of *harmonisation* and *imposition*, Busch and Jörgens make their key empirical contribution in its focus on a third category: *diffusion*. The key argument for the continuum was to capture the subtleties that lie between the two opposites, which can even vary within the same political

system (Dolowitz and Marsh 2000). The next couple of paragraphs will elaborate upon the three dimensions before developing indicators in the next sub-chapter.

The first dimension is international *harmonisation*, which in this case (given the unit of analysis) is the process of a country committing and complying to laws, agreements and/or international negotiations in a multilateral setting which eventually advises the implementation of a policy. It is a therefore a conscious and negotiated modification of domestic policies by governments that is characterised by "centralised top-down decision-making procedures in the course of which the co-operating states consent on the international harmonisation of their policies" (Busch and Jörgens 2011, pp. 863). Harmonisation is motivated by *cooperation* or *compliance* or *imposition* of practices for the goal of adaptation to agreements, norms, or law. While it is voluntary, harmonisation is driven by a motivation to implement policies for harmonisation: whether it is to avoid negative externalities, hope to realise positive gains, collective action problems hinder an effective management or problems where unilateral action offers at best unsatisfactory solutions (Busch and Jörgens 2011, pp. 863).

The second dimension is that of *imposition*, which occurs when asymmetric power relations are present. Imposition involves forceful coercion, political or economic conditionality, economic sanctions, and military intervention amongst others. As a result, a government may implement measures that they would not have otherwise done (Busch and Jörgens 2005, pp. 853). Dolowitz and Marsh (1996) integrated 'coercive' forms of practice after policy transfer was criticized and was premised on implicit assumptions where policy processes are both rational and voluntary (Benson and Jordan 2011). While it can be assumed that different actors do have different motivations ranging on a continuum, however, in this thesis, it is assumed that politicians, experts, and policy entrepreneurs participate in the process voluntarily (Dolowitz and Marsh 2000). This dimension, however, will not be applied to this thesis because it violates its very premise: policy *innovation*, in which the influences and forces behind a policy were pushed voluntarily.

The third dimension — which is the core of its empirical contribution — is the concept of *diffusion* (also referred to as 'transnational communication' in Knill 2005; Liefferink 2013). Rather than operating between the boundaries of 'harmonisation' and 'imposition' dimensions referred to above, the authors argue that diffusion is a distinct and important conceptualisation for empirical analysis. Diffusion is defined as: "a process by which policy innovations are communicated in the international system and adopted voluntarily by an increasing number of countries over time" (Busch and Jörgens 2005, pp.

865). As opposed to processes of harmonisation and imposition, policymakers are drawing inspiration from information exchanges that have been communicated in the international system. This is an independent process in terms of making decisions without cooperation or coercion, but it is also an interdependent process in terms of factoring in and monitoring choices of others.

3.2.2 Indicators: Mode of Operation and Principal Motivations

The first set of indicators to identify the mechanisms of which policies are transferred is through its *mode of operation,* which concerns *what* is transferred and *how*. At the micro-level, it can be identified through mechanisms of social learning, copying or mimetic emulation and occurs in the absence of formal obligations. It is a decentralised process that remains at a national level and becomes "manifest only through the accumulation of individual cases of imitation, emulation or learning with respect to one and the same policy item" (Busch and Jörgens 2005, pp. 865). The second set of indicators concerns the *principal motivation* for the policy transfer in question. Motivations may differ across different individuals, actors, multilateral settings, and different stages of the processes within a case study. All these points will be elaborated upon and summarised in Table 2 below.

2. Table of Indicators for *Policy Transfer*

Measurement	**Indicators**
Mode of operation	**Diffusion** • Communication and exchange of information driven by information-flows • Emulation of policies, where government copy and/or learn from policies from abroad • Transnational problem-solving, in which experts from different countries jointly develop solutions to a similar problem **Harmonisation**

	• influence from international negotiations/ legislation/ enforcement for complying to international harmonisation of policies • monitoring of landscape to commit to common standards • characterised as a multilateral and state-centred processes that lead to implementation
Principal motivation	**Diffusion** • Looking across national borders for effective solutions to pressing problems • Persuaded, but not forced, by other actor to adopt policies • Norm-driven and legitimacy-oriented motivations, through increasing the legitimacy of political elites and positioning itself internationally by emerging standards of appropriate behaviour **Harmonisation** • Avoid negative externalities of unilateral action and hope to realise positive gains • Improve the management of the collective problems where unilateral action offers at best unsatisfactory solutions or collective action problems hinder effective management

3.3 Entrepreneurship

People are interested in other people – and we are *especially* interested in people who achieve extraordinary things. Political science researchers are no expectation. With a long tradition of studying entrepreneurs, leaders and other notable actors throughout history, researchers have attempted to conceptualise and systematise the ways in which some actors, in some situations, significantly accelerate, stall, or shift policy and governance (Boasson 2018, pp. 117). Research on policy entrepreneurs has seen an upsurge in recent years, particularly climate change governance. Boasson and Huitema (2017) argue that the empirical shift – with focus moving away from top-down, international regimes to an increasingly bottom-up approach with a focus on social movements, grassroots initiatives, and expert groups – are increasingly focused upon may suggest a new dynamic in global governance (Boasson and

Huitema 2017). Some argue that policy entrepreneurs will "play a vital role in future efforts to address climate change" through their "political skills and their coordination efforts" (Mintrom and Luetjens 2017, pp. 1363).

The emergence of entrepreneurship in political science was introduced by John Kingdon (1984), who argued that entrepreneurs effectively using windows of opportunity was impactful on US federal policymaking (Kingdon 1984). Since then, many adjustments and additions to the theory have followed. In the literature on policy development- and innovation, entrepreneurs have been described as everything from "central figures to the drama" (Kingdon 1984, pp. 189); to "change agents" (Huitema and Meijerink 2010). What all the different conceptualisations of entrepreneurship have in common is that an entrepreneur often engages to a greater extent than required by their *formal* roles (Boasson and Wettestad 2013). Here, the concept of *window of opportunity* is at the very heart of entrepreneurship theory. It encompasses the moment of opportunity for a policy to be pushed: it is an excellent opportunity to articulating and pushing new policy ideas into a policy process, as "entrepreneurs will constantly be shopping around in search of decision possibilities where they can succeed in getting their policy on the agenda and will skilfully exploit any windows of opportunity" (Boasson and Wettestad 2013). The authors conceptualise two dimensions to this act: it is possible to *seize* a window of opportunity, or to *create* a window of opportunity. As opposed to Kingdon (1984) who believed a window of opportunity were beyond the control of an entrepreneur (illustrated in his well-known analogy of "surfers waiting for the big wave"), Boasson and Wettestad (2013) counter-argue that entrepreneurs do not sit around waiting for the next big wave. Rather, it partially depends on the entrepreneur themselves to create and exploit situations through "interpretation and creative alterations" (Boasson and Wettestad 2013, pp. 405).

In summary, people that merely follow their regular tasks cannot qualify as an entrepreneur: and while some people may, over time, contribute to changing the rules and therefore contribute to policy invention, this may be the result of other developments rather than acts of entrepreneurship (*ibid*). This thesis will define an entrepreneur according to Boasson and Wettestad's (2013) definition: "acts aimed at enhancing policy influence by altering distribution of authority and information, and/or altering norms and cognitive frameworks, worldviews, or institutional logics" (Boasson and Wettestad 2013, pp. 405 and should be viewed as one of many factors for sources of change (Boasson and Huitema, pp. 1353).

3.3.1 Overview

While it is difficult to separate and disentangle entrepreneurship from other drivers of change in policy and governance, their influence is one of many sources of change. Political science researchers are attempting to systematise the ways in which policy entrepreneurs' manoeuvres and impact their given contexts. This thesis will apply the theoretical framework provided by Boasson and Wettestad (2013), which is an appropriate tool for measuring and identifying the techniques and commitment of policy entrepreneurs to answer one of the guiding questions for this thesis: how was the policy framed, and how can this contribute to the pushing of policies?

It is important, however, to note that the analytical aim is solely focused on the *acts* of the entrepreneurs rather than the individual characteristics of the entrepreneur(s) themselves. Strategies and key roles of collaboration should not be confused with the "individual actions of heroic figures" (Boasson and Wettestad 2013, pp. 405). The analytical aim should be on the willingness to use their positions for leverage, which depends on their skill at identifying, developing, and effectively deploying their influential position (Mintrom and Luetjens 2017, pp. 1365). This is due to the dynamic situation of a policy process: it is possible for entrepreneurs to perform entrepreneurial acts in some policy processes and not others (Boasson and Wettestad 2013). Boasson and Wettestad's (2013) typology is divided into two analytical categories: *entrepreneurial techniques* and *level of commitment.*

First, entrepreneurial techniques…. They outline two categories of entrepreneurship techniques that both take part in creating and exploiting a window of opportunity: the first of which is *framing* mechanisms, and the other is *procedural engineering* techniques. Essentially, these aim to capture the policy as *more* than a good idea. They must be "workable" by "amassing relevant evidence and presenting it in ways that can convince an appropriately powerful coalition of supporters to back the proposed changes" (Mintrom and Luetjens 2017, pp. 1365). First, *procedural engineering* techniques relate to creative and persuasive ways of portraying issues or changing decision-making procedures that constitute changing 'the rules of the game'. In other words, it is aimed at altering the distribution of authority and information concerning the policy in question. It is pursued by actors who find "that the policy in which they are interested is based on norms, values or worldviews that they find inappropriate or malfunctioning" (Boasson and Wettestad 2013, pp. 105). Therefore, an entrepreneur using procedural engineering may be trying to provide decision-makers 'good information' through networking, bargaining techniques, lobbying,

collaborative activities with elite groups, coalition building and so forth. The second dimension of entrepreneurial techniques is that of *framing techniques*. Mintrom and Luetjens (2017) looks at framing mechanisms as "vital" as there is increasing insights about their solution techniques through discovering "what others are looking for and shape their proposals for policy innovation and change accordingly" (Mintrom and Luetjens 2017, pp. 1373). Here, two indicators will be developed according to the indicator in the literature: *window identification* and *agenda-setting*. As opposed to procedural engineering which focuses on creative ways of altering the distribution of authority, framing techniques relate to the norms, values and world views associated with the issue at hand. As the authors put it: "the problem will not so much be that the decision-makers do not have good information, but that they systematically interpret this information in the 'wrong way'" and therefore attempt to persuade decision-makers otherwise in hopes of changing their opinion (Boasson and Wettestad 2013, pp. 405). Window identification involves an entrepreneur shedding light on an external development as important and therefore contributing to creating a policy window through "creating a need to cope with a larger issue such as climate change". The term is used for "focusing on presentations of new ways of defining, presenting, identifying and labelling certain problems, solutions, decision alternatives and decision-making situations" (*ibid*). The second is the technique of agenda-setting, which is when the entrepreneur is framing the issue as appropriate within an already-established conceptualisation of a policy window.

3.3.2 Indicators: Entrepreneurship Techniques and Commitment

In accordance with the theoretical framework, this thesis will develop two sets of indicators to measure how an entrepreneur navigates and acts to create and exploit a window of opportunity: one dimension represents the entrepreneurial *techniques*, and the other represents entrepreneurial *commitment*. The indicators for procedural engineering are therefore, in accordance with the theory, window engineering and decision strategy. Window engineering refers to acts "aimed at changing formal decision-making procedures to underpin the window creation", while decision strategy "relates to more micro-level tactical moves after the window is established" (Boasson and Wettestad 2013, pp. 411).

The second dimension of entrepreneurship lies in its *commitment* to the issue at hand, further distinguished between a *tortoise* entrepreneur and a *carpe diem* entrepreneur. The first describes an entrepreneur with a strong commitment to a certain policy perspective or

solution. With a long-term horizon and a slow and steady pace, the tortoise entrepreneur is often better at creating and developing windows of opportunities than others. The latter, however, describes an entrepreneur with a short-term approach: and while it is often founded in a more of a shallow commitment to the issue at hand, the carpe diem entrepreneur is categorised by its ability to exploit policy windows with more flexible views than pre-fixed solutions. Unlike Kingdon (1984), the authors believe that flexibility and the possibility of adjusting views rather than the idealist entrepreneur must be included in the analysis. It is, however, important to note that the conceptualisation of commitment is seen as issue-specific rather than as a personality trait: it is fully possible to be a *tortoise* in some policy areas, and a *carpe diem*er in another (Boasson and Wettestad 2013, pp. 406). Both forms of entrepreneurship are important for shaping policies "when it comes to ensuring that new policy ideas emerge and get adopted at a certain point" (ibid). These indicators will be applied to this thesis and will be summarised in the table below.

1. Table of Indicators for *Entrepreneurship*

Measurement	**Indicators**
Entrepreneurial Techniques	**Framing Mechanisms** a. Window-identification, i.e. activities aimed at framing and situating the issue within larger picture in order to create a window of opportunity b. Agenda-setting, i.e. particular issue as appropriate within the already established conceptualisation of a policy window **Procedural Engineering:** a. Window engineering, i.e. acts aimed at changing formal decision-making procedures to create a window of opportunity b. Decision strategy, i.e. micro-level tactical moves after the window is established
Commitment Category	**Tortoise:** a. Slow and steady, working with a long-term horizon b. Commitment to a certain policy or solution

	Carpe Diem: a. shallower commitment to issue at hand b. flexible views as opposed to pre-fixed views

3.4 Summary of the Framework

This sub-section will explain how the two theories above together create a strong, analytical framework to answer how the establishment of the Seed Vault can explained and which factors facilitated the decision by the Norwegian government. As will be explored in this thesis, the establishment of the Seed Vault was a result of both international and domestic policy processes on international and national forums. The two theoretical approaches above constitute a combined theoretical framework which can disentangle the 'puzzle' of the process from multiple perspectives of how an idea was transferred and established on a government's agenda. Essentially, the indicators combined provide a theoretical framework for investigating the *transfer of influence* on two fronts. For both theories, it is roughly divided into a) motivation and b) the nature of the mechanism through which the transfer occurred. The indicators capture the two essential parts of the overall research question: motivation and the transfer of policy.

First, the two sets of indicators capture the *commitment* and *principal motivation* necessary to answer the first part of the research question of *why* the policy was established on the government's agenda. The commitment category indicators for entrepreneurship captures how entrepreneurs – identified as *tortoises* with pre-fixed views, and/or *carpe diemers* with a more flexible stance – motivate, advocate for and work towards implementing their cause on the agenda. Not only do these indicators further our understanding of an entrepreneur working within the system, but it can also pinpoint to the cross-collaboration *between* the different categories of entrepreneurship. The central concept of motivation is also measured through the indicators of the policy transfer framework. Rather than looking at the individual movements within a process, however, it analyses principal motivation at the macro-level through a state's transnational communication, norm-awareness, and monitorisation across borders. Essentially, the indicators combined provide a theoretical

framework for investigating the *transfer of influence* on two fronts: policy transfer looks at why states implement policy, and entrepreneurship looks at how policies are pushed.

Second, the combined set of indicators from both frameworks captures the necessary data to answer the second part of the research question of how and through which mechanisms the policy was transferred. The framing mechanisms indicators for entrepreneurship provides data on how the Seed Vault was framed, conceptualised, and presented to policymakers. The procedural engineering indicators capture the techniques employed and strategies used while a window of opportunity was presented, whether the window was created, or whether the situation was identified as appropriate for further action. The policy transfer framework adds to this knowledge by looking at it from the policy-makers side, focusing on the *transfer* of the policies. Essentially, it looks at the process from different phases: from the conceptualisation of the idea, to the agenda-setting phase, to its planning stages, and at last to the Norwegian government's decision to implement the policy. It encapsulates both sides of the process, seen from both the internal world of policymakers and from a governance perspective. With the abstract view of policy transfer and the macro- and micro level focus of entrepreneurship, the two theories touch base on each level of analysis. Together, it constitutes a framework for analysing how a policy is created, pushed, and established on a national government's agenda with the ability to analyse the same transfer of influence from different angles.

While entrepreneurship and policy transfer are useful explanatory variables, neither are sufficient for explaining the causes of policy development where factors are likely to overlap. This problem, however, is considered in both theories. In both typologies, each of the respective authors emphasises that the explanatory power of the concept lies not only in *whether* it played a part, but more importantly, *to what extent* it played a part (Boasson and Wettestad 2013; Busch and Jörgens 2005). Therefore, the proposed theoretical framework aims to identify the role and to which extent each concept can explain its role in the establishment of the Seed Vault. Together, it can capture nuances of which influences explain policy measures to capture the dynamics and techniques at play.

4 Research Design and Methods

This chapter will present and discuss the relevance of the chosen research design, research method and data collection techniques for answering the overall research question. First, it will argue that the most appropriate research design for the purpose of this study is a within-case, theory-guided case study, and then go on to explain the process of case selection. Second, it will present and reflect upon the data collection methods used in this thesis, which consists of a triangulation of methods: the primary data is collected from semi-structured expert- and elite interviews, which are triangulated with document analysis and field as work as complementary methods. Third, it will discuss and reflect upon validity, reliability, and operationalisation measures to maintain the quality and integrity of the thesis. At last, it will reflect upon the limitations of the thesis for answering the research question.

4.1 Research Design and Case Selection

A thoroughly and carefully planned design is essential for constructing a high-quality research 'blueprint' of a thesis. It is through the guidance of the research design strategy that researchers systematise, organise, collect, and analyse data to answer the research question. In other words, the research design is the chosen strategy for identifying the types of data for testing the argument that will serve as a basis for drawing inferences (Halperin and Heath 2020, pp. 160). According to Halperin and Heath (2020), one of the basic principles of a research design is to specify the type of research and techniques of data collection which are appropriate to the research project. To answer the question presented in Chapter 1, the research design must allow for the researcher to delve deep into a single case without losing track of the bigger question. Therefore, the research design for this thesis will be *an embedded single-case study design*. This research design is favourable as it can serve an important device of maintaining a case study's focus and for adding significant opportunities for extensive analysis of a single-case study. However, the difficulty of defining a *process* can be difficult to conceptualise into a single case. As Levy (2008) argues, a case is "an instance of a class of events" and a case study as "the detailed examination of an aspect of a historical episode to develop or test historical explanations that may be generalisable to other events" (Levy 2008, pp. 2). Applied to this thesis, it means that while the policy process

towards establishing the Seed Vault is a case in and of itself, there are different aspects to the case study that have broader, theoretically defined classes of events (Levy 2008, pp. 2). However, Yin (2018) warns that the researcher must keep the 'original case' in mind, and be aware that the original phenomenon does not turn into the context for and not the target of the study (Yin 2018, pp. 53). This is controlled for by asking guiding questions to answer the research question, which confines the scope of each sub-chapter and clearly defines the factors at play.

According to Levy's (2008) typology of case studies, the phenomenon in question can be qualified as a *common case* study in which the goal is to capture circumstances and conditions of the given case through subunits within the original single-case (Levy 2008; Yin 2018). Moreover, Levy (2008) argues that inter-case comparison research designs have a "comparative advantage in the empirical analysis of decision making at the individual, small group, and organizational levels, including the analysis of leaders' perceptions, judgements, preferences, internal decision-making environmental, and choices (…) that are sensitive to the accurate identification of the precise timing of these key turning points" (Levy 2008, pp. 11-12). The thesis can also be classified as a *theory-guided case study* that focuses on theoretically specific aspects of reality while neglecting others. It is therefore an ideographic case study that aims to describe, explain, and interpret a single case as an end in and of itself, rather than developing broader theoretical generalisations beyond the data (Levy 2008, pp. 4). This is good for, as Levy (2008) argues, "the more case interpretations are guided by theory, the more explicit their underlying analytical assumptions, normative biases, and causal propositions; the fewer their logical contradictions; and the easier they are to empirically validate or invalidate" (Levy 2008, pp. 5). The limitations of the thesis will be discussed in section 4.4 on page 50.

In summary, this thesis contributes to providing better measurements of key turning points and debates in the policy process in the case study at hand. While comparative studies on the role of policy transfer and the role of policy entrepreneurs have been conducted (Hwang and Song 2019), this thesis argues that the policy processes towards establishing the Svalbard Global Seed Vault is an under-researched topic that merits closer scrutiny. Levy (2008) argues that researchers should not only hypothesise explanations that fits the evidence, but also that it fits better than do leading explanations (Levy 2008, pp. 5). However, this is more important for hypothesis testing since they enhance control over extraneous causal influences (Levy 2008, pp. 8). Moreover, given the context of PGRFA, it can be argued that

the emerging phenomena simply belongs to a small universe of cases. In these cases, fewer cases are preferable (Levy 2008, pp. 8).

4.2 Data Collection

This thesis employs a triangulation of methods: semi-structured interviews are used as the primary data collection tool, while document analysis and field work are used as complementary methods.

4.2.1 The Semi-Structured Interview

Interviews are regarded as one of the most important resources for a case study (Yin 2014). One of the strengths of the qualitative method lies in its flexible structure. In its explorative nature through semi-structured interviews, the qualitative researcher tried to not delimit areas of inquiry and rather ask general questions than specific research questions (Bryman 2008, pp. 389). The quality of the questions asked may to some extent determine the quality of the findings, which makes the ability to pose and ask good questions essential (Yin 2018). This can be done through creating a rich dialogue with the informant. To maximise validity and reliability, the same structure and questions will be used to ensure cross-subcase compatibility (Bryman 2008, pp. 440). The semi-structured interview is commonly placed in the middle of the continuum between the structured and the unstructured interview. The first is a standardised approach to maximise reliability and validity, commonly used in quantitative studies; and the latter tends to be more of a conversation (Bryman 2008). While each interview format has its positive and negative traits, the semi-structured interview is an attempt to compromise. With a set list of questions or topics to be covered, the interviewer has the flexibility to ask follow-up questions, and the interviewee has leeway in how to reply to questions (Bryman 2008, pp. 38).

Yin (2014) highlights the need for asking good questions, interpreting answers fairly and to be a good listener when collecting data that simultaneously requires “an inquiring mind” (Yin 2014, pp. 73). Or as Bryman puts it, “to ask questions [that] allows interviewers to glean the ways in which research participants view their social world” (Bryman 2008, pp.

440). Moreover, the researcher should "continually ask yourself why events or perceptions appear as they do", adding that good research is often about the questions imposed and not the questions answered and to read between the lines (*ibid*). Importantly, the need to keep focused on the grasp of the issues being studied is key to maintaining an unbiased perspective. Moreover, Yin (2014) argues that the interviewer essentially has two jobs: the first is to ask questions that satisfy the line if the inquiry, a level two question; and the second task is to ask "friendly" and "non-threateningly" questions for open-ended questions, a level one question (Yin 2014, pp. 110). After his advice, this project applied 'how'-questions instead of 'why'-questions. This is rooted in the principles of the qualitative method, which emphasises that the formulation of the research questions should not 'close off prematurely' other perspectives, which makes it important to 'not starting out with too many preconceptions' (Bryman 2008, pp. 441). In accordance with the tradition with semi-structured interviews, an interview guide can be accessed on page 98. While this thesis does not use the grounded theory approach, Bryman (2008) suggests that the grounded theory framework for three types of asking questions have a general applicability. Therefore, the interview guide will be divided into the following categories: initial open-ended questions, intermediate questions and ending questions (Bryman 2008, pp. 447). The questions were formulated in a way to avoid asking leading questions in a comprehensible language (Bryman 2008).

To fully capture the diversity of the case study, field work was applied as a complementary approach to semi-structured interviews in this thesis. Field work belongs to the tradition of ethnography, which is considered to be more of an approach than a method. Participant observation, however, is one of the most common methods of data collection (Halperin and Heath 2020). During the writing of this thesis, I was invited to a three-day trip to Svalbard to observe a seed deposit of 14,011 seeds, follow discussions between experts on genetic resources, and interview relevant informants. The field work provided the unique opportunity to witness and observe the day-to-day activities of the Seed Vault and its internal process in greater detail than would have been possible through a desk-study. It provided me with first-hand experience and the perceived on-ground reality of the case study at hand, which is essentially data collection in real-time: rather than just relying on what people say what they do, which is not always the same as they do in reality (Halperin and Heath 2020). Halperin and Heath (2020) outlines the process of methodological decisions of participatory observation. First, the case selection and gaining access to the field site. In this case, the case

is a single case study and the justification and criteria for choosing the case has already been elaborated upon. The invite came from the Coordinator of the Seed Vault. Second, is the issue related to carrying out research in the field and collecting data. The role, the contacts they make and who they speak to influences the quality, reliability and validity of the data being generated (Halperin and Heath 2020). The third step is the recording of the data. In this case, the interviews follow the same steps as elaborated upon in the chapter on semi-structured interviews. Essentially, it contributed with a thick description of the social and political aspect of the case study which contributed to the thesis. As specified by Halperin and Heath (2020), "there is no substitute for getting out of the armchair, getting your hands dirty, and observing first-hand what it is that you are writing about in its natural setting" (Halperin and Heath 2020, pp. 340). As will be further elaborated upon in Section 4.4 on research limitations, however, as this approach cannot generalise the findings to a broader universe.

4.2.1.1 Selection of Interviewees

To answer the research question of this thesis, specialised knowledge and information on internal policy processes often kept out of the public eye are essential. Therefore, this thesis will employ a combination of elite and expert interviews. Expert interviews are defined as gathering "specific information from individuals with a specialised knowledge or expertise on a particular issue", while an elite interview is a "method of obtaining, from political elites, information that might not otherwise be available to a researcher, or that can confirm the accuracy of information that has previously been collected from other sources" (Halperin and Heath 2020, pp. 333). The selection of interviewees is based on purposive sampling, which essentially means choosing informants relevant to answer the research question (Bryman 2008). While this thesis cannot interview all the relevant key actors involved, the aim of this thesis is to attain a representative sample of the informants with access and knowledge to the policy processes. However, making a 'sample frame' for a randomised, representative sample of the wider population is unfit for the research design and objectives of this thesis. Research limitations concerning validity and reliability will be further elaborated upon in sub-chapter 4.3 and 4.4.

The international community on PGRFA consists of a complex web of actors, dynamics, and processes. While it could have been interesting to interview NGOs, gene bank managers, and other relevant key actors, it is both unnecessary to answer the research

question and beyond the scope of this thesis. The selection of interviewees must have direct or indirect experience or expert knowledge around the policy processes leading up to the establishment of the Seed Vault. This empirical limitation is important for answering the overall research question of the thesis. While the methodological approach for analysing the data will be provided later in this chapter, a full list of the informants and their respective categories can be found below. The first category, 'national delegation', consists of the individuals working in the Norwegian government on the Seed Vault. The second category, 'expert', is assigned to people within academic communities or other areas with direct or indirect expert knowledge on the process. The third and final category, 'international actor', constitutes of international actors who were directly or indirectly involved in the policy process.

1 List of Informants

Informant number	**Category**	**Location**
1	National delegation	In office
2	National delegation	In office
3	Expert	Digital
4	Expert	Digital
5	National delegation	Digital
6	International actor	Digital
7	National delegation	Digital
8	International actor	Digital
9	Expert	Digital

4.2.2 Document Analysis

While semi-structured interviews are important for answering the overall research question, it is insufficient to solely rely on the information provided by informants to establish inferences. To control for this bias, however, this thesis will conduct a document analysis to enforce a *triangulation* of methods. Through combining different methods, the case study is approached from different angles which ultimately contributes to cross-checking findings and increasing the overall validity of the results. Furthermore, bias is avoided through examining

the data with different theoretical perspectives that enables the researcher to find agreement between different perspectives (Halperin and Heath 2020). This means that an interview or a document does not get a stronger hold to establish causal inferences than other documents, and the balance will be maintained.

Documents are understood to be materials that can be read, have not been produced specifically for the purpose of research, and are relevant to the concerns of the thesis (Bryman 2008, pp. 515). While documents are a key source of information, it is important to ask: what can we *learn* from documents? In the same way selection of interviewees requires a systematic strategy, selection of documents requires equal critical thinking and careful selection. Bryman (2008) argues that documents are more than just revelatory about the underlying social reality of our chosen topic of study. It is also about the *context* in which the document was produced. Documents are produced with the purpose to convey a favourable impression. Moreover, it is also about its implied readership, which makes them likely to be written with the perspective of scrutiny in the back of their minds. These linkages between the inter-connectedness of documents are known as *inter-textuality* (Bryman 2008, pp. 527). When using documents to study social sciences phenomena, there is a risk of selection bias, if the collection of materials is complete; reporting bias, which is the unknown reflection of bias given by any document's author (Yin 2014, pp. 106). Moreover, Yin warns of the dangers of document reliance: every document, he argues, is written for a specific purpose and audience other than those of the researcher. The document being studied represents communication between parties to achieve some other objectives (Yin 2014, pp. 108). Therefore, this thesis conducts a critical document analysis and takes biases of newspapers, publishers, researchers and so forth. It will be guided by four criteria: authenticity, questioning the whether the document is genuine and from an unquestionable origin; credibility, evaluating whether the evidence is free from error and distortion; representativeness, to evaluate whether the evidence is typical of its kind; and meaning, assessing whether the evidence is clear and comprehensible (Bryman 2008, pp. 516).

The latter point is important to acknowledge, since this affects the "possibility of a reactive effect can be largely discounted as a limitation on the validity of the data" (Bryman 2008, pp. 515). This thesis will only use *official* and publicly available documents as opposed to *personal* documents, meaning that it will analyse material that belongs to an entity rather than an individual: such as official state documents, news articles and official statements. This will consist of books, official memoirs, journal articles, new articles, publicly available

government documents accessed through *eInnsyn*, and official planning documents shared by elite and/or experts. On the other hand, access to any agendas, e-mails, internal records, and minutes of meetings from any of the meetings, can be highly useful for in-depth studies (Yin 2014, pp. 106). However, the use of expert and elite interviews introduces some empirical limitations to this study. While the thesis takes advantage of all public documents that are made available online, requests to the different government agencies for access to reports, e-mails or other internal documents have been denied. This will be further discussed in section 4.4 on page 50 on the limitations to this thesis.

4.2.3 Data Analysis

Given the semi-structured nature of the interviews, it is especially important to have a clear strategy when it comes to analysing and coding the data of which inferences will be drawn. As the transcript may come in different kilobytes – some interviews might go on longer than others, or some questions might change or be adapted to the context, for example – the data reduction process of selecting, focusing, simplifying, abstracting, and transforming the data must be condensed for the sake of manageability and to be made intelligible (Halperin and Heath 2020, pp. 329). However, Halperin and Heath (2020) argue that the more structured the question, the easier the analysis. Therefore, the interviewees will follow the set of questions asked. Each question has pre-planned probes and follow-up questions. The strategy is to first see how the respondent answers and interprets the question, and then to steer them into the same topics. This is a way of controlling for a certain standardisation of the interviews, as well as getting a frame of comparison. Boasson and Huitema (2017) argues that in-depth interviews with actors who themselves have performed entrepreneurship can provide a valuable resource (Boasson and Huitema 2017, pp. 1353). However, when interviewing elites, some precautions must be taken. The information received are within the "confines of bounded reality" in which policymakers act upon their perceived reality rather than the "real situation" (Dolowitz and Marsh 2000, pp. 14).

Moreover, the data analysis is sorted in categories. Dolowitz and Marsh (2000) use distinct categories when analysing policy transfer. In a complex web of a process, there are many actors to consider. Therefore, as previously argued, this thesis will limit itself to three categories of (a) national delegation, (b) expert, and (c) international actor for answering the

research question. Following the advice from Halperin and Heath (2020), each interview was first transcribed. Then, a 'profile' was made containing a simple coding of their sector category, their role, and number of years active (Halperin and Heath 2020, pp. 329). In the process of analysing the data, the informants will be fully anonymised. In practice, this means that every informant will be labelled as a number (e.g., "Informant 6"). The number is given in a randomised order, meaning that the numeration does not follow a system (i.e., the order they were interviewed and reached out to). The same informant, however, will be identified with the same number through the thesis.

This is done for several reasons. First, when including – and relying on – human subjects to the extent done in this project, it is important to have clear ethical considerations and to protect them: both through gathering informed consent, knowing the nature of the study and what questions will be asked; through privacy and confidentiality, so they are not put in an undesirable position as a result of their participation (Yin 2014, pp. 78). It will, however, mention which 'category' they belong to, whether it be national government, expert, or an international actor. Second, the identity of the informant does not necessarily increase the quality or value of the information provided. As discussed in Chapter 3, it is essential that this thesis does not study the individual characteristics or personality traits of an individual. Not only does it better suit the design of the purpose of the study by focusing on the different factors behind the proposal, it was also seen as an advantage for many informants to feel like they could talk more freely.

4.3 Validity, Operationalisation, and Reliability

The most important criteria for evaluating the adequacy of research are what Yin (2014) calls the 'criteria for judging the quality of research design', which is conducted by evaluating its validity and reliability (Yin 2014, pp. 45). In its essence, the concept of *validity* means that we are measuring what we claim to measure and that there are no logical errors in the inferences we draw from the data. As Halperin and Heath (2020) says, the better the research design, the more decreasing threats to validity (Halperin and Heath 2020, pp. 162). In other words, it relates to the confidence we can have in our results. Now, the concepts of validity, operationalisation and reliability will be further elaborated upon below.

First, there are usually two types of validity that are usually measured in the analysis stage: internal and external validity. *Internal validity* concerns the extent to which we can be confident that the causal relationship between two variables exist. Essentially, high internal validity means that we have confidence that the independent variables caused the observed effect and thus provides a foundation for making inferences (Halperin and Heath 2020). Having confidence in our results means controlling for other factors that can cause variation in the dependent variable, such as controlling for spurious effects. *External validity,* on the other hand, refers to the generalisability of our findings, and whether our empirical findings go beyond the case study in question. The strength of this study's research design, however, does not lie in its generalisability: it is rather in identifying on a small-N study, which can be useful for later theory-building and generalisations to a wider universe of cases on international cooperation towards climate change adaptation measures (Halperin and Heath 2020). The findings of this thesis may have transferability to other cases through the different mechanisms, patterns and dynamics found. These, which could be relevant for other objects of study, will be further discussed in Chapter 5 and 6. In the case of this thesis, the topic is largely under-researched. In cases where statistical generalisability is not the goal of the study, Yin (2014) argues that posing 'how' and 'why' questions – as is done in this thesis – is helpful for making the data more generalising because it can be, to varying degrees, say something general about a phenomenon (Yin 2014, pp. 48).

Second, the concept of measurement validity is commonly applied to determine whether we have confidence in our results. In other words, it evaluates the objectivity and credibility of our research (Peräkylä 2011; Halperin and Heath 2020). The concept of measurement validity refers to the process of identifying the correct operational measures for the concepts being gathered in the data collection phase (Yin 2014; Adcock and Collier 2001). This term, however, is used somewhat inconsistently in the literature. Adcock and Collier (2001) found over 37 adjectives relating to measurement validity, including to the related concept of construct validity, applied by Yin (2014). However, in line with Adcock and Collier (2001), this thesis will apply the term measurement validity because according to them, construct validity in political science commonly refers to specific procedures rather than to the general idea of valid measurement (Adcock and Collier 2001, pp. 537). Adcock and Collier (2001) define a measurement as valid when "the scores, derived from the given indicator, can meaningfully be interpreted in terms of the systematized concept that the indicator seeks to operationalise" (Adcock and Collier, 2001, pp. 531). In other words, it is

critical to evaluate whether the author's systemised concepts, indicators and scores "holds". If it is not – whether it is due to systematic bias or errors – it ultimately leads to decreased validity and reliability (Adcock and Collier 2001).

Underpinning measurement validity is the strength of its descriptive inferences, which form the basis for operationalising the indicators used to collect, measure, and analyse the data. In other words, an operational definition is essential to measure a concept to tap into concepts that are otherwise hard to quantify (Yin 2018). It is therefore used when we are looking for the causes of variation, in which indicators can be developed to treat the resulting quantitative information as if it were a measure. According to Yin, it is "something that is devised or already exists and that is employed as though it were a measure of a concept" (Yin 2018, pp. 145). The first of the indicators will be developed through a series of questions asked of the interviewees, namely, to ask questions concerned with the respondents' report of their attitude, perception of what occurred (Yin 2018). As will be reflected upon in the next section on data collection, this thesis aims to capture the interviewee's own perspectives and perceptions. The challenge in a qualitative study is to maintain high measurement validity through capturing the concepts at hand through operationalisations. Yin (2014) urges the researcher to use multiple sources of evidence and establish chain of evidence through sufficiently developing an operational set of measures that "subjective judgements – ones tending to confirm a researcher's preconceived notions are used to collect the data" (Yin 2014, pp. 46). In this case, the phenomena of policy innovation can cover a wide variety of phenomena. Therefore, Yin (2014) urges researchers to meet the test of construct validity: first, two define the phenomena in terms of specific concepts and relate them to the original objectives of the study; and to identify operational measures that match the concepts (Yin 2014, pp. 46). This was specified in Chapter 1 and elaborated upon in Chapter 3.

Third, the concept of *reliability* concerns the data collection phase: can another researcher, if following the same procedures, reach the same findings and conclusions? In other words, reliability looks to minimise the errors and biases in a study for it to be as theoretically replicable as possible (Yin 2014, pp. 49). While this may be more applicable to a quantitative study, Yin (2014) urges researchers to document the procedures followed in the earlier case to have the documentation. This can be solved by having a case study protocol for documentation purposes and developing a case study database, which has been complied during the writing of this thesis.

4.4 Research Limitations

The limitations of a single-case study design as opposed to a multiple-case study design is the impossibility of direct replication, thereby reducing the reliability of the findings. In this case, however, a potential second case could not fill a potential gap left by the first case and is therefore unsuitable. While there are advantages to including additional cases in some cases, the research question for this thesis will best be answered with an embedded case research design. However, Halperin and Heath (2020) points out: "A saw is not better or worse than a wrench; it is only more or less useful in relation to a specific task" (Halperin and Heath 2020, pp. 161). As in all empirical studies, however, the topic of this case study can gain additional leverage by going beyond the case. Suggestions for further research can be found in Chapter 6. With different units of analysis at different stages in the process, it is easier to maintain focus (Yin 2014).

Moreover, it is important to account for the process of how the case was selected for several reasons. A specific challenge to case-selection is that of selection bias, which occurs when the researcher picks a case that fits their hypothesis, which can over-represent cases from either end of the distribution of the key variable or when it involves cases with extreme values on the dependent variable as it underestimates the strength of causal effects (Levy 2008, pp. 8). In a common case, however, the selection of cases is not as critical as with other research designs that involve comparison and follow an arguably different inferential logic (*ibid*). In this case, the case study is chosen on the dependent variable for a reason: it aims to explain the unfolding of the process, which according to Bryman (2008) is common in qualitative studies: the concern of showing how events and patterns unfold over time, often conveying a strong sense of 'change and flux' (Bryman 2008, pp. 388). While the danger of selection bias must always be carefully considered, it is controlled for in this thesis by careful, theory-guided selection of cases and through implementing a triangulation of sources (Levy 2008).

Another empirical limitation concerns the limitations for the primary data collection of the thesis. Accessing informants were a difficult part of the process, given that interviewees were largely unavailable, unable to contact, or unwilling to contribute to the thesis. In the end, nine respondents accepted the interview request. Considering the *quality* of

the interviews, the central position of each interviewee, and the empirical findings to be extracted from each of the interviews, however, provides a strong counterweight to the *quantity* of the interviews. In accordance with the research design and the characteristics of a single-case study, the quantity of the interviewees is not considered to be of importance. While this does represent an empirical limitation, it is not considered to weaken the empirical foundation or findings for this thesis. In this thesis, this problem will be controlled for by applying source triangulation. including inaccuracies, misunderstandings between the interviewer and interviewee; response bias, and the danger of the interviewee providing the answers they think the interviewer wants to hear; and poorly articulated questions (Yin 2014, pp. 106). Because this thesis is using many different types of documents, this triangulation strengthens the holistic approach to answering the overall research question. This means that an interview or a document does not get a stronger hold to establish causal inferences than other documents, as the balance will be maintained.

5 Analysis

This chapter is divided into two parts. Chapter 5.1 will *describe* the policy process, using primary and secondary data sources to establish an empirical background with 'thick description'. Chapter 5.2 will *analyse* and *explain* the empirical material through utilising the indicators developed and operationalised in Chapter 3.

5.1 Part One: The Road to the Seed Vault

This part of the analysis will describe the policy process and discuss some of the central challenges of the policy process.

5.1.1 Overview of the Policy Process

5.1.1 The First Seed Vault Proposal

The idea of a global backup facility for the world's gene banks is an old idea, and its origins is widely is disputed. Some claim the idea started in Norway, through academic communities or through Nordic Gene Bank's seed samples in the coal mines at Svalbard. Others emphasise the role of the gene banks who needed a backup facility for unique collections, while others attributed the idea to passionate individuals who had fought and promoted the idea for decades (Informant 1, 3, 4, 5, and 6). In 1989, the Norwegian government officially approached to the idea of creating an international backup facility for plant genetic resources for the very first time. The 'permafrost idea' was inspired by the Nordic Gene Bank's – now NordGen – storage of 10,000 duplicate seed samples in an abandoned coal mine at Svalbard (Fowler 2016). The seeds, stored in aluminium bags in the permafrost, had already been preserved as "sleeping" for twenty years (Qvenild 2006). This cooperation between the Nordic countries provided a "proof of concept" for the Norwegian government (Informant 4). The strategic geopolitical location of Svalbard was an additional advantage of the proposal. While the Kingdom of Norway has sovereignty of Svalbard, the 1920 Svalbard Treaty provides equal rights to conduct commercial activities on the Arctic Archipelago. While there has been a history of disputed regarding natural resources, the Svalbard Treaty recognised

environmental conservation, military restrictions, and non-discrimination of citizens (Østhagen 2020). Ultimately, it made the location Norwegian enough for Norway to pursue the location and international enough to make it appear less as a Norwegian, domestic project (Informant 1, 2, 5, 8 and 9). It was therefore considered to be an optimal location for storing a backup facility. But as time would tell, the idea was not mature.

The suggestion, however, was rejected by the FAO Commission and the international community. At home, it was a "huge embarrassment" (Informant 5, 6, and 8). In the first round of the proposal, the international community hesitated. While many gene banks thought it was a good idea, they believed it would not work because of the inadequate temperatures (Informant 7). There are several reasons why the first Seed Vault proposal failed, relating to funding, institutional changes within the CGIAR, technological standards of the facility, and legal matters. Importantly, however, Qvenild (2006) points to the international issues of political dispute, which were the difficulties of meeting the international standard conservation at -18 °C and finding donors (Qvenild 2006). While the technical side of the facility was covered, the political aspect was somewhat neglected. The actors involved in the first proposal largely came from a scientific background with an emphasis on the technical and scientific issues with constructing a Seed Vault. Political and legal issues, however, turned out to be the major challenge, which largely remained unaddressed (Qvenild 2006). The international community was largely focused on debates regarding access and property rights over plant genetic material. There was a 'clash of mentalities' of the actors promoting the idea, and the actors from the wider community who were "more concerned with controlling the access to the material than securing the material by placing it in locations where they could not control it directly" (Qvenild 2006, pp. 45). The technical, legal, and political aspects did not hold up, which ultimately led to a lack of trust within the international community (Informant 5). In summary, the first proposal was regarded with suspicion, seen to be unrealistic, and ultimately did not evoke trust from the international community (Qvenild 2006).

5.1.2 The Second Seed Vault Proposal

Decades after the first proposal, none of the defeating factors subsisted and "everything had changed" (Informant 8). The most important changes in context for the first and second proposal was the international political and legal environment. First, the multilateral treaty

Convention on Biological Diversity (CBD), which entered into force in 1992, was the first legally binding agreement to address the sustainable management of biological diversity through conserving biological diversity, the sustainable use of its components, and the fair and equitable sharing arising from genetic resources (Andersen 2008). While it was considered a break-through, but there were remaining questions of *ownership* and the *exchange* of plant genetic material. This initiated the process for the International Treaty on Plant Genetic Resources for Food and Agriculture, referred to from now on as the *Plant Treaty*, which became the internationally, legally binding instrument for – among other things – the equitable sharing of the benefits arising from the use of crop genetic resources (Andersen 2008). The Plant Treaty, signed in 2001 and entering into force in 2004, was one of the most important political and legal conditions for establishing an international, global seed facility. Without an international legal framework, "even with the best lawyers and most influential people in the world", the second proposal might have failed as the first proposal did in 1989 (Informant 7). Essentially, it provided a framework to access PGRFA and settled the "political" dust that had been negotiated between governments for years (Fowler and Hodgkin 2004). With years of politicization of the governance of genetic resources, the topic was "high up in the frontal lobe for many" (Informant 7). In short, it took years of political, technical, and legal restraints to establish a foundation and "prepare the world community" for a system where the Seed Vault could exist.

With the Plant Treaty in place, whispers of reviving a second Seed Vault proposal first took place in 2001. The first traceable, official documentation on these discussions can be traced between "rather important people" within expert communities (Informant 8). Qvenild (2006) shared e-mail exchanges between these actors, revealing how there were increasing worries on how gene banks, some guarding unique seed collections, were not adequately managed (Qvenild 2006). As previously mentioned in Chapter 2, several instances of political instability and natural disasters had exposed the vulnerability of gene banks all over the world located in unsafe locations (Fowler 2016). If disaster were to strike, there as "no plan B" and important crop collections could be lost forever (Informant 8). Cary Fowler, then-Director of Research at Noragric and Senior Advisor to the Director General at the International Plant Genetic Resources Institute (IPGRI), and Henry Shands, then-Director of the National Centre for Genetic Resources in the United States, realised how "centres were located in some dangerous places (…) and things can go bad anywhere" (Informant 8). In early e-mail exchanges between Fowler and Shands, the latter expressed discomfort at the

unsustainability of how CGIAR centres had to back-up their collections within their own centres. Shands therefore suggested resurrecting the Svalbard proposal. A few days later, colleagues within the CGIAR arena were copied in for a second e-mail discussing the technical specifications that hindered the former proposal (Qvenild 2006).

In addition to the alarming risks of within-gene bank conservation, the international community, particularly in the United States, was largely affected by 9/11 and Hurricane Katrina. These incidents contributed to increasing tensions on national security and security issues in general, which ultimately created renewed interest and susceptibility towards the idea of a global backup facility for genetic resources (Informant 8 and 9). This urged several informal discussions and meetings about the conservation of plant genetic resources, urging many to feel like "something had to be done" (Informant 8). Up until 2001, there were little or no discussions outside the small group in the CGIAR who discussed establishing a global seed facility in Norway (Informant 9). After the Plant Treaty was signed, however, informal exchanges between actors started to take place, including within the Norwegian government (Informant 1). CGIAR officially requested Norway to investigate the feasibility of reviving the Seed Vault proposal in 2004 (Statsbygg 2008). By then, several informal requests expressing interest in a renewed proposal had already reached the Norwegian government (Informant 1). Norway was hesitant, but open, to the idea. There was, however, "no point" in working on it before there was a reason to believe that such a facility would be used and accepted by the international community (Informant 1 and 2). Therefore, the Norwegian MFA and MAF decided to co-finance a study involving both national and international expertise to assess the feasibility of establishing a Seed Vault at Svalbard (Statsbygg 2008).

5.1.2.2 Feasibility Study and Presentation to the FAO Commission

After receiving the official request from CGIAR in the spring of 2004, the Norwegian government made the first informal move towards implementing the idea. There were, however, several people in the government who were 'nervous' about the proposal emerging for a second time (Informant 1). As previously emphasised, the unsuccessful proposal in 1989 had left many in the Norwegian government embarrassed. Some simply "wanted to move on" (Informant 8). Further persuasion was needed to move forward with the request, particularly from IPGRI bureaucrats and other key actors in the international system with key links to Norwegian bureaucrats and politicians (Qvenild 2006). Both as a protective and

technical measure, the MFA and MAF commissioned a committee to investigate the feasibility of constructing a global backup facility for seeds at Svalbard. The committee was appointed to investigate the idea of establishing what the report called a "Svalbard Arctic Seed Depository for the International Community" in 2004 (Fowler et. al. 2004, pp. 11). It was commissioned by the MFA, MAF, NordGen and the Centre for International Environment and Development Studies (Noragric) at the University of Life Sciences (Fowler 2016). According to the informants, the most important condition for implementing the proposal on the Norwegian agenda relied on the results of the feasibility study. The feasibility study would assess whether a good management plan that could satisfy depositors; fulfil legal, economic, and political expectations; could run efficiently; and whether it could be built at a low cost (Fowler et. al. 2004). The plan for the management and operations of the Seed Vault would there determine whether it would not only be a "durable institution", but also whether it would be used by depositing countries (Fowler 2008, pp. 191). The report concluded:

> "Political conditions have changed dramatically since Norway's previous offer 15 years ago. The technical characteristics of the facility proposed herein are also very different. All indications point now to a political climate that will be favourable to the establishment of the Svalbard facility. In discussions with a wide range of political actors, no opposition ibid was detected. Enthusiasm and political support appear to be widespread." (Fowler et. al. 2004, pp. 11).

In addition to the official report quoted above, the Norwegian government commissioned an external consultant to write a separate, confidential report on the international political climate. Specifically, it would assess whether it was politically feasible to establish – and whether the international community would *accept* – the Seed Vault (Informant 1, 8 and 9). Ultimately, both reports confirmed the feasibility of the Svalbard proposal. For Norway, the only challenge left was to approach FAO's Commission on Genetic Resources for Food and Agriculture (FAO Commission) with the proposal. Norway presented the proposal to the Commission for Genetic Resources of the FAO in Rome in October 2004. Not wanting to re-live past events, government officials were "a little nervous" about whether the international community and the FAO in Rome would be officially on board with the proposal (Informant 9). The policy proposal was already far developed at this point: what Norway needed was

"some sort of blessing from the international community" to "check all the boxes" (Informant 9). A group of Nordic experts and representatives from the MFA and the MAF presented the Seed Vault proposal to the member countries of the FAO Commission, which resulted in the recommendation of the Norwegian initiative to establish the Seed Vault at Svalbard. After the proposal were officially established on the Norwegian government's agenda, a two-year long domestic policy process was still ahead. The construction of the facility was finally commenced in May 2007 and the Seed Vault officially opened in February 2008.

5.1.2 What were the central challenges leading up to the establishment of the Seed Vault and how were they resolved?

It is useful to look at the reasons why it may *not* have become a successful policy. There was a long list of obstacles to overcome before the Seed Vault could be realised. As previously emphasised, the legal and political world of plant genetic resources has a long, complicated history of different interests between different stakeholders, including the international trade regime, the seed industry, NGOs and other institutions with interests, governments, the scientific and academic communities, and so forth. The diversity of PGRFA is a crucial factor for the ability of farmers to adapt their food production to the effects of climate change. But the conservation of genetic resources, however, is not only a technical challenge: it is a highly politicised issue. Governments have "persistently faced the problem of ensuring cooperation among actors with widely differing interests" (Rabitz 2017). This sub-chapter highlights the challenges related to ownership and control of PGRFA, funding, and cross-departmental collaboration in the Norwegian government, which will establish a foundation for the empirical discussion in the next chapter.

5.1.2.1 Ownership and Control of PGRFA

As briefly discussed in Chapter 2, the ownership and control of PGRFA has been the central political and legal challenge for decades. Here, the debate on *ex-situ* (gene bank conservation) versus *in-situ (*in-field conservation) stands out. Essentially, it boils down to a debate on the most efficient way to conserve and develop genetic resources, and a debate of ownership, access, and control of plant genetic resources. Given the highly politicised context, many in the PGRFA community thought the idea of a global Seed Vault was "crazy"

20 years ago, and some think so even to this day (Informant 8). In the 1990s, many were opposed to the idea of having a centralised, top-down approach facility for conserving genetic resources. The international community at the time of the first Seed Vault proposal was characterised by wide-spread conspiracy theories and concerns around biopiracy, which is the idea of someone reaping undeserved benefits through acquiring intellectual property rights through a seed sample (Informant 5, 7 and 9; Fowler 2008). Some speculated that the Norwegian government and its partners knew something the rest of the world didn't, while others believed the powerful seed industry was behind everything (Hermansen 2013; Fowler 2016). It was only through international protocols such as the CBD and the Plant Treaty, which established the basis for how to manage the exchange of plant genetic materials, that most concerns slowly faded away. Not all did, however. Even after the Seed Vault was established in 2008, there was international criticism and push-back from the international community, which often boiled down to the rhetoric of: "here's government and big institutions again, doing stuff, while farmers are the ones needing funding for their conservation" (Informant 8). This was particularly true for many non-governmental organisations (NGOs) who had worked, lobbied, and advocated in favour of de-centralised, in-situ conservation methods since the 1960s. The Seed Vault was seen as fundamentally unjust for taking away unique plant varieties away from the farmers and communities in which they were created, selected, and protected in the first place (GRAIN 2008; Acharya 2008). GRAIN, along with several NGOs, believed the Seed Vault was therefore based on false assumptions which only served the scientific community, ultimately representing "the pinnacle of this faulty architecture" (GRAIN 2008).

Second, there were debates on ownership and sharing in the multilateral system related to what would happen once a depositor stored their seed collections in the Seed Vault. The question was centred around whether the depositor in question could deposit collections in the Seed Vault that could remain inaccessible to the multilateral system, or whether the criteria for depositing seeds should include a sharing-mechanism (Informant 6 and 7). In talks between Norway and prominent actors leading up to the Seed Vault, CGIAR (a global partnership system that works with all gene banks in the system) expressed an interest in making unique genetic resources accessible to *all* countries as part of the multilateral system. To them, the Seed Vault was seen as an opportunity to create the multilateral sharing system they wanted (Informant 1). The motivation stemmed in the fear that developing countries, home to many unique seed collections in the world, could retract their seeds and ultimately

make unique seeds unavailable to the multilateral community. Therefore, they wanted a solution where it would be more difficult to retract seeds if they were already deposited in the Seed Vault. While it was important for Norway that the Seed Vault would have seeds that belonged to the multilateral system, the CGIAR proposal was deemed unacceptable for Norway (*ibid*). This is because the Seed Vault can only keep one copy of every unique kind of seed. While there are over 7 million seeds stored in gene banks across the world, it is estimated by FAO that only 2.2 million of them are unique (FAO 2021). After having spent years building up international trust as a bridge-builder between the global North and South in the CBD and Plant Treaty, it was important for Norway to continue its reputation for being a trustworthy partner to the international community (Informant 1).

Norway therefore guaranteed that deposits in the Seed Vault did not involve changes in ownership of the seeds, and that the institutions that chose to deposit seeds had the opportunity to request the seeds to be returned if they wished. It was also, however, important for Norway that the seeds in the Seed Vault could be *used* and not only stored. Therefore, every precaution to prevent this was a deal-breaker in the time of creating a management plan for the Seed Vault (*ibid*). Therefore, exceptions to the rule were allowed. An example of this is seeds belonging to indigenous peoples, such as the Cherokee Nation's unique collections and potato varieties once thought lost to the Andean people, which are now safeguarded in the Seed Vault (Lakhani 2020; FAO 2016a). To make all parties happy, the result of the criteria for depositing seeds became a compromise between the different stances in the debate. The Norwegian government was happy with the compromise, which in the end was designed to make countries use the Seed Vault (*ibid*). The motivation for this compromise will be discussed further in the next chapter.

Another important factor for Norwegian development of the policy proposal was to decline all commercialisation of the Seed Vault. It was offered – and still *is* offered – commercial deals with high-standing, global companies who want to collaborate (Informant 1). However, any commercialisation of the Seed Vault was considered to "go beyond the trust" of the institution, which was one of the main pillars of justification for its existence (Informant 1). However, the black-box, free of charge management plan for the Seed Vault somewhat "calmed down" the international environment. Once the legal, financial, and political aspects of managing the Seed Vault was in place, fears of NGOs or others claiming that governments or big institutions were trying to "steal the world's genetic resources, trying

to monopolise it and give it to big corporations", most concerns were eventually met (Informant 8).

Third, the debate on the correct way to conserve plant genetic resources was also reflected in questions of which conservation measures are worthy of investment. To some, the millions of dollars that went to constructing the Seed Vault represented a figurative loss of investment and focus on the work of the 1.700 national, regional, and local gene banks around the world. One of the missions of a gene bank is to conserve plant genetic resources, which ultimately made many think the Seed Vault did a job that was already being done (Fowler 2009). As emphasised in Chapter 2, many gene banks around the world struggle with sufficient funding and resources. The Seed Vault, then, reflected how large sums of money were invested in the symbolism it represented rather than the on-the-ground work of the many gene banks around the world (Informant 4 and 7). The question of where money is most efficiently invested to conserve plant genetic resources therefore turned into a question of the cost-benefit relationship of building a Seed Vault. Those who argued for in-situ conservation methods, including many developing countries, thought it unnecessary to channel a huge amount of money into a centralised, Western Seed Vault (Informant 1). On the flip side, however, it was also expressed by several gene banks that the Seed Vault helped the cause of gene banks around the world. Gene banks, who are rarely if ever mentioned in the news, now received positive media coverage when collecting, preparing, and shipping collections to the Seed Vault. While the technical aspect of what a gene bank does is a hard sell to the public, the message of the Seed Vault ultimately elevated the concept because "sometimes a simple message is good" (Informant 7). The simplicity of the message resonated with the public and policymakers, as will be further explored and discussed in the next chapter.

5.1.2.2 Funding and Cross-Departmental Collaboration

The issue of how to fund the Seed Vault was one of the central challenges for those who promoted the proposal internally in the government. The proposal was "difficult" to push internally before the financial situation was clarified. And the process of attaining funding for a project is not easy, as "money is always a topic (…) people like to use the least amount of money possible, so you have to fight for it" (Informant 2). There was no money set aside for such a project in the existing government budget: therefore, the funding had to be either

distributed from *something* or *someone* (Informant 1 and 2). Before the proposal was officially recognised by the Norwegian government, there was internal confusion about funding. This can be exemplified by how a diplomat from the MFA, minutes before the presentation to the FAO Commission in Rome, thought the funding would come from the MAF: "There were probably a few things that were left unsaid at the time, since he assumed that the funding for the proposal already were in place." (Informant 1). Up until then, the MFA, MAF and MCE had been involved in the processes regarding the Seed Vault, as the Seed Vault was relevant for and had components of both environmental politics, agricultural politics, and humanitarian development.

While the Seed Vault was a natural part of the portfolio to the MAF and MCE, there were questions raised about whether it could also be accounted for as development assistance. In the end, 65% of the costs were channelled from the MFA categorised as development assistance. Official development assistance (ODA) is defined by the OECD as "government aid that promotes and specifically targets the economic development and welfare of developing countries", which has been the "gold standard" of foreign aid since 1969 (OECD 2021). In 2018, the OECD formally assessed the 65% of the costs of the Vault as having ODA-eligibility because of its: (a) conservation measure for global biological diversity; (b) as the project contributed to a "global public good" whereas two-third of the costs are considered to be benefiting directly to developing countries; and (c) although it derails from the principle of all ODA costs are excluded from the building unless it is donated in order to avoid that the actor can later sell it for other purposes, the special weather conditions and special location at Svalbard was seen as an exception (*ibid*).

One of the key negotiators highlights cross-department collaboration as a crucial strength for not only implementing the policy, but also for attaining the necessary funding for it. Under normal circumstances, several government departments working on the same policy is "not always a strength" (Informant 1). If several departments share responsibility for the same case, there are two likely scenarios: a conflict of interest where no one wants to *share* responsibility, or a situation where no one *takes* responsibility. After the first green light from then-Secretary of State Olav Kjørven, one of the challenges ahead was the cross-departmental coordination towards establishing the Seed Vault (Informant 1). The official acceptance of the proposal did not come until two years after initial planning (Statsbygg 2008). Actors outside of the Norwegian system did not anticipate the challenges ahead associated with the funding of the project (Informant 8 and 9). One informant stated that: "I was naïve. I thought

that Norway said yes, so Norway would pay for it. But Norway is not *Norway*. Norway is a bunch of different ministries, who all had to get on board" (Informant 8). In the case of pushing the Seed Vault, however, you had three individual people who were "all very engaged in the case" working "closely together" from the Department of Environment, Agriculture and Foreign Affairs, ultimately "we had the opportunity to elevate the case in all three departments and work for a financial resolution" (Informant 1). If the smallest department – MAF – had done it alone, the end-solution for a Seed Vault might have turned out worse than if it had a major part of the funding and political influence of the MFA and MCE (Informant 1).

5.2 Part Two: Empirical Discussion

This chapter aims to analyse and explain the empirical findings through utilising the indicators operationalised in the theoretical framework presented in Chapter 3. Three guiding questions investigating the factors leading to the establishment of the Seed Vault structure the analysis: first, it will ask what may explain Norwegian engagement and commitment; second, it will measure the extent to which transnational relationships and factors played a role in the process; and at last, it will analyse how the policy proposal was framed, promoted, and presented. By separating these key elements of the policy process, this sub-chapter aims to analyse the factors relevant towards answering and discussing the overall research question in the next chapter:

> *How can the establishment of the Seed Vault be explained, and which factors facilitated the decision by the Norwegian government?*

5.2.1 What can explain Norwegian engagement for establishing the Seed Vault?

The concept of *motivation* is an indicator for both theories in the theoretical framework. While entrepreneurship analyses the individual motivation and commitment, policy transfer investigates the principal motivation of the government to implement the policy.

5.2.1.1 Entrepreneurship

The driving force and motivation of an entrepreneur is captured through its *commitment* to the policy in question. As outlined in Chapter 3, this can be categorised through two categories. The first is the *tortoise*, identified through its long-term policy vision and slow, steady working pace. The second is the *carpe diem*er, with a more flexible policy view and a shallower commitment to the issue at hand (Boasson and Wettestad 2013). Through interviews with the informants, it became apparent that the process towards the Seed Vault was strongly influenced by 'passionate' individuals who worked tirelessly for the cause. To illustrate the importance of the individuals involved, several informants pointed out that the Seed Vault would probably not exist if it were proposed today (Informant 1, 3,5, 6 and 8). Individual contributions, driven by motivation and commitment, therefore had a

consequential effect on the outcome of the policy process. This is largely due to the strong, steady commitment of the actors involved at the time, which is illustrated by one of the informants in the paragraph below:

> "People that don't have the background that the folks 15 years ago had. Wouldn't share the same commitment. Wouldn't share the history. Wouldn't share the friendship networks, I think. This work took people who were professional colleagues and had become personal friends through their professional dealings over many years. And if you're going to do something this big and complicated involving many countries in the world, not just Norway, you have to rely on a lot of personal contacts and trust. People have to know that what you're saying is going to happen (Informant 8).

The source of this commitment can be traced in domestic institutional knowledge sharing. Several of the informants described *mentorship* within the Norwegian government as an important factor to the Norwegian delegation's commitment to the cause, which can be traced back to the 1980s. In fact, this is how several of the informants first learned about and became passionate about the subject. The Plant Treaty, as previously emphasised, was an important policy condition for building and created a window of opportunity for reviving the Seed Vault proposal. The Norwegian delegation to the negotiations consisted of the same people, who had also worked with each other on other international arenas, thereby ensuring *continuity* in terms of policy, work methods, and shared networks (Informant 1, 5, 6 and 8). Those who had negotiated and represented Norway through international forums expressed that they were either taught or actively taught others about the importance of PGRFA (Informant 1, 5 and 6). The delegation, consisting of "optimists and pragmatists (…) in problem-solving mode", shared the same commitment to the cause and politically aligned with the direction in which they wanted it to take the policy (Fowler 2016, pp. 108). After decades of working with each other on different arenas, they became close friends and trusted co-workers, who again connected with *other* tortoises outside of the government. These connections and networking techniques will be further explored in the next guiding question.

However, the background and context of Norway's role on the international scene majorly influenced the policy stance of the delegation. While several of the key people can be categorised as tortoises in their motivation and commitment, the techniques of which they

employed to promote the proposal were more aligned to that of a *carpe diemer*. An example of this is the strategies employed by the Norwegian delegation during the Plant Treaty negotiations. Here, it became apparent through interviews that while individuals within the Norwegian government were committed to a certain policy or solution, it was more important for the delegation – as a unit – to have a flexible stance on policy. They therefore had the slow and steady work horizon of a *tortoise*, but worked with the flexible views of a *carpe diemer*. In other words, the motivation and commitment of the delegation was based on the view that Norway were committed, international players with a stance of flexibility and cooperation (Informant 1 and 6).

The cross-collaboration between the two commitment categories had an important effect on realising the Seed Vault proposal. Informant 2, who was in a high-ranking, decision-making position at the time highlighted the influence passionate policymakers had on them and on the Norwegian Parliament. Being in a position to promote the policy internally, but having no commitment to the topic itself, they can be categorised as a *carpe diemer* who saw their role as "picking up the baton and running towards the goal with it, based on the groundwork that was done earlier" (Informant 2). The *tortoises* within the government, placed around in key ministries, who had laid the groundwork and strategically worked for the proposal were seen as a "fantastic driving force, which is contagious when you meet people who have strong faith in something and think that something is of importance" (Informant 2).

5.2.1.2 Policy Transfer

Today, the Norwegian government considers the Seed Vault to be its "most important" global initiative towards the diversity of plant genetic resources (MFA 2018). With a long tradition of supporting multilateral action in the international community, the Seed Vault "fits nicely" in the national portfolio (Hermansen 2013, pp. 127). This can be traced through several official documents from the policy process. In the first official authorisation for the Seed Vault, it is argued that the purpose of the policy is to make Norway a "visible as a constructive partner" and "ensure effective international regulation in this area that will facilitate both value creation" (MAF 2004). Moreover, planning documents by Statsbygg shows that one of the defining goals of the building was to "consolidate Norway's integrity and credibility" and "give positive attention to Norway and Svalbard" (Statsbygg 2008).

First, one of the driving forces of motivation for the Norwegian government to establish the Seed Vault was the international *legitimacy* and *visibility* in the international community. While "no one" in the Norwegian government foresaw the immense, positive media coverage the Seed Vault would later attract, the project was seen as a way of gaining visibility as a "good global citizen" (Informant 2). At the opening of the Seed Vault in 2008, however, major news outlets from all over the world travelled to Svalbard to cover the event. Then-UNSG Ban ki-Moon declared Norway as "forward-thinking and visionary", while the Pope claimed it was "typical Norwegian to protect the Creation" (Skjæraasen 2021). The Seed Vault thus created an international visibility which furthered its international reputation, position, and profile (Informant 1, 2 and 5). Moreover, it increased the visibility of and provided an economic opportunity for Svalbard, as well as establishing and positioning Norwegian activity in the Arctic (Informant 2).

Second, there was an "eagerness" within the MCE to take on new, visible environmental projects after several unsuccessful global climate summit meetings in the years prior to the proposal. The sitting government and the MCE were therefore "actively looking for opportunities" on this front, given that Norway had "not done much in the climate and environment department before in the years before (…) there was a "bit of a standstill" (Informant 2). While the international environment may have been affected by the decades long dispute over the conservation of genetic resources, politicians at the top looked at the Seed Vault as a "relatively uncontroversial point of assembly" (*ibid*). Speaking from the very top level of decision-making, Informant 2 could not remember any counterarguments to establishing a Seed Vault. In contrast to Norway's oil and energy politics, this was an "easy thing to do" (*ibid*). While several of the informants who pushed through the proposal during the two years before every part of the management plan, funding, and other political processes, as the policy moved further and further up to the top of the food chain, the politicians saw it less as a fight, and more as a "gift". Essentially, they were in a position where they were given a platform and a political opportunity to implement the proposal or not (Informant 8).

These motivations align with the indicators for policy diffusion where norm-driven and legitimacy-oriented motivations are the principal motivation for policy transfer. Through increasing its legitimacy, reputation, and further positioning itself internationally, Norway gained wide-spread international praise for its appropriate behaviour, as illustrated by the selected quotes from two powerful, international voices. Dimensions of harmonisation of

policies can, however, be found in some of its motivations. A fourth motivation in establishing the Seed Vault was in the fact that Norway was one of the few countries who *could* establish the facility, thereby improving the management of collective problems where unilateral action offered at best unsatisfactory solutions. When CGIAR and the multilateral community pointed to Norway in 2004, the government recognised its importance (Informant 2). However, the weight of the previously failed proposal should not be underestimated. According to information provided by informants as well as document analysis of central documents, there is no evidence pointing to the Norwegian government attempting to *avoid* negative externalities if they chose to not implement the proposal. In fact, some informants pointed out that to some degree, they risked negative externalities by implementing it in the first place: if anything, Norway might have experienced more pressure to *not* go forward with the Seed Vault (Informant 8). The previous proposal had "frankly embarrassed some people in the government (…) and they really, really did not want to be embarrassed again, which was stated very clearly" (Informant 8). This is reflected in the two-part feasibility study: while the first was a technical assessment, the latter was a political and legal assessment that was made private by the government. The latter report was written personally by Fowler without involvement of the Committee, urging him to state the fact clearly of whether this has a possibility of becoming a failure again (Informant 8 and 9). This could point to a heavier emphasis on the dimension of diffusion, which consists of norm-driven and legitimacy-driven motivations.

5.2.2 To what extent did transnational communication play a role in the establishment of the Seed Vault?

The theoretical framework emphasises the *transfer of influence,* specifically the influence of the flow of information between the different actors. It looks at the process of knowledge and information in the policy process, but analysed at two different levels: while entrepreneurship investigates the individual transfer of knowledge and information within networks, policy transfer looks at the relationships and learning processes between the Norwegian government and the central actors involved.

5.2.2.1 Entrepreneurship

This section will analyse how entrepreneurs navigated the policy process towards establishing the Seed Vault through accessing, creating, and utilising personal relationships across networks, which contributed to the transfer of knowledge and information to promote the Seed Vault proposal. In the literature on entrepreneurship, networking is highlighted as one of the key strategies in which entrepreneurs advocate for their cause (Boasson and Huitema 2017). First, we will look at the how entrepreneurs gained access to and created extensive networks on the international arena. As explored in the previous chapter, several *tortoises* were positioned, strategically yet accidentally, around central bureaucratic, governmental, or political positions domestically. These actor networks were strengthened by the *continuity* of the people involved, both on the Norwegian and international side: many of the same people were involved in different aspects of genetic resources and related issues on the global stage, and worked over the years with the same people across contexts. The community is small, but close: most of the actors involved know each other well and had access to decision- and policymakers both in Norway and abroad. With years of experience, in-depth knowledge, and often personal relationships across networks, many of the central entrepreneurs had established a foundation of *trust*. The Norwegian delegation to the Plant Treaty was described as "the most trusted delegation in the room. People liked them. People trusted them." (Informant 8). This trust helped establish the relevant foundation for executing strategy, lobbying, and promoting the Seed Vault (Informant 1 and 5).

The *tortoises* of the community were particularly well-connected with key actors on the political sphere. While the theoretical framework of entrepreneurship advises against speaking of individuals attributes, singling out a few individuals provides important context for the analysis. As previously mentioned, Cary Fowler was hired as a consultant to examine the feasibility of establishing the Seed Vault. Throughout his career, Fowler held positions at the Crop Trust, NMBU, FAO, CGIAR and other key places with a wide range of contacts. These contact networks had a significant impact on the realisation of the Seed Vault. Fowler knew "everyone at FAO" and its system well (Informant 9). While acting as a consultant for the Norwegian government, NMBU and at CGIAR, enabled him to be in daily contact with gene bank staff, as well as being "in a position to explore the subject informally with officials in Oslo and with NordGen" (Fowler 2016). From the entrepreneurship explanatory framework, the strategic placement of knowing the FAO system, in addition to close ties and access to policymakers in the Norwegian government, facilitated "serious consideration of

the proposal" (Fowler 2016, pp. 110). The collaboration and cooperation between these institutions therefore had great significance on pushing and promoting the Seed Vault internally. Moreover, traces of political lobbyism on plant genetic resources even have deep roots in the Norwegian Parliament, where many politicians at the time were "well-known" and familiar with work around PGRFA (Informant 3). One of these insiders was Åslaug Haga, then-leader of the governing coalition party The Centre Party, who had years of experience in the area, was one of the people who "lobbied, supported and knew everyone at Parliament" (Informant 3). With years of experience in the community, she later took over as the Director of Crop Trust in 2013 after Cary Fowler (Parliament n.d).

These, and several more entrepreneurs, had been "working behind the curtains" and making contacts in the Norwegian political scene for years (Informant 1). Moreover, the different staff positioned in academic, bureaucratic, and political positions around Norway cooperated well together. Several of the entrepreneurs in the Norwegian government shared a broad contact network in the NGO world, and actively worked to maintain good relationships with them (Informant 5). Without direct contact and connections in the government – and without knowing exactly *who* to talk to – the different actors involved is unlikely to have been successful as promoting the proposal from their respective academic or professional positions alone (Informant 1). The collaboration and cooperation between these institutions therefore had great significance on pushing and promoting the Seed Vault internally. An example of how the entrepreneurs engineered and employed networks to further the case can be seen from the Plant Treaty, which was an important prerequisite for the Seed Vault. With the backdrop of the CBD and Plant Treaty, the Norwegian delegation had the technical and academic knowledge to truly know and understand the field of which genetic resources are situated. The number of people who had this holistic understanding of issues in Norway was rare and served of great importance in all the parallel policy processes towards biodiversity measures in the Norwegian government at the time. This internal collaboration between the three departments were rare and had been built over years. During the Plant Treaty negotiations, Norway conducted a type of collaboration that is "rare" in these settings by sending out a letter form the MAF, MFA and MCE to all the countries urging to "get this done" (Informant 7). This coordination and cooperation within the different Ministries and its willingness to build bridges on the international arena was "rather unique" (Informant 7).

These networks were strategically utilised to situate the issue within a larger picture to create a window of opportunity. This aligns with the indicator for window-identification, one

of the indicators for entrepreneurial techniques, which was utilised to promote the Seed Vault proposal. Several of the informants expressed how the different actors involved strategically approached individuals might be sceptical of the proposal (Informant 1, 3 and 8). As previously explored, one of the Norwegian government's conditions for implementing the Seed Vault was to ensure that the proposal would be accepted by the FAO and the international community. The Feasibility Committee and others in the government therefore conducted groundwork to make sure to talk to every "weak link" to ensure they were on board with the Seed Vault proposal (Informant 1 and 8). In summary, the central actors involved in promoting the Seed Vault used and employed networking and engineering strategies to realise the policy in arguably equal measure to the contents of the policy itself.

5.2.2.2 Policy Transfer

Analysed through the lens of policy transfer, the question of transnational communication concerns how governments communicate and exchange information driven by information flows in the international community. The framework for policy transfer treats these networks as an inherent part of different modes of operation these communication flows are driven by. As argued throughout the thesis, the extensive networks and information exchanges between the actors were one of the most important conditions for the realisation of the Seed Vault. The Norwegian government, academic communities, and different actors in the multilateral system had worked closely with each other over the years. As previously mentioned in Chapter 2, Norway is not only a committed, long-term multilateral donor, but its development aid is also perceived to be more altruistic than many other countries (Informant 7 and 9). Several important countries in Africa, particularly East Africa, has a good relationship with Norway on working with seed systems management through giving assistance to build up its local seed system management long before the Seed Vault. The fact that important African countries therefore already had duplicated before the Seed Vault ultimately "meant something" (Informant 7).

The prevalence of the *continuity* of these relationships was an important factor for years of information flows, lesson learning, and communication on the topic of PGRFA. Moreover, the strengthening of these international networks and a stronger affiliation with the UN Rome-based institutions, WFP, FAO, and the International Fund for Agricultural Development (IFAD), was highlighted as one of the advantages for Norway (Informant 2).

At the time, the proposal for the Seed Vault was the first of its kind. For the Norwegian government, the lesson-learning activities primarily occurred through internal people with first-hand, institutional knowledge from PGRFA and the first Seed Vault proposal, and through hiring external consultants. The transitional factors were therefore highly prevalent, especially seen through how these were implemented to conduct transnational problem-solving activities. These factors are aligned to one of the indicators for *diffusion* of policies, where it can be demonstrated that Norway consulted with, hired, and routinely coordinated with experts from different countries to jointly develop a solution to a common problem. Moreover, key people in the Norwegian government were spread around different ministries, paying close attention to international movements on PGRFA (Informant 1 and 5). This was especially prevalent after the signing of the Plant Treaty in 2001, when whispers of reviving the Seed Vault proposal first occurred. Many believed a window of opportunity had emerged. This aligns with the indicator for *harmonisation* of international policies, where the government monitored the international landscape to commit to common standards. However, the Norwegian government knew that they had a competitive advantage from the international community in establishing a successful global seed facility that had a higher likelihood of being utilised by the international community, and therefore chose to seize the opportunity (Informant 5). This transfer of knowledge between Norway and the multilateral system points to a knowledge transfer of Norway *diffusing* with the international system through standing up against a collective action problem hindering effective management.

5.2.3 How was the policy proposal for the Seed Vault framed, promoted, and presented?

The theoretical framework captures the way in a policy proposal is framed, promoted, and presented to be transferred onto an official agenda. While entrepreneurship captures the framing mechanisms involved in framing the policy aspects and agenda-setting of the proposal, policy transfer captures the framing mechanisms seen from the standpoint of the state-centred, multilateral process.

5.2.3.1 Entrepreneurship

With the implementation of the CBD and the Plant Treaty, several insiders in the PGRFA community knew that the new, international context could *both* enable and hinder the Norwegian government's susceptibility to revisit the proposal (Fowler 2016). The framing, promotion, and presentation of the proposal was therefore essential to convince the Norwegian government to establish the Seed Vault. First, the proposal had to be framed as appropriate within the present environmental discourse. In what Informant 7 describes as a "policy divide", there were also "several people who worked with traditional environmental issues took a while" to welcome the idea as suitable on the Norwegian agenda (Informant 7). The topic of plant genetic resources therefore is often a "hard sell" within traditional environmentalism: not only are our agricultural systems a far-fetched, abstract concept for most people, it has traditionally been excluded in many climate conferences on tackling climate change (Informant 4 and 5; Fowler 2009). Moreover, framing the Seed Vault proposal for people with no background with genetic resource was a central challenge. One of the informants, central to promoting the Seed Vault internally in the government, describes the experience of promoting the policy to the then-leader of the MAF, Lars Sponheim:

> It was not easy to approach Sponheim and say: "Let's build a Seed Vault at Svalbard!". It was a big challenge to get support for it. Because politicians often prioritise national issues that their voter base cares about. It's understandable that it sounds like a weird thing to do (Informant 1)

As seen in the previous sub-chapter on motivation, however, policymakers in the Norwegian government were susceptible to the idea given the extensive portfolio and previous proposal to establish a Seed Vault. Many highlight the importance of the *simple message* of the Seed Vault as one of its main strengths. While it is difficult to explain the concept of genetic resources to someone, the importance of the Seed Vault, as the guardian of the "library of life", was easy to visualise that resonated with most people. This is apparent through how the media quickly dubbed the Seed Vault as the 'Doomsday Vault' (Informant 5).

The failure of the first Seed Vault proposal served many lessons learned for the actors involved when the second proposal was revived decades later. Several of the informants described how window engineering, one of the indicators for entrepreneurship, was employed throughout several stages of the process. The *tortoises* of the community knew that a global

backup facility was needed, but it was essential that the conditions for such a facility would satisfy depositors. Knowing the proposal would fail if implemented by most other countries, several of the entrepreneurs engineered and steered conversations about a functioning, useful Seed Vault to be most fit to Norway (Informant 1, 4 and 8). Fowler, at the time splitting his time between CGIAR and NMBU, was in the position to conduct agenda-setting in several informal and formal international forums. Here, the advantages of Norway's international profile, trust, and former motivations can be viewed as engineering techniques, one of the indicators for entrepreneurship, for *creating* window of opportunity (Informant 5 and 8). This points to how entrepreneurs created, rather than exploited, a window of opportunity through window-identification techniques. These remarks, again, spread to Norwegian forums, where several important, domestic actors were persuaded of the importance of the topic and how the time was ripe to seize the opportunity (Informant 8).

Second, the framing of the proposal was strategized to create trust. An important technique to establish trust was accomplished through strategic agenda-setting, in other words by framing the issue as appropriate within the already established conceptualisation for the policy. The premise of the proposal was directly linked to the new international agreements and obligations of the Plant Treaty, with as direct and transparent linkages as possible (Informant 5). The challenge was to draw up an agreement that created a foundation of trust. The strategy was to use the platform in place to develop a project proposal that was as trustworthy as possible. and link it to new international agreements, and as a credible partner to the Crop Trust (Informant 5). Although the legal underpinnings allowed for a platform to build the proposal and was an important factor, it was not necessarily a sufficient base to create the necessary trust for countries to use the facility (Informant 5). The strategy was therefore centred around achieving the necessary international support. While the technical construction of the Seed Vault could easily be *built*, it would have no reason to exist if it did not satisfy the international community for *using* it (Informant 5).

5.2.3.2 Policy Transfer

Analysed through the lens of policy transfer, the framing, promotion, and presentation of the proposal is particularly relevant to the presentation to the FAO Commission in Rome. This part of the processes especially emphasises the multilateral and state-centred process that eventually led to implementation. At this point in the process, the proposal had already been framed, promoted, and presented to the Norwegian government. The remaining job was to do

the same, but this time to the multilateral community. In other words, the transfer was now elevated from the national to the international level. The two processes, however, were not necessarily different from each other (Informant 1 and 8). As previously explored, Rome's interest in the proposal was clarified in advance (Informant 9; Fowler et. al. 2004). The impression at the time was that the FAO preferred Norway for hosting a global seed facility (Informant 2). Otherwise, the Norwegian delegation would likely not have gone to present the proposal, as they were "completely dependent on a positive response in Rome and from important countries" at the time (Informant 1 and 6).

The most important framing mechanism to the second proposal was to bridge the gap of what the latter proposal had failed to do: create trust from the international community (Informant 6). The strategy for framing the second proposal was *clarity*. This was done underpinning the proposal in the management plan and seed deposit agreement. The purpose was communicated individually to NGOs, FAO, different missions, and actors, where the project proposal was also discussed in relation to how it would be developed, handled, and how safeguards would be implemented. Here, one of the most important safeguards were the black-box system (Informant 3 and 4). Then, the agreements could be developed with Crop Trust with reference to the Treaty and the depository agreement (Informant 5). After all, it was Norway's "biggest fear" that the Seed Vault would not be *used* by the international community (Informant 1). The success of the Seed Vault therefore rested on the management plan, where the feasibility study provided the necessary conditions for a facility that was efficient, sustainable, inexpensive, and politically and legally acceptable before for taking the proposal to Rome (Fowler et. al. 2004). The indicator for diffusion of policies, transnational problem-solving through jointly developing solutions to a similar problem, is arguably the overarching strategy from Norway's point of view. Importantly, this was done through Fowler and other experts, who acted in consultation with the Norwegian government throughout the process. The government's flexible stance was therefore closely related to the indicators for harmonisation, which is to monitor the landscape to commit to common standards through a multilateral and state-centred process that eventually led to implementation.

In the spring of 2004, Norway sent a skilled diplomat, a group of Nordic experts, and representatives from the MFA and the MAF to present the policy proposal to the member countries of the FAO Commission. While the diplomat presented the proposal, the experts were "sort of whispering in his ears about the details" (Informant 8). At the end of the

presentation, the FAO Commission officially recommended the proposal. Several of the informants, however, do not believe that it was the strategy that won the FAO Commission over and determined the ultimate success of establishing a global seed vault. It was the trust and standing of the Norwegian delegation, which was outside of the "very narrow confines of this particular question at FAO" and had everything to do with trust-building over several years (Informant 8). The delegation was familiar with the FAO system, culture, and "lingo", which the proposal was strategically planned and framed to fit (Informant 9). In relation to the indicators for policy transfer, this strategy is closely aligned to the intention to frame the policy as in harmonisation with the FAO, rooted in committing to common standards through influence from international negotiations and the international community.

6 Discussion

The previous chapter analysed the empirical data through utilising the indicators operationalised in the theoretical framework. This chapter will introduce two main findings that can explain the establishment of the Seed Vault. First, it will discuss the importance of *networking* and *transnational communication*. Second, it will discuss the importance of *trust*. At last, it will discuss the relevance of these results, link it to the theoretical framework and literature presented in previous chapters, and outline what it means for the wider universe of cases.

> *How can the establishment of the Seed Vault be explained, and which factors facilitated the decision by the Norwegian government?*

6.1 Networking and Transnational Communication

As previously discussed, the policy process towards the establishment of the Seed Vault were characterised by close professional relationships, networking, and the continuity of the people involved had on the establishment of the Seed Vault. One of the most prevalent findings in the empirical material was how these networks were utilised as an entrepreneurial technique to promote the policy proposal, which ultimately had a significant effect in the policy process towards establishing the Seed Vault. This paragraph will therefore provide an answer to the three guiding questions: (1) how Norwegian engagement for establishing the Seed Vault can be explained, (2) the extent to which transnational communication played a part in establishing the Seed Vault, and (3) how the proposal was framed, promoted, and presented. The theoretical framework emphasises communication and exchange of information, influence from international negotiations, and the strategies through which individuals promote their policies through entrepreneurial techniques. This was found to have significant impact on the Norwegian government's decision to establish the Seed Vault. While the motivations for implementing the proposal on the national agenda was largely driven by legitimacy- and norm-driven motivations for being a "good global citizen", the Norwegian government also had several reasons *not* to pursue the proposal (Informant 2 and 8). The embarrassment following the first failed proposal and the politicised issue of PGRFA was

perceived to be a possible risk. However, as outlined in the analysis, the Norwegian government was *persuaded* by international influence, not forced, to adopt the policy. Seen through the lens of policy transfer, these factors are in line with the indicator for diffusion of policies and was driven and influenced by communication with the international environment at the time. Several of the informants emphasised that the decision to revive the proposal was greatly affected by the individuals involved, who had either been part of the first proposal, or who had worked on PGRFA for years and identified a window of opportunity to push the policy. Analysed through the lens of entrepreneurship, the factors that facilitated the establishment of the Seed Vault and the factors that facilitated the Norwegian government's decision to implement it is rooted in the entrepreneurial techniques and the commitment of the actors involved. These entrepreneurs had become personal friends throughout years of professional dealings. Given the complexity of a project involving "all the countries in the world", several of the informants expressed how they relied on personal contacts to promote the Seed Vault proposal. The small community of experienced experts were able to pull through by using their "necessary skills, knowledge and enthusiasm" after a window of opportunity was recognised (Qvenild 2006, pp. 57).

Many of these individuals were placed around in the accidental, yet ultimately strategic, locations in academic communities, government, organisations and so forth. These entrepreneurs had access to policymakers, which facilitated "serious consideration of the proposal at high levels in government" (Fowler 2016, pp. 110). Moreover, several informants highlighted the effect 'passionate' tortoises had on the Norwegian government over the years, both in Parliament and government, who were a "fantastic driving force" to inspire *carpe diemers* to "pick up the baton and running towards goal with it" (Informant 2). This further highlight another finding, which was the *collaboration* between the two categories that ultimately had a significant effect on the establishment of the Seed Vault. Interestingly, however, several of the tortoises shared techniques and approaches with carpe diemers. The *tortoises* did, however, have elements of a carpe diemer in their approach. This was largely attributed to the internal culture of the Norwegian delegation, who had negotiated across several arenas on PGRFA over the years. This is in line with Boasson and Wettestad's (2013) conceptualisation of an entrepreneur in flux: the categories are not static, and an entrepreneur can change its commitment and strategies throughout a policy process. For the realisation of the Seed Vault, it was apparent that the dynamics between the actor networks were essential for the different motivations coming together. An entrepreneur cannot work alone: they have to navigate the system and adapt to it. This was apparent through how the different

entrepreneurs made sure to contact every "weak link" in the community to make sure the Seed Vault was politically acceptable for them to use (Informant 8). In summary, the empirical material pointed to a strong emphasis on the effects of transnational networking as an important explanation to the establishment of the Seed Vault.

6.2 The Importance of Trust

Several of the informants pointed to *trust* as one of the most important factors for the establishment of the Seed Vault. This is central to both parts of the research question: it was essential for explaining the establishment of the Seed Vault, and for one of the key factors facilitating the decision by the Norwegian government. Therefore, this thesis argues that trust was the most important factor for the three guiding questions, as well as the overall research question. Every single informant attributed trust as the grounding force, both through trust in the Norwegian delegation who had built professional relationships and networks in the international community for years, and trust in Norway as a "fair "country with a good international reputation. The combined theoretical framework managed to capture both of these aspects. This is seen both through its non-colonial past, significant development aid portfolio, and without an apparent economic agenda. Several of the informants emphasised that gathering international support was key to their strategy, which was directly related to how it was not only important that the Seed Vault would simply be built: it had to be *used* by the international community. Given the complexity of the legal and political background of PGRFA, the accomplishment of constructing a policy that could fulfil all sides of the parties was the main challenge. Interestingly, Norway went ahead with the proposal despite of the disputed issue on the international arena. Several informants expressed that, given the politicisation of the issue of PGRFA, it is impressive that the Norwegian government made it happen (Informant 10; Informant 6).

In terms of policy, the management plan for the Seed Vault was imperative for both creating trust in the international community and one of the main factors facilitating the decision to adopt the policy. A good management plan that could satisfy depositors, fulfil legal, economic, and political expectations was central to the adaptation of the idea was key for a sustainable institution that would be *used* by the international community.
There was significant trust in the actors that represented Norway, but also in Norway as a country. With the establishment of the Plant Treaty, it was "Norway's history of political

non-alignment, economic stability, and environmental preservation, in addition to its geological suitability and willingness to pay construction costs, that made a vault project politically possible under international governance" (Breen 2015, pp. 43). Moreover, the decision to not commercialise The Seed Vault would "go beyond the trust of the institutions" was adopted (Informant 1). Norway's long-term commitment as an altruistic, multilateral donor perceived, "harmless" bridge-builder between North and South in multilateral negotiations, and with little or no economic interests in its own, non-existing plant-breeding industry, gained trust from the international community. Ultimately, Norway had built up more trust in the international community than many other OECD and EU countries (Informant 7, 8 and 9).

In summary, entrepreneurship provides a strong explanatory framework for this dimension. It captured the different dynamics of trust on both the domestic and international level. The framework for policy transfer, however, was arguably unable to capture these trust dynamics. This is because the framework operates on a continuum of transfer which implicitly *assumes* cooperation. In other words, the indicators for policy transfer are *effects* of cooperation, whether it be through diffusion or harmonisation, and thus cannot delve further into the dynamics which underpins the transnational factors of transfer. In short, while it provided interesting insights on the factors that facilitated the Norwegian government's decision to establish the Seed Vault, the analysis of the roots of these dynamics remained largely untouched. This will be elaborated upon in the next section.

6.3 Relevance of Theoretical Framework

The combined theoretical framework captures the nuances and dynamics of the transnational communication factors, which is argued to have greatly influenced the establishment of the Seed Vault. However, there were factors identified in the data collection process that the theoretical framework did not manage to capture. First, while policy transfer explained how the Norwegian government employed lesson-learning, were driven by transnational problem-solving, and was heavily influenced by the communication and exchange of information in the international community, the concept of networking is included as set as a premise and inherent *assumption* for the processes above. Therefore, it does not allow for further analysis on how and through which factors these networks underpinned. Instead, the policy transfer

operates on the continuum of harmonisation and diffusion, which is a possible weakness for deep analysis of policy networks.

Second, entrepreneurship manages to capture and further explain the international *context* of the policy. One of the central aims of this thesis was to investigate the context in which the policy occurred, which may provide further explanation for how the establishment of the Seed Vault can be explained. As previously emphasised, the international context for the policy was controversial in areas of ownership, access, and control for the last 20 years (Andersen 2008). Through the lens of entrepreneurship, it is possible to analyse how these challenges were overcome both at the domestic and international level. Policy transfer, on the other hand, looks more at the context of the international community itself rather than the context of the policy proposal. While it captures the dynamics for how the policy was *transferred*, the explanatory factors for dynamics and networks underpinning the very context of this transaction were not sufficiently explained. While this might be considered a weakness, the framework of policy transfer still provides a rich explanatory framework to analyse other dimensions of the process. The framework utilised in this thesis looks at the policy from different points of view: while policy transfer looks at the more abstract parts of the policy process, entrepreneurship delves into the details. The policymakers interviewed in this thesis looked at the policy proposal from an abstract point of view: for them, the process towards the Seed Vault was largely uncomplicated and an "easy thing to do" (Informant 2). Interviews with those who had worked on the policy for a longer time, however, highlighted the political, economic, and legal hurdles that had to be overcome to get there (Informant 1, 3, 5 and 6). Therefore, the framework looks at the process from different sides and different levels of analysis.

Third, while the networks and transnational communication was one of the most important findings, it remains unclear *how* the window of opportunity emerged. This issue is particularly relevant for the framework of entrepreneurship, which aims to capture whether an entrepreneur *created* or *exploited* a window of opportunity. The theoretical frameworks emphasise a difference between framing the policy as appropriate between an *already established* conceptualisation of a policy window, i.e., agenda-setting, and through activities of framing and situating the issue to *create a window of opportunity*, i.e., window identification. On the one side, this thesis found that the Plant Treaty provided not only the legal and political underpinning for the success of a second proposal, but also that the relationships and networks *created* during the Plant Treaty negotiations enabled the necessary continuity of already-established close working relationships, which ultimately founded the

necessary trust to promote the proposal after 2004. While parts of these processes are briefly covered in the analysis, the objective of this thesis does not include how the Plant Treaty negotiations may have affected the establishment of the Seed Vault. However, the scope of analysis for this thesis is set after the Plant Treaty was signed in 2001. Therefore, the data collected mostly concerns entrepreneurs employing agenda-setting techniques to persuade the relevancy of the proposal in the "new world" that emerged after the Plant Treaty (Informant 1). In short, the emphasis of the analysis begins after the signing of the Plant Treaty in 2001 when the window of opportunity arguably may already have been created. This limitation will be further discussed in Chapter 7. However, it will tentatively hypothesise that, through the findings found in this thesis, there are clear indications that the effect of the international negotiations preceding the Seed Vault were a key part of the Seed Vault process itself.

At last, we will reflect on the findings of this thesis and evaluate the relevance of the theoretical framework to answer the research question. The explanatory power for policy transfer shed a light on the transfer of information and knowledge on the multilateral level, as well as providing a strong analytical framework for analysing the motivation of the Norwegian government ad multiple stages in the policy process. Entrepreneurship, on the other hand, contributed with detailed analysis on networking building, the extent to which different commitment categories collaborated, and the trust-building measures. In summary, it will be argued that the framework of entrepreneurship managed to capture and explain nuances these to a greater extent than policy transfer did. This is largely due to the level of detail entrepreneurship was able to gather on key parts of the policy processes (Tilly 2001, quoted in Busch and Jörgens 2005, pp. 862). It also allowed for the "mechanisms- and processed-based accounts" in political science literature, which was highlighted as one of the contributions the thesis could make to the literature. As previously explained in the literature review, one of the goals of the thesis was to situate the case of the Seed Vault in literature on the role of policy innovation and international cooperation in climate change adaptation policies. While the limitations of the thesis will be further outlined and discussed in the next chapter, the premise of the thesis was to contribute to and further our understanding of how innovative ideas gain prominence on government agendas. Here, the central theme of international cooperation is argued to be particularly relevant through the lens of entrepreneurship, which provides knowledge on how transfer occur from the local, regional, and international level to a greater extent than the policy transfer framework applied in this thesis. Thus, the findings of this thesis may provide insight on further specifying the strategies of entrepreneurs, to identify when entrepreneurs prompt change, and to further

investigate the contextual factors that encourage the emergence of policy entrepreneurs (Petridou and Mintrom 2020). However, the combined theoretical framework provides a stronger approach for investigating how actors articulate policy innovations onto government agendas and energise the diffusion process by combining a detailed analysis on the entrepreneurial level and through the abstract view of the policy process seen from the state-centred perspective (Mintrom 1997).

7 Conclusion

Now, we will return to the premise of the thesis: how can the establishment of the Seed Vault be explained, and which factors facilitated the decision by the Norwegian government? This research question has been addressed through the investigation of the policy processes leading to the realisation of the Seed Vault in Svalbard. The process has been described, analysed, and explained through the theoretical framework, consisting of the political science theories *entrepreneurship* and *policy transfer*. The research design was conducted through an explanatory, theory-guided case study design. The final step of the thesis is to summarise the main findings, discuss the theoretical and methodological implications, outline limitations of the thesis, and at last provide suggestions for further research on the topic.

7.1 Main Findings

The Seed Vault has been described as an architecturally innovative policy that is unique in its ability to cross political and cultural divide over the ownership and conservation of seeds, and therefore represents a high-water mark for international cooperation (Breen 2015, pp. 39). As highlighted in the introduction, however, the road to the establishment of a global backup facility like the Seed Vault was not easy. Legal frameworks, technical capacities, political cooperation, and not least international cooperation was needed for the realisation of the Seed Vault. The Seed Vault therefore represents what can be possible when countries work together for the common good. The premise of this thesis was to investigate the policy processes towards the Seed Vault in order to identify the factors that can explain the establishment of the Seed Vault, and the factors that facilitated the Norwegian government's decision to implement it. Throughout the analysis, two empirical findings stand out as the most important for the field of international cooperation and climate change adaption measures. The establishment of the Seed Vault and the factors that facilitated the decision by the Norwegian government to implement the policy can be explained through networking strategies and trust-building measures, which will be further elaborated upon below.

Entrepreneurs were found to navigate the policy process towards establishing the Seed Vault through accessing, creating, and utilising personal relationships across networks. In fact, the empirical data points to the strategic use of reaching out to "weak links" to ensure

support from those in the international community that might have been sceptical of the proposal (Informant 8). The tortoises of the community were well-connected with the multilateral system, had access to policymakers in the Norwegian government and Parliament, which facilitated "serious consideration" for the proposal (Fowler 2016, pp. 110). Several of the informants highlighted these contact networks as of high importance, indicating that the process of framing and promoting the idea on the Norwegian government's agenda is unlikely to have worked without it. These networks were strategically utilised to situate the issue within the larger picture to both create and exploit a window of opportunity throughout key parts of the process. Therefore, the transnational communication networks and the collaboration between these different institutions had a significant effect on promoting the Seed Vault proposal. It is therefore evident that these networks in the international community were ultimately utilised as a strategy towards enhancing international cooperation. Another interesting finding was an important precondition for the establishment of the Seed Vault.

The second important empirical finding *trust* brings us to the second important finding of this thesis. The success of the Seed Vault proposal was grounded in attaining the necessary trust from the international community. First, the framing, promotion, and presentation of the Seed Vault proposal was not aimed at simply building a global seed facility. The aim was to construct a facility that would be *used* by the international community. Given the highly complex legal and political context of PGRFA, the challenge of satisfying depositors and the international community was the main obstacle to be overcome. In terms of policy, this trust was created through the management plan and black-box system that could fulfil legal, economic, and political expectations. Second, there was a significant trust in Norway as a fair country with a good international reputation as a bridge-builder on the global stage, non-colonial past, and close relationships with many developing countries. Third, it found that professional working relationships of trust between the Norwegian delegation and actors in the international community were essential for gaining the necessary legitimacy of the proposal. Here, the people in Norway who had worked on the Plant Treaty was an important policy condition for creating alliances and close professional working relationships in the international community. This thesis found that entrepreneurs employed trust-building measures through the continuity of building relationships and networking through the already-established connections, characterised by trust, made in the Plant Treaty. Therefore, the Norwegian delegation and external consultants played a crucial role in the establishment of the Seed Vault.

In summary, the findings from this thesis may also say something about how states adopt policies, the wider scope of agenda-setting in the policy-making process, and the role of entrepreneurs and transfer in policy innovation. Hence, the overarching theme and wider universe of cases belongs to *policy innovation*, *international cooperation,* and the way in which efforts to *adapt to climate change* are taken. These findings may also expand our knowledge on how international cooperation is facilitated through trust and networking strategies, specifically through the specification of the effects entrepreneurial techniques and strategies have on a policy process. Moreover, the case study may contribute towards knowledge on the context of policy entrepreneurship emerges (Petridou and Mintrom 2020). In combination, the theoretical framework provides insight on how policy innovations are articulated and established on a government's agenda, analysed here through analysis of entrepreneurship and state-centred perspectives on local, national and international levels (Mintrom 1997).

7.2 Theoretical and Methodological Implications

This section will evaluate the strengths and weaknesses of the theoretical and methodological choices of the thesis. As outlined in Chapter 4, the theoretical framework of a thesis guides the analysis and therefore largely determines what can be found. The purpose of a theory, however, is not to explain the reality of what happened, but to simplify and contextualise our understanding of what *may* have happened (Halperin and Heath 2020). Other theoretical approaches may have given different descriptions and answers to what can explain the establishment of the Seed Vault.

An evaluation of the validity and strength of the inferences drawn in this thesis follows. As previously discussed in Chapter 4, the external validity of findings is limited due to the single-case research design applied in this thesis. In addition to this, the lack of research on the policy dimension of the Seed Vault makes it difficult to cross-reference with the general academic agreement on the topic. The findings on the policy processes in this thesis, however, does resemble and reflect those argued by Qvenild (2006; 2008). Moreover, the reliability of the findings is also limited. Given the qualitative nature of the research design and methodological approach, it is not certain whether another researcher would have

acquired the exact same data from the anonymous informants. Moreover, the anonymity of the informants makes it impossible for another researcher to cross-reference the data found in the interviews. This thesis also faces the paradox of interviewing and collecting data from the individuals who took part in the process. Naturally, the agenda of these actors must be critically considered. Another element to the paradox, however, is that few people outside of the process has any insight into the policy processes apart from those who took part in them. This is particularly true in the process towards the Seed Vault, which occurred in a somewhat closed community. While treaties and negotiations such as the Plant Treaty publicly disclose minutes from meetings, the informal, inner workings of the Norwegian ministry remain undisclosed. It is not considered to limit the results in any way, the potential bias that arises from interviewing actors that want to polish their narrative must be taken into account. The importance of which they may have attributed to their own roles, friends, or colleagues, or people they otherwise have known, whether it is negative or positive feedback, may have skewed the results. However, this potential bias might have provided more data and insight on entrepreneurship.

However, the limited external validity and reliability is considered as a trade-off for high internal validity. The triangulating approach of semi-structured interviews, field work, and document analysis proved to provide thick description, which is necessary for an explanatory case study. This includes the strength of the descriptive inferences, which forms the basis for operationalising the indicators used to collect, measure, and analyse the data. In other words, the quality of the internal validity for what is the aim and strength of the thesis: to capture the perceptions of what occurred in the policy process, who holds knowledge unavailable to the public, of the informants. Moreover, the triangulation of findings was employed to control for bias and cross-check information by the informants.

The theoretical and methodological framework that has been utilized this thesis is a good fit given the results of the analysis and discussion The theoretical framework for this thesis is considered to have significant explanatory power to answer the research question through its ability to capture both domestic and international processes, whether they be individuals or state-centred on an international, national, regional, and domestic level. The combined theoretical framework therefore manages to capture different factors, nuances, and "mechanism- and processed-based accounts" of the policy process on a general scope, which was highlighted as one of the contributions the thesis could make to the literature (Tilly 2001, quoted in Busch and Jörgens 2005, pp. 862). The informants were highly involved and

relevant to the policy processes, and sat on knowledge that is not otherwise known to the public. It is therefore evaluated to be a contribution to how policies were framed, promoted, and presented, in addition to the techniques employed to enhance the proposal on both domestic and international levels.

7.3 Limitations and Further Research

The limitations of the thesis can be used a starting point to venture into suggestions for future research. First, one of the empirical limitations of this thesis was the decision to restrict the data collection from the signing of the Plant Treaty in 2001 to the official opening of the Seed Vault in 2008. During the interviews, however, it became apparent that the Plant Treaty negotiations was an important predecessor to the Seed Vault. In fact, several of the informants spoke of the Plant Treaty negotiations in equal measure to the process towards the establishment of the Seed Vault. Therefore, a logical next step is to extend the scope of analysis to include the Plant Treaty negotiations to investigate its relationship to the Seed Vault. This could, in turn, tell us more about the effect of international treaties in the multilateral system on international cooperation on climate change adaption measures. Specifically, a future suggestion for research is to look at how the Plant Treaty affected the establishment of the Seed Vault. Second, the theoretical framework of this thesis was largely analysed from a Norwegian point of view. As emphasised above, one of the main findings of this thesis was that trust-building was a necessary condition for explaining the establishment of the Seed Vault. Therefore, it would be interesting to further investigate the range of conditions that evoked trust and receptivity from the perspective of the international community. It was Norway's "biggest fear" that no one would use the Seed Vault (Informant 1). While most countries in the world have deposited seed collection at the Seed Vault, there are notably countries that have not. In other words, a future venture for research would be to further investigate the conditions for what made countries *use* the Seed Vault, as well as the conditions for countries that have decided *not to use* the Seed Vault. Moreover, the importance of trust can point to a third suggestion for further research on trust-building techniques employed by entrepreneurs. As highlighted in the introduction of this thesis, the policy dimension on climate entrepreneurship is called for in the literature. Here, a comparative approach is the next logical step. At last, the extensive political and legal

challenges related to the ownership and control of PGRFA has been prevalent throughout the thesis. It would be interesting to compare the deposit agreement, which was carefully constructed and by several informants argued to be the success of the Seed Vault. Which compromises were made? What can be learned from how the Seed Vault managed to satisfy deposits, despite political and legal constraints?

8 Bibliography

Acharya, K. (2008) *NGOs Wary of Doomsday Seed Vault*. [online] Available at: https://www.organicconsumers.org/news/ngos-wary-doomsday-seed-vault [Accessed: 19 November 2021].

Adcock, R. and Collier, D. (2001). Measurement Validity: A Shared Standard for Qualitative and Quantitative Research. *American Political Science Review*, 95(3), pp. 529-546.

Andersen R (2008). *Governing Agrobiodiversity – Plant Genetics and Developing Countries.* Aldershot: Ashgate.

Andersen, R. (2012). *Plant genetic diversity in agriculture and farmers' rights in Norway*. FNI Report no. 17. The Fridtjof Nansen Institute: Lysaker. Available at: https://www.fni.no/getfile.php/132143-1469870399/Filer/Publikasjoner/FNI-R1712.pdf [Accessed: 6 May 2021].

Bioversity (n.d.a). *Ex-situ conservation definition.* [online] Available at: https://biodiversitya-z.org/content/ex-situ-conservation [Accessed: 28 October 2021].

Bioversity (n.d.b). *In-situ conservation definition.* [online] Available at: https://biodiversitya-z.org/content/in-situ-conservation [Accessed: 28 October 2021].

Boasson, E. L. and Huitema, D. (2017). Climate governance entrepreneurship: Emerging findings and a new research agenda. *Politics and Space,* 35(8), pp. 1343-1361.

Boasson, E.L. (2018) 'Entrepreneurship: A Key Driver of Polycentric Governance?' in Jordan, A. et al. (eds.). *Governing Climate Change: Polycentricity in Action?* Cambridge: Cambridge University Press, pp. 117–134. doi:10.1017/9781108284646.008.

Boasson, E.L. and Wettestad, J. (2013). Policy invention and entrepreneurship: Bankrolling the burying of carbon in the EU. *Global Environmental Change,* 29(1), pp. 401-412.

Breen, S.D. (2015). Saving Seeds: The Svalbard Global Seed Vault, Native American Seed-Savers, and Problems of Property. *Journal of Agriculture, Food Systems, and Community Development*, 5(2), pp. 39–52. doi:10.5304/jafscd.2015.052.016.

Bryman, A. (2001) *Social Research Methods*. Oxford and New York: Oxford University

Busch, P. and Jörgens, H. (2005). The international sources of policy convergence: explaining the spread of environmental policy innovations. *Journal of European Public Policy*, 12(5), pp. 860–884. doi:10.1080/13501760500161514.

Cairney, P. (2009). The role of ideas in policy transfer: the case of UK smoking bans since devolution. *Journal of European Public Policy*, 16(3), pp. 471–488. doi:10.1080/13501760802684718.

Claeys, P. and Lambek, N.C.S. (2014) 'Introduction: In Search of Better Options: Food Sovereignty, the Right to Food and Legal Tools for Transforming Food Systems', in Lambek, N.C.S. et al. (eds). *Rethinking Food Systems: Structural Challenges, New Strategies and the Law*. Dordrecht: Springer Netherlands, pp. 1–25. doi:10.1007/978-94-007-7778-1_1.

Commission on Genetic Resources for Food and Agriculture (2010) *The second report on the state of the world's plant genetic resources for food and agriculture*. [online] Available at: https://www.fao.org/3/i1500e/i1500e00.htm [Accessed 30 November 2021].

Cooper, H. D. (2001) *Broadening the Genetic Bases of Crop Production*. CABI: New York.

Crop Trust (n.d). *Svalbard Global Seed Vault*. [online] Available at: https://www.croptrust.org/our-work/svalbard-global-seed-vault/ [Accessed: 30 October 2021].

Crop Trust (n.d). *The BOLD Project*. [online] Available at: <https://www.croptrust.org/project/bold/> [Accessed 30 November 2021].

Dalle, S. P. and Westengen, O.T. (2020). Seed security in theory and practice: a comparative study of seed security frameworks and their use. Noragric report 86 2020. Available at: https://nmbu.brage.unit.no/nmbu-xmlui/bitstream/handle/11250/2732942/Noragric%20report%2086%202020.pdf?sequence=1&isAllowed=y (Accessed: 27 October 2021).

De Schutter, O.D. (2014) 'The Reform of the Committee on World Food Security: The Quest for Coherence in Global Governance', in Lambek, N.C.S. et al. (eds) *Rethinking Food Systems: Structural Challenges, New Strategies and the Law*. Dordrecht: Springer Netherlands, pp. 219–238. doi:10.1007/978-94-007-7778-1_10.

Dobson, J. (n.d). A Doomsday Vault In India Holds Frozen Storage For The Survival Of Future Generations. *Forbes*. [online] Available at: https://www.forbes.com/sites/jimdobson/2019/02/23/a-doomsday-vault-in-india-holds-frozen-storage-for-the-survival-of-future-generations/ [Accessed: 18 November 2021]. doi:10.1103/PhysRevPhysEducRes.16.010142.

Dolowitz, D.P. and Marsh, D. (2000). Learning from Abroad: The Role of Policy Transfer in Contemporary Policy-Making. *Governance*, 13(1), pp. 5–23. doi:10.1111/0952-1895.00121.

Esquinas-Alcázar, J. (2005). Protecting crop genetic diversity for food security: political, ethical and technical challenges. *Nature Reviews Genetics*, 6(12), pp. 946–953. doi:10.1038/nrg1729.

FAO (2006). *Policy Brief: Food Security*. [online] Available at: https://www.fao.org/fileadmin/templates/faoitaly/documents/pdf/pdf_Food_Security_Cocept_Note.pdf [Accessed: 17 November 2021].

FAO (2010). *The Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture*. [online] Available at: https://www.fao.org/3/i1500e/i1500e00.htm [Accessed: 28 October 2021].

FAO (2015). *Coping with climate change – the roles of genetic resources for food and agriculture*. Rome, FAO

FAO (2016a). *The State of Food and Agriculture – Climate Change, Agriculture and Food Security.* Rome, FAO.

FAO (2016b). *Seed Security Assessment: A Practitioner's Guide.* Rome: FAO.

FAO (2017a) *Leveraging food systems for inclusive rural transformation*. Rome: Food and Agriculture Organization of the United Nations

FAO (2017b) *Sowing the seeds of peace for food security: disentangling the nexus between conflict, food security and peace*. Rome: Food and Agriculture Organization of the United Nations

FAO (2019). *Norway Adds 1 million kroners to International Treaty Fund |International Treaty on Plant Genetic Resources for Food and Agriculture.* Available at: http://www.fao.org/plant-treaty/news/news-detail/en/c/1201486/ (Accessed: 12 May 2021).

Finnemore, M. (1996). Norms, Culture, and World Politics: Insights from Sociology's Institutionalism. *International Organization*, 50(2), pp. 325–347.

Finnemore, M. and Sikkink, K. (1998). International Norm Dynamics and Political Change. *International Organization*, 52(4), pp. 887–917.

Fowler C., George W., and Shands H, Skovmand B. (2004). *Study to Assess the Feasibility of Establishing a Svalbard Arctic Seed Depository for the International Community. Prepared for the Ministry of Foreign Affairs (Norway).* [online] Available at:

https://www.regjeringen.no/globalassets/upload/lmd/kampanjesvalbard/vedlegg/frohvelv_study_to_assess.pdf [Accessed: 5 October 2021].

Fowler, C. (2008). The Svalbard Seed Vault and Crop Security. *BioScience*, 58(3), pp. 190–191. doi:10.1641/B580302.

Fowler, C. (2016) *Seeds on Ice: Svalbard and the Global Seed Vault*. Prospecta Press: New York

Fowler, C. and Hodgkin, T. (2004). Plant Genetic Resources for Food and Agriculture: Assessing Global Availability. *Annual Review of Environment and Resources,* 29(1), pp. 143-179.

Fowler, C. and Mooney, P.R. (1990) *Shattering: Food, Politics, and the Loss of Genetic Diversity*. University of Arizona Press.

GRAIN (2008). *Faults in the vault: not everyone is celebrating Svalbard*. [online] Available at: https://grain.org/fr/article/entries/181-faults-in-the-vault-not-everyone-is-celebrating-svalbard [Accessed: 5 October 2021].

Hae-Yeon, M. (2021). Inside Asia's first underground seed vault. *Korean Herald* [online] Available at: http://www.koreaherald.com/view.php?ud=20130929000313 [Accessed: 26 October 2021].

Halperin, S. and Heath, O. (2020). *Political Research: Methods and Practical Skills*. Oxford: Oxford University Press.

Hawtin, G. and Fowler, C. (2012). 'Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture' in Frison et. al. (eds). *Plant Genetic Resources and Food Security.* Routledge: London.

Hermansen, P. (2013). *Seeds for the World: Svalbard Global Seed Vault.* Kom forlag: Oslo

Holzinger, K., Knill, C. and Sommerer, T. (2011). Is there convergence of national environmental policies? An analysis of policy outputs in 24 OECD countries. *Environmental Politics*, 20(1), pp. 20–41. doi:10.1080/09644016.2011.538163.

Hwang, S. and Song, H. (2018). Policy transfer and role of policy entrepreneurs in international aid: exploring international development cases of Korea and Vietnam. *Policy Studies*, 40(1), pp. 1-20.

IPCC (2019). 'Food Security — Special Report on Climate Change and Land' in Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in

terrestrial ecosystems. [online] Available at: https://www.ipcc.ch/srccl/chapter/chapter-5/ [Accessed: 16 November 2021].

Lakhani, N. (2020) Cherokee Nation to preserve culturally important seeds in Arctic vault. *The Guardian.* [online] Available at: https://www.theguardian.com/world/2020/feb/07/cherokee-nation-seeds-arctic-vault-svalbard [Accessed: 26 October 2021].

Leichenko, R. and Silva, J.A. (2014). Climate change and poverty: vulnerability, impacts, and alleviation strategies. *WIREs Climate Change*, 5(4), pp. 539–556. doi:10.1002/wcc.287.

Levy, J. S. (2008) Case Studies: Types, Designs, and Logic of Inference. *Conflict Management and Peace Science*, 25(1), pp. 1-18.

Lieberman, R.C. (2002) 'Ideas, Institutions, and Political Order: Explaining Political Change', *The American Political Science Review*, 96(4), pp. 697–712.

Liefferink, D., Jörgens, H. and Lenschow, A. (2013). 'Introduction: theoretical framework and research design' in Jörgens, H., Lenschow, A., and Liefferink, D. (eds). *Understanding Environmental Policy Convergence*. Cambridge: Cambridge University Press, pp. 1–38. doi:10.1017/CBO9781139795357.002.

MAF (2007) Agreement between the Royal Norwegian Ministry of Agriculture and Food, The Global Crop Diversity Trust and the Nordic Gene bank providing for the funding, management and operation of the Svalbard Global Seed Vault. [online] Available at: http://www.regjeringen.no/en/dep/lmd/campain/svalbard-global-seed-vault.html?id=462220 [Accessed 15 February 2021].

MAF (2015) *More about the physical plant*. [online] Available at: https://www.regjeringen.no/en/topics/food-fisheries-and-agriculture/svalbard-global-seed-vault/mer-om-det-fysiske-anlegget/id2365142/ [Accessed: 29 October 2021].

MAF (2020) *Frøhvelvet er Norges bidrag til verdens biologiske mangfold*, *Regjeringen.no*. [online] Available at: https://www.regjeringen.no/no/aktuelt/frohvelvet-er-norges-bidrag-til-verdens-biologiske-mangfold/id2703705/ [Accessed: 12 May 2021].

Margulis, M.E. (2013). The Regime Complex for Food Security: Implications for the Global Hunger Challenge Special Focus: Regime Complexity. *Global Governance*, 19(1), pp. 53–68.

McGuire S., and Sperling, L. (2016). Seed systems smallholder farmers use. *Food Security*, 8(1), 179-195.

Meijerink, S. and Huitema, D. (2010). Policy Entrepreneurs and Change Strategies: Lessons from Sixteen Case Studies of Water Transitions around the Globe. *Ecology and Society*, 15(2). Available at: http://www.jstor.org/stable/26268135 [Accessed: 24 June 2021].

MFA (2007). *Norsk politikk for forebygging av humanitære katastrofer.* St. Meld. Nr. 9 (2007–2008). [online] Oslo: Ministry of Foreign Affairs. Available at: https://www.regjeringen.no/no/dokumenter/Stmeld-nr-9-2007-2008-/id493401/?ch=2 [Accessed: 24 February 2021].

MFA (2009) *Report No. 13 to the Storting (2008-2009)*. Oslo: Ministry of Foreign Affairs. [online] Available at: https://www.regjeringen.no/en/dokumenter/report-no.-13-to-the-storting-2008-2009/id545698/ [Accessed: 29 October 2021].

MFA (2019) *Food, People and the Environment*. [online] Available at: https://www.regjeringen.no/en/dokumenter/sustainablefood_actionplan/id2661208/ [Accessed: 24 February 2021].

MFA (2019c) *Meld. St. 11 (2019–2020) Report to the Storting (white paper).* [online] Available at: https://www.regjeringen.no/en/dokumenter/meldst11_summary/id2699502/ [Accessed: 29 October 2021].

Mintrom, M. (1997). Policy Entrepreneurs and the Diffusion of Innovation. *American Journal of Political Science*, 41(3), pp. 738–770. doi:10.2307/2111674.

Mintrom, M. and Luetjens, J. (2017). Policy entrepreneurs and problem framing: The case of climate change. *Environment and Planning C: Politics and Space*, 35(8), pp. 1362–1377. doi:10.1177/2399654417708440.

Mooney, P. (2011). 'International Non-governmental Organizations: The Hundred Year (or so) Seed War – Seeds, Sovereignty and Civil Society – A Historical Perspective on the Evolution of The Law of the Seed' in Frison, C., Lopez, F., and Esquinaz-Alcazar (ed.), *Plant Genetic Resources and Food Security,* London: Routledge, pp. 135-148.

Moravcsik, A. (2014). Trust, but Verify: The Transparency Revolution and Qualitative International Relations. *Security Studies*, 23(4), pp. 663–688. doi:10.1080/09636412.2014.970846.

Norway in the UN (2021). *UNGA: Food Systems Summit*. [online] Available at: https://www.norway.no/en/missions/UN/statements/other-statements/2021/unga-food-systems-summit/ [Accessed 30 November 2021].

OECD (2008). *Norway: Development Assistance Committee Peer Review.* [online] Available at: https://www.oecd.org/dac/peer-reviews/41847146.pdf [Accessed: 28 October 2021].

OECD (2019). Official Development Assistance (ODA). [online] Available at: https://www..org/development/stats/What-is-ODA.pdf [Accessed: 4 October 2021].

Østhagen, A. (2020). '100 Years of Arctic Geopolitics: The Svalbard Headache' in Ellehuus et. al. (eds). *Geopolitics and Neglected Arctic Spaces*, pp. 3-5.

Pal, S. (2018). *Freezing Future: Chang La, India's Doomsday Vault In The Himalayas*. [online] Available at: https://www.thebetterindia.com/132661/chang-la-ladakh-doomsday-vault-india/ (Accessed: 18 November 2021).

Parliament (n.d.). Åslaug Haga. [online] Available at: https://stortinget.no/no/Representanter-og-komiteer/Representantene/Representant/?perid=AAMH (Accessed 4 October 2021).

Peräkylä, A. (2011). 'Validity in Research on Naturally Occurring Social Interaction' in Silverman, D. (ed.). *Qualitative Research*. SAGE Publications: Los Angeles.

Petridou, E. and Mintrom, M. (2021). A Research Agenda for the Study of Policy Entrepreneurs. *Policy Studies Journal*, 49(4), pp. 943–967. doi:10.1111/psj.12405.

Qvenild, M. (2006). *Securing seeds in permafrost: an idea whose time has come.* [online] Master's thesis, Norwegian University of Life Sciences. Available at: http://www.umb.no/statisk/noragric/publications/master/2006_marte_qvenild.pdf

Qvenild, M. (2008) Svalbard Global Seed Vault: a "Noah's Ark" for the world's seeds. *Development in Practice*, 18(1), pp. 110–116. doi:10.1080/09614520701778934.

Rabitz, F. (2017). *The Global Governance of Genetic Resources: Institutional Change and Structural Constraints.* Routledge: London.

Reddy, D.E. (2017). Emerging Trends in Seedbanking for Food and Agriculture: An International Perspective. *Journal of Agricultural & Food Information*, 18(2), pp. 145–160. doi:10.1080/10496505.2017.1289092.

SDG Advocates (n.d) *SDG Advocates*. [online] Available at: https://www.unsdgadvocates.org/about (Accessed: 13 May 2021).

SDGs (2021). *Goal 2.* [online] Available at: https://sdgs.un.org/goals/goal2 (Accessed: 27 October 2021).

Skedsmo, P.W. and Andersen, R. (2021). Governing crop genetics in post-Soviet countries: lessons from the biodiversity hotspot Armenia. *Euphytica*, 217(5), doi:10.1007/s10681-021-02824-w.

Skjæraasen, M. (2021) Svalbard globale frøhvelv: Slik satte Norge sitt omdømme på spill – og verdensarven i fare. *NRK*. [online] Available at:

https://www.nrk.no/klima/xl/svalbard-globale-frohvelv_-slik-satte-norge-sitt-omdomme-pa-spill-_-og-verdensarven-i-fare-1.15375268 (Accessed: 16 April 2021).

SOFI (2021) *The State of Food Security and Nutrition in the World 2021: Transforming food systems for food security, improved nutrition and affordable healthy diets for all*. Rome, Italy: FAO. doi:10.4060/cb4474en.

Sperling, L. and McGuire, M. (2012). Fatal Gaps in Seed Security Strategy. *Food Security*, 2012(4), pp. 569-579.

Statsbygg (2008). Svalbard Global Seed Vault. Report 671. [online] Available at: https://www.avijl.org/docs/Svalbard_Global_Seed_Vault.pdf (Accessed: 29 October 2021).

Svalbard Global Seed Vault (n.d.). *Our Purpose.* [online] Available at: https://www.seedvault.no/our-contribution/our-purpose/ (Accessed: 29 October 2021).

Svalbard Global Seed Vault (n.d). *The Facility*. [online] Available at: https://www.seedvault.no/about/the-facility/ (Accessed: 29 October 2021).

Tania, S. and Mapulanga-Hulston, J.K. (2016). Examining the Synergy between the Right to Food and Agricultural Trade Policies. *African Journal of International and Comparative Law*, 24(2), pp. 293–326. doi:10.3366/ajicl.2016.0154.

The Nobel Prize (2020). *The Nobel Peace Prize for 2020 Announcement*. [online] Available at: https://www.nobelprize.org/prizes/peace/2020/press-release/ (Accessed: 20 October 2021).

Tvedt, T. (2007). International Development Aid and Its Impact on a Donor Country: A Case Study of Norway. *The European Journal of Development Research*, 19(4), pp. 614–635. doi:10.1080/09578810701667672.

United Nations (n.d). *About the Summit*. [online] Available at: https://www.un.org/en/food-systems-summit/about (Accessed: 28 June 2021).

United Nations (n.d). Goal 2: Zero Hunger. [online] Available at: https://www.un.org/sustainabledevelopment/hunger/ (Accessed: 12 May 2021).

Von Verschuer, F. (2021). Making Post/Anthropocentric Futures in Agrobiodiversity Conservation. *Nature and culture,* 16(1), pp. 47-64

Westengen, O.T. et al. (2020). Safeguarding a global seed heritage from Syria to Svalbard. *Nature Plants*, 6(11), pp. 1311–1317. doi:10.1038/s41477-020-00802-z.

World Food Programme (2019). WFP's Contribution to Improving the Prospects for Peace – 2019. [online] Available at: https://www.wfp.org/publications/wfps-contribution-improving-prospects-peace-2019 [Accessed 21 November 2021].

World Food Programme (2020). *Hunger, Conflict, and Improving the Prospects for Peace fact sheet - 2020*. [online] Available at: <https://www.wfp.org/publications/hunger-conflict-and-improving-prospects-peace-fact-sheet-2020> [Accessed 21 November 2021].

Yin, R. K. (2014). *Case study research: design and methods.* SAGE: Los Angeles

Yin, R. K. (2018). *Case study research and applications: design and methods.* SAGE: Los Angeles

Zhang, R. (2004). Food security: food trade regime and food aid regime. *Journal of International Economic Law*, 7(3), pp. 565–584. doi:10.1093/jiel/7.3.565.

Zimmerer, K.S. and de Haan, S. (2017). Agrobiodiversity and a sustainable food future. *Nature Plants*, 3(4). doi:10.1038/nplants.2017.47.

9 Appendix

9.1 Interview Guide

1. How would you describe the development of the policy – from its initial stages, its campaign to be implemented, and all the way to the decision of implementation?

2. To what extent did policy entrepreneurs – *individuals* who pushed the policy, whether they be Norwegian or international actors – play a role in developing and pushing the policy on the agenda?

3. In your opinion, what was Norway's *motivation* for advocating for and implementing the proposal?

4. In order for a policy to be implemented onto an official agenda, it needs the **opportunity** to do so. This is what I mean when I say a 'window of opportunity' in the following question: In your opinion, how would you describe the window of opportunity for the realization of the Seed Vault?

5. How was the proposal for a Seed Vault *framed* and *presented* to policymakers?

6. Can you describe the international environment at the time? To what extent were other actors – whether they be countries, organizations and/or individuals – outspoken on similar policies, or the need for such a policy?

7. Does the Seed Vault belong to a larger network of something? If so, please describe the relationship between the Seed Vault and similar/other initiatives.

8. Overall, which **factors** do you think were important for the Seed Vault to be realised?