Collective Climate Action, Policy Learning and COVID-19: A Comparative Analysis of the Global Governance and Responses

By

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Declaration

I, …….Leigh-Ann Palmer…… know the meaning of plagiarism and declare that all the work in this dissertation/thesis is based on my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other university.

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Abstract

This thesis investigates the governance of two global challenges in terms of policy learning and collective action. The COVID-19 pandemic and anthropogenic climate change pose critical challenges to human well-being as much as they depend on collective responses to contain them. The comparative analysis of governance structures in climate change and the COVID-19 pandemic shows similarities and differences. A significant difference is the timing and pace of the responses: while international organisations and governments took drastic measures in response to the spread of the coronavirus, global and national responses for climate change have been comparatively slow. However, similarities emerge in the nature of the responses to these two global challenges: individual behavioural change is necessary to manage the challenges, which rarely occur without political guidance and public policy.

The thesis combines the concepts of collective action and policy learning in a conceptual framework for the comparative analysis of global governance between the COVID-19 pandemic and climate change. The success of the rapid and large-scale coordinated response to the COVID-19 disease outbreak has indicated that these conceptual notions are required for global governance and that they can be harnessed on a large-scale to address a GPG or commons problem. Therefore, in order to more effectively address the GPG problem of climate change, these conceptual notions of global governance need to be harnessed not only between international organisations and governments but between governments and non-state actors.

The shared policy challenges of both crises, therefore, highlight the importance of good policy design and the coordination of actors. The lessons identified can be broadly applied to the global commons problem of climate change and can help policy makers identify where enhanced policy learning and collective action is required. In particular this should be applied to coordinate policy learning and collective action from municipal to global levels and enhance the participation of the global public for long-term climate policy.

Glossary of Terms

°C	Degrees Celsius
ADP	Ad-hoc working group on the Durban Platform for Enhanced Action
AIDS	Acquired immunodeficiency syndrome
AR1	First assessment report
AR3	Third assessment report
AR4	Fourth assessment report
AR5	Fifth assessment report
C.E.	Common Era
CCRT	Containment and Relief Trust
CO_2	Carbon dioxide
COP	Conference of the Parties
COVID-19	Coronavirus disease 2019
CPR	Common pool resource
FCCC	Framework Convention on Climate Change
FTA	Forum on Tax Administration
GDP	Gross Domestic Product
Gen Z	Newest generation; born between 1997 and 2012
GHG	Greenhouse gas
GPG	Global public good
HIV	Human Immunodeficiency virus
IBRD	International Bank for Reconstruction and Development (
IFC	International Finance Corporation
IMF	International monetary fund
INC	Intergovernmental Negotiating Committee
INDC	Intended Nationally Determined Contributions
IPCC	Intergovernmental panel on climate change
KPMG	Klynveld Peat Marwick Goerdeler
Millennial	Gen Y, preceding Gen Z; born between 1981 and 1996
NAZCA	Non-State Actor Zone for Climate Action
NDC	Nationally determined contribution
NGO	Non-governmental organisation
OECD	Organisation for Economic Co-operation and Development

OPEC	Organisation of the Petroleum Exporting Countries
PHEIC	Public Health Emergencies of International Concern
PPE	Personal protective equipment
ppm	parts per million
SDG	Sustainable development goal
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention on Climate Change
USA	United States of America
WHO	World Health Organisation
WMO	World Meteorological Organisation

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1. Introduction

1.1 Background

Anthropogenic climate change, if left unchecked poses an unprecedented threat to human welfare and the natural systems of the planet that sustain human livelihoods (Intergovernmental Panel on Climate change [IPCC] Summary for Policymakers, Masson-Delmotte et al., 2018). The increasing anthropogenic influence on the natural environment has led to significant challenges for society, including human health, of which, the global coronavirus disease (COVID-19) is the most recent manifestation. The COVID-19 pandemic has posed unprecedented challenges for public health, the global economy and food systems. Measures to contain the pandemic have resulted in social and economic disruption and increasing poverty (World Bank, 2021). These uncharted challenges have led to unprecedented global action that triggered radical preventative measures from governments and world leaders. From country wide lockdowns, shutting down schools and places of work, enforcing social distancing practices and the mandatory or encouraged use of personal protective equipment (PPE) such as masks in public (Manzanedo & Manning, 2020). These radical, and often unconstitutional measures were implemented swiftly in response to the COVID-19 pandemic. On a global scale the pandemic has shared marked similarities to the climate crisis which society have been facing for decades crisis.

Climate change and the pandemic pose global problems and require drastic intervention and rapid remediating intercession globally and nationally. The research sets out to compare the governance of these two major global challenges: climate change and the COVID-19 pandemic. The COVID-19 pandemic and anthropogenic climate change pose equally critical challenges to human well-being as much as they depend on collective responses to contain them. Therefore, this thesis investigates the governance of these two global crises in terms of policy learning and collective action.

1.2 Rationale

The risk of severe climate change impacts implies that urgent action is required to significantly reduce global greenhouse gas (GHG) emissions. Since the early 1990s, many industrialised countries have applied climate change related policies. The adoption of the Paris Agreement

(2015) in December 2015 marked a significant milestone in coordinating a collective agreement among global parties and devising a new international agreement to tackle the climate crisis. However, to date, the global community have not implemented significant enough policies to considerably reduce GHG emissions. Scientists have warned that irreversible changes may ensue when temperatures reach a certain threshold (Trisos, Merow, Pigot, 2020). Therefore, the Paris Agreement (2015) target of limiting global warming to well below 2ºC compared to pre-industrial levels is so important for humanity. The most recent unprecedented global challenge impacting humans is the current COVID-19 pandemic. The rapid evolution of the COVID-19 pandemic triggered a global emergency and has impacted global economies and all aspects of everyday life. In addition, the pandemic prompted extreme preventative measures and harnessed an urgent need for collective action and policy in shaping and changing human behaviour.

A comparative analysis of governance structures in climate change and the COVID-19 pandemic shows both similarities and differences. A significant difference is the timing and pace of the responses: while international organisations and governments took drastic measures in response to the spread of COVID-19, global and national responses on climate change has been comparatively slower. On the other hand, similarities have emerged in the nature of the responses. In both cases, individual human behavioural change is proven necessary to manage the challenges, which rarely occur without political guidance, public policy, and radical intervention. Therefore, by comparing the global responses of the COVID-19 pandemic and climate change in terms of policy learning and collective action, the political guidance, public policy, and interventions can be assessed to provide lessons for global climate change governance.

1.3 Objectives

The overarching objective of the research is to compare the global and national responses to the COVID-19 pandemic with the global and national responses to climate change. The main research questions are: How is policy learning and collective action coordinated in the global governance of the COVID-19 pandemic and climate change? What lessons can be learned from the global governance of the COVID-19 pandemic for collective action on climate change, and vice versa? Therefore, in order to determine how collective action and policy shape the governance of global challenges like the COVID-19 pandemic and climate change, a

conceptual framework on policy learning, collective learning and collective action was developed to investigate what can be learned from the governance of the COVID-19 pandemic for collective climate action.

The research explores the following specific objectives:

1. Investigate the global governance architecture for policy learning and collective action in responding to the COVID-19 pandemic.
2. Investigate the international policy responses for collective action in addressing climate change and COVID-19.
3. Compare the international and national responses from an institutional perspective for each crisis (climate change and the COVID-19 pandemic) and determine how these responses worked, who they worked for and how radical change was coordinated through policy learning and collective learning (i.e., what scales dominate the framing of responses, governance, and coordination).
4. Identify lessons from the COVID-19 pandemic to address the climate crisis by determining how governance of the crises through policy learning and the coordination of collective action can inform public policy to address climate change.

1.4 Structure

The research is structured into two main topics: the COVID-19 pandemic and climate change. Following the introduction, Section 2 provides a synthesis of the literature of the governance of global challenges and outlines the governance of climate change and the COVID-19 pandemic and compares both crises. The research highlights the role of various actors such as international organisations, governments, and individuals. The theoretical ideas of policy learning, collective learning and collective action for global governance are explored. Thereafter, Section 3 provides a synthesis of the conceptual framework of analysis for policy learning, collective learning and collective action and outlines the processes and potential outcomes necessary to globally govern a challenge like the COVID-19 pandemic and climate change. Section 4 presents the methodology used for the case selection in analysing the national and institutional responses to the pandemic, including the sources of the information used for the analysis. Section 5 presents the analysis of the responses of international organisations to slow the spread of COVID-19 and how the international organisations shaped the governance of the pandemic. Thereafter, the section presents the analysis of global climate change

governance between 1985 and 2020 to assess the coordination of climate change policy, from a global and international organisation perspective. Section 6 discusses and synthesizes the analysis of the two global governance challenges. The thesis concludes with a brief breakdown of the key findings, highlighting the significance of the study as well as its relevance to future research and the global coordinated action required to tackle the climate change crisis.

1. Literature Review: Governance of Global Challenges

The COVID-19 pandemic and anthropogenic climate change pose critical challenges to human well-being as much as they depend on collective responses to contain them. Thus, these challenges require solutions that cannot be addressed by a single international organisation, government or individual, and requires a group of actors: global governance.

Global governance requires the bringing together of a diverse number of actors, including international organisations, governments, non-state actors and individuals in order to coordinate global collective action. As such, global governance requires the provision of global public good (GPGs) (Thoyer, 2002). These public goods include unified trade and industry, functioning markets, peace, and prosperity, security, and justice. therefore, global governance is a purposeful order that emerges from organisations, processes, norms, informal mechanisms, and formal agreements that aim to regulate action towards common good (Benedict, 2015). Global governance embodies activities that surpass national boundaries at international, and regional levels and is based on rules and rights which are usually enforced through a combination of mechanisms including economic and moral incentives (Benedict, 2015).

There are numerous ways to initiate global governance including the harmonisation of laws among countries, international regimes, networks of global policy and organisations that amalgamate the functions of country organisations as well as private sector organisations (Benedict, 2015). The United Nations (UN) is considered the leading global governance organisation today. Although the UN does not directly bring the people of the planet together, it brings together sovereign nations and currently has 193 members (UN, 2019) The UN's predominant mandate is to preserve global security as well as settle international legal issues. Since the UN was founded in 1945 it has added a range of themes to its core mandate including the mandate of the United Nations Framework Convention on Climate Change (UNFCCC). This mandate was formed to respond to the changing climate, society's greatest challenge.

1.1 Challenges of Global Governance

The climate crisis and COVID-19 pandemic are examples of global challenges that require international governance, however, incentivise people to 'free ride'. The free rider problem is when someone or a group receives a benefit without contributing towards the cost of the production of the benefit (Hardin & Cullity, 2020). As such, economically this is considered as a failure of conventional free market systems (Hardin & Cullity, 2020). The free-rider problem occurs when a resource is unlimited, people's consumption cannot limit anyone else's consumption, and someone has to produce the benefit and maintain it (Hardin & Cullity, 2020). In particular, free-riders are considered as direct threats to society in addressing global challenges like the COVID-19 pandemic and climate change.

Olson (1995) and Oliver (1993) explain that benefits of a collective good can't be withheld from non-participating individuals, therefore the rational individuals will subsequently free ride on the contributions of the individuals participating collectively. The free-rider problem is usually exacerbated by the size of the group, where the benefits of the contribution are divided across more people (Oliver, 1993). Therefore, the climate change free rider problem is argued to be exacerbated by the idea that one person's contribution is considered so small that it doesn't make a noticeable difference to the overall outcome, resulting in collective inaction. Oliver (1993) indicates that this is usually exacerbated by the size of the group, where the benefits of the contribution are divided across more actors (Oliver, 1993). This leads to tensions between individual and collective rationality in governing these global challenges.

The free rider problem is common with public goods and is of particular concern in global governance challenges. Bodansky (2012) argues that the basic characteristics of a public good is that it is non-rival and non-excludable This means that the user of the good can use it without diminishing its availability to others and that people cannot be excluded from using the good (Bodansky, 2012). Hence the good is available to everyone, regardless of their contribution in producing it or not (Bodansky, 2012). These two characteristics of public goods create tensions. Public goods are non-excludable; therefore, they tend to be under provided as people are inclined to free-ride on the efforts of others (Bodansky, 2012). This is of particular concern in global governance challenges such as climate change.

As a public good is non-rival, there are inefficient efforts to encourage their production as their supply is unaffected by its consumption, with no threat of reaching depletion of supply (Bodansky, 2012). However, this concept of a public good is ideal and theoretical. The

changing climate has since altered this concept. Goods that are thought to be non-rival such as fresh air, is in fact rivalrous, due to modern day pollution and GHG problems. Bodansky (2012) argues that climate change is considered a GPG problem, where the word "global" pertains not to the thing itself, but rather to its effects. Goods can also have a public or private effect. International negotiations can be considered a GPG (Bodansky, 2012). Goods can also have a private effect and climate change illustrates this too; as there are several characteristics of a single good, for example, a solar farm can provide local and private benefits in the form of electricity and also provides a global public benefit as it reduces carbon emissions that would otherwise be produced by a coal-fired power station. Hence, climate change is exemplary of a GPG.

The COVID-19 pandemic has also illustrated the governance challenges in providing GPGs. Therefore, it can be said that disease eradication is non-rivalrous and non-excludable. Accordingly, health services can then be considered a GPG. In order to combat the COVID-19 disease and eradicate the disease a vaccine is required. Although, disease eradication is considered a GPG, the medication required to eradicate it, may be more complex.

Healthcare systems required a range of resources such as test kits, medical equipment, PPE, and medication. But these resources and the COVID-19 vaccine are usually considered rivalrous and excludable public goods. There is constant debate around whether health care is a private or public good. Some consider healthcare as an individual responsibility while others see it as a public good (Fisk, 1996). Some will argue that without paying for health care you will not be treated and achieve good health. In addition, if you do not pay a pharmacist for medication, you will not have access to the medication and may not achieve good health. Others would argue that healthcare is a human right and should thus be provided by the state (Summary & Henry, 2013). The provision of healthcare by the state means that everyone has access to the public service. The public provision of health care therefore ensures that those within the free market that cannot afford health care insurance are still able to get treated and may achieve good health. However, these issues illustrate the trade-offs between efficiency and equity (Summary & Henry, 2013). Thus, public policy is required to determine which goods should be private goods and which should be public goods (Summary & Henry, 2013).

Political leadership has influenced the provision of medication and the vaccine to treat COVID-19 as GPGs to ensure that it is affordable and accessible to all countries; rich or poor. Therefore,

the management of the pandemic and the subsequent medication to eradicate the disease is being treated as a GPG and governed in this manner on a global scale. Nonetheless, the global governance of the COVID-19 pandemic suggests that the COVID-19 vaccine should be affordable and available to all countries; rich or poor, thus making it a GPG. The COVID-19 pandemic has illustrated that although many consider healthcare a private commodity, the global governance of the pandemic has strived for political leadership that aims to develop vaccines, diagnostics, and therapeutics quickly while allocating them fairly across the globe, as a GPG.

The World Health Organisation (WHO) essentially provided a range of GPGs throughout the pandemic, in the form of knowledge, guidelines, the testing and funding for vaccine development and the coordination of frameworks that coordinated the collective action to address the pandemic.

The climate change crisis and the COVID-19 pandemic can also be considered global commons. The term 'commons' refers to a resource that is accessible to all members of society (Heikkila & Carter, 2017). Resources referred to as commons includes water, air, and the habitable earth. Thus, they are not owned privately but are considered as a common (Heikkila & Carter, 2017). These global challenges do not fall within the jurisdiction of a single country or continent. Their management by one particularly country will be susceptible to policies adopted by another country. Therefore, global governance of these global commons is an alternative term used in political discourses to tackle challenges such as climate change and the COVID-19 pandemic is a 'commons.'

This refers to Ostrom's demonstration that the capacity of communities to self-organise and share common pool resources (CPRs), beyond the paths of the exclusively public or exclusively private management of solutions (Boonen et al., 2019). Ostrom et al. (1999) indicate that the CPR problem can be better understood if the concepts related to the resource systems and the property rights of concern are separated. CPRs can therefore be defined as natural or human resources that are costly to exclude from beneficiaries or if a single user reduces the resources availability of others through exploitation (Ostrom et al. 1999).

These situations described, generally lead to the actors following their own short-term interests and producing outcomes that do not yield long-term interests for other actors. Therefore, when

actors interact without the benefit of rules that limit the access and define the rights of the resource; 'free riding' occurs (Ostrom et al., 1999). As mentioned earlier, free riding can take two forms: overuse without concerns for the potential negative impacts on other actors, or a lack of contributed resources for maintaining or improving the CPR (Ostrom et al., 1999). Therefore, CPRs are considered to be viewed as depletable resources, which can lead to negative impacts to the resource (Ostrom et al., 1999).

The atmosphere can be considered a CPR as it functions as a sink for carbon dioxide (CO_2) and other GHGs for the entire globe. Likewise, oceans and forests can also be perceived as a CPR, as these resources serve as important sources of biodiversity, ecosystems and natural resources which benefit society. Climate change's complex nature makes it increasingly difficult to comprehend and determine the global CPRs. Moreover, how to determine the manner in which countries and populations need to work together to govern these resources (Ostrom et al, 1999).

Another climate change challenge is that population growth, economic development and science and technology have accelerated the rates of change within society. These rates of change have made it increasingly difficult to comprehend the current climate problems society faces. Moreover, to follow the practice of 'learning by doing' to ensure that we do not push past our environmental thresholds (Ostrom et al, 1999).

History shows that previously, humanity could migrate towards other resources if a CPR was mismanaged (Ostrom et al., 1999), however, the climate crisis reminds society that we have less leeway to make mistakes as this global challenge threaten our existence. The COVID-19 pandemic is however similar to the climate crisis in this regard. The COVID-19 pandemic changed the course of 'business-as-usual' and shifted economic development. Moreover, to determine the risks and threats posed by the novel disease, science and technology evolved at rapid rates. But international organisations, governments and individuals were able to make the necessary changes by following the 'learning by doing' approach.

Ostrom et al. (1999) identify two elements that can solve CPR problems and include restricting access and creating incentives for actors to invest in the resource rather than over exploitation of the resource. However, differences in characteristics of CPRs make it difficult to identify an effective way to manage the complex interactions and dynamics of the resource, particularly

global CPRs (Ostrom et al., 1999). Climate change and the COVID-19 pandemic could be considered humanity's greatest current CPR problems. A large number of actors involved in a CPR increases the difficulty in organising actors, agreeing on rules, and implementing the rules (Ostrom et al., 1999). Therefore, determining and implementing solutions becomes a challenge. Not only global responses but national and local responses are required to adequately address these global challenges. Cultural diversity across actors impacts the diversification in which actors organise themselves, therefore this impacts the likelihood of actors in finding shared interests and understandings (Ostrom et al, 1999).

Economic differences exacerbate the divide between developed and developing countries (Ostrom et al, 1999). The climate crisis and COVID-19 pandemic have highlighted the inequalities that exist in global challenges. Moreover, the climate crisis and COVID-19 pandemic has exacerbated the inequalities across countries, including the intensification of cultural diversity that is exacerbated in attempting to solve global CPR problems.

Global governance challenges like climate change and the COVID-19 pandemic likely require different governance solutions. Both global challenges can be defined as a GPG or CPR. But GPGs and CPRs suffer from different problems when individuals act in self-interest and/or rational manners. GPGs are concerned with tackling issues of a global nature through an inter-state cooperation and international institutions. Contrastingly, CPRs reflect ideal self-governance of social movements and communities that are cautious of market judgement and government hierarchy (Boonen et al., 2019). Boonen et al., 2019 state that depending on how a particular good is framed, it determines to a great extent the possibilities of its management, production, and provision.

Although GPGs and CPRs intend to address the same challenge and questions of global governance and management, these concepts generally lead to different notions of what governance systems should do and look like (Boonen et al., 2019). Therefore, it is important to determine how power is understood and how the varying conceptions of power determine the extent and scale of decision making within the hierarchy (Boonen et al., 2019). For both the climate crisis and the COVID-19 pandemic, global governance is required to manage the outcomes of the challenge. However, these global crises require different conceptions of what governance systems should be doing to address these challenges. Whether these global challenges are managed as GPGs or CPRs, they require solutions and action. Since the

declaration of the COVID-19 disease as a global emergency by the WHO (World Health Organisation [WHO] Director-General Statement, 2020), the pandemic has been regarded as a GPG and/or CPR in the manner in which society has responded.

The single most important priority of society since the novel disease disrupted the global norm, has been to stop the spread of the COVID-19 disease. Therefore, coordinated collective action was harnessed to address the COVID-19 pandemic. The governance structures and leadership mechanisms expended in responding to the COVID-19 pandemic can therefore offer society lessons in coordinating collective action globally and nationally to address climate change. By exploring the similarities and differences between the two global crises: climate change and COVID-19; the successes and failures in coordinating collective action can be recognised and leveraged. The global governance of these large-scale challenges is explored to better understand how international organisations, governments and non-state actors have organised themselves to address climate change and the COVID-19 pandemic.

1.2 Global Governance of Climate Change

Anthropogenic climate change effects were projected to be visible by the end of the 20th century by scientists at the World Meteorological Organisation's (WMO) World Climate Conference in 1979 (Bodansky, 2001). This called for global coordination and cooperation to better understand the challenges associated with the changing climate.

By the late 1980s the issue of climate change and international environmental law had emerged. During the 1980s, a gap was identified in international law, particularly about atmospheric pollution and the legal action needed to address climate change. Two models were considered to address this. A general framework agreement that could model climate change on the 1982 UN Law of Sea Convention (Zaelke and Cameron, 1990). This would enable climate change/atmospheric pollution to be addressed in a comprehensive manner. The other model was based on the Vienna Ozone Convention (Zaelke and Cameron, 1990). The process of these negotiations; since commencement, took an impressive three years and this was considered to be a short period for international consultations.

These negotiations began when the UN General Assembly established the Intergovernmental Negotiating Committee (INC) for the Framework Convention on Climate Change (FCCC)

(Bodansky, 2001). Between 1991 and 1992, the INC/FCCC held approximately five sessions. By May 1992, it was finally adopted and implemented. By 1994 it was ratified by 50 states. These progressions indicate early international responses to globally govern climate change. Governments began to play a greater role in the governance of climate change, and this was further strengthened by the Intergovernmental Panel on Climate Change (IPCC), which was formed in 1988 by the United Nations Environment Programme (UNEP) and the WMO after their successful attraction of policy makers to the Villach Conference in 1985. This platform provided a stage for UNEP and the WMO to identify climate change as a political issue so that countries could consider developing a global climate convention based on significant information that indicated climate change was highly probable (Bodansky, 2001). The idea that climate change is a political issue was further enhanced by the discovery of the stratospheric "ozone hole" and the publication of the Brundtland Commission report: Our Common Future, in 1987 (Bodansky, 2001). The Brundtland Report (World Commission on Environmental and Development, 1987) provided evidence of a changing climate and served as the global agenda for change. The Brundtland Report (Brundtland, 1987) was developed by the General Assembly of the UN and was used to propose a long-term environmental strategy to achieve sustainable development by the year 2000 and beyond.

The protection of the stratigraphic ozone hole is an example of the successful international cooperation of the provision of a GPG (Barrett, 2005). The coordinated effort to protect the stratospheric ozone layer demonstrated that this kind of global challenge can be solved (Bernauer & Schaffer, 2010). Global governance to achieve the coordinated effort to protect the stratospheric ozone was achieved through policy mechanisms of reciprocity (Bernauer & Schaffer, 2010). Reciprocity helps to prevent free riding on positive externalities (Bernauer & Schaffer, 2010). Reciprocity implies that governments committing to the cause exchange their commitments with other governments. This ensures the exchange of information and a sense of monitoring of efforts to achieve the same goal (Bernauer & Schaffer, 2010).

At the UN General Assembly Conference and Toronto Conference climate change was being discussed as a concern for humanity. This marked the beginning of the global consensus that climatic change needed to be addressed through mitigation efforts in reducing GHG emissions. The most pressing question was by how much should GHG emissions be reduced and in what time frame? Moreover, how much it would cost, and which countries should take on the burden.

During this period of climate discussions, it was determined that governments should develop frameworks on the law of the atmosphere and reduce global CO_2 emissions (Bodansky, 2001).

The UNFCCC was negotiated and formally adopted in Rio at the UN Conference on Environment and Development (UNCED) in 1992. This global treaty has established the basic legal structure for future agreements and helped to define the goals to be achieved within climate policy (Bernauer & Schaffer, 2010). The negotiations to address international atmospheric quality issues and the emerging prominent issue of climate change started the collective global effort to address climate change. Since its creation, UNFCCC has had the ultimate goal to resolve issues related to the protection of the global commons (Termeer, Dewulf & Breeman, 2012). Since the UNFCCC entered into force in 1994, member countries have met each year at the Conference of the Parties (COP). The purpose of these meetings is to review implementation of the agreement and negotiate future or follow-up agreements (Bernauer & Schaffer, 2010). An historical outcome of these negotiations was the Kyoto Protocol (KP). The KP set internationally binding GHG emissions reduction targets for parties. It also recognised that developed countries are responsible for the emissions due to industrialisation activities, thus placing a heavier burden on these countries (Poulopoulos, 2016). The KP offered three market-based mechanisms to the parties to achieve their GHG emissions targets: (i) international emissions trading; (ii) clean development mechanism; and (iii) joint implementation (Poulopoulos, 2016).

The KP helped to mobilise cooperative mechanisms within the UNFCCC but in practice these mechanisms demonstrated limitations, particularly as political and economic tools (Termeer, Dewulf & Breeman, 2012). It was unable to harness a high level of collective commitment and high ambitions from country parties. Termeer, Dewulf & Breeman (2012) argues that the Kyoto Protocol impacted the progress of COP negotiations under the UNFCCC. Particularly developed countries did not propose ambitious commitments and developing countries did not get involved in climate action as it was not a mandatory. The Paris Agreement (2015) marks the basic framework of the post-2020 climate regime governance structure. This new approach set out by the Paris Agreement introduces a new transnational approach in governing the climate (Bultheel, Morel & Aberola, 2016). The Paris Accord introduced a new avenue for multilateral cooperation aimed at enhanced cooperation. This inclusivity encourages all actors including public and private sector to commit to addressing climate change (Paris Agreement, 2015). This mechanism helps to share the burden of in GHG emission reduction efforts. This

builds on capitalising benefits and co-benefits of climate action (Bultheel, Morel & Aberola, 2016). This approach differs from the constrained framework of the Kyoto Protocol as it harnesses commitment from governments and non-state actors.

A new climate governance based on the will of governments emerged when the UNFCCC launched the Ad Hoc Working Group on the Durban Platform (ADP). This prepared the Paris Agreement and initiated the negation process based on voluntary cooperation for each party (Bultheel, Morel & Aberola, 2016). Thereafter the ADP continued to extend the voluntary mechanism to rally collective action by country parties. This resulted in a new format in an effort for national commitments to be developed. This resulted in the formation of Intended Nationally Determined Contributions (INDC) (Bultheel, Morel & Aberola, 2016). The increased role of the UNFCCC within negotiations remained a crucial element in advancing coordination across the globe in addressing the climate crisis. The UNFCCC is said to have capitalised on the institutionalisation of intention cooperation by establishing these mechanisms of cooperation and support (Bultheel, Morel & Aberola, 2016).

The Paris Agreement aims to reach net-zero anthropogenic GHG emissions by the end of the 21st century (Paris Agreement, 2015). It also strives to develop climate resilience. This approach of political multilateralism however does not guarantee the achievement of long-term climate goals (Bultheel, Morel & Aberola, 2016). The Paris approach relies on: (i) multiple cooperative frameworks which are aimed at accelerating sharing of best practices to afford access to low carbon technology and solutions, and (ii) a strong 'naming and shaming' or 'peer pressure' system to maintain and enhance the existing efforts of country's commitments and actions from the stakeholders (Bultheel, Morel & Aberola, 2016). Therefore, the achievement of these goals is heavily reliant on actors transforming ambitions into concrete actions. The Paris Agreement has a stringent transparency process (Paris Agreement, 2015). This was incorporated into the governance structure to ensure compatibility with long-term climate goals. The UNFCCC, the COP Presidencies, and their partners, including the international community, will be in charge of coordinating and communicating these efforts and actions. Moreover, the UNFCCC will maintain the regulatory framework that provides the visibility of the actions of the parties to the Agreement (Bultheel, Morel & Aberola, 2016). The Paris Agreement is therefore considered a collective and dynamic political process.

The climate regime has also managed to catalyse climate actions and build sectoral solution clusters with the action agenda. The Global Climate Action Agenda (GCAA) was developed as a result of the coordination of French and Peruvian Presidencies as well as the UN and UNFCCC Secretariats as part of the Lima-Paris Action Agenda (LPAA). The evolution into the GCAA in the political process in 2016 has enabled multilateral cooperation and the launch of the Non-State Actor Zone for climate Action (NAZCA) (Bultheel, Morel & Aberola, 2016). This records the unilateral commitments from businesses', cities, regions, and investors on climate. Meadowcroft (2009) notes that for governments to take an active role and to help change interest perceptions for these actors, they need to play an active role in the fight against climate change. Governments need to change perceptions by building coalitions for change, establishing canters of economic power, creating new institutional actors, and adjusting legal rights. Ideas also need to be changes and accepted as norms and expectations (Meadowcroft, 2009).

Climate change adaptation is considered a 'wicked problem'. Wicked problems are difficult to define due to the formulation of their problem, they are considered a symptom of another problem (Termeer, Dewulf & Breeman, 2012). Thus, they are particularly resistant to solutions and interconnected with numerous other problems (Termeer, Dewulf & Breeman, 2012). The IPCC outlines that adaptation has always taken place within society however, climate change poses new challenges particularly due to uncertainty, the speed at which change takes place as well as the extremes that will likely exceed previous conditions (IPCC, 2014). Adaptation has become a more important component in addressing climate change and is a component for the Paris Agreement. The Paris Agreement encourages the implementation of NDCs by allowing for increased mitigation and adaptation efforts to promote sustainable development. Thus, adaptation has risen on the global policy agenda since the Paris Agreement. Persson (2019) suggests that global adaptation governance occurs when state and non-state actors in the global context authoritatively and intentionally shape the actions of constituents towards climate change adaptation as a public goal. However, climate adaptation is still an emerging governance mechanism of climate change. This may be due to the lack of a clear global level approach in the problem framing or recognition of adaptation as a GPG, thus there has been little legitimisation of adaptation as a global governance initiative (Persson, 2019).

It is evident that climate change has posed challenges in contemporary political systems. Meadowcroft (2010) argues that when the influence of groups that fear adverse consequences

of mitigation policies is combined with uncertainty in the scientific understanding of climate change, the global challenge becomes complex. Thus, the complexity of reaching global agreements, over a long period of time, there is a natural tendency for country parties to delay their actions (Meadowcroft, 2009). Meadowcroft (2009) argues that this is attributed to governments avoiding antagonising influential groups and therefore adopt less ambitious climate programs. Moreover, the agreements are not legally binding (Obergassel et al., 2016). The Paris Agreement has harnessed voluntary climate actions within its transparency framework and has determined a broad range of options of coordination that concerns climate change, through mitigation and adaptation mechanisms. However, to-date, country's commitments are assessed to be incompatible with the Agreement's long-term goals. Although governments have committed to low carbon solutions, more still needs to be done, and quickly.

1.3 Global Governance of Health Emergencies

1.3.1 Governance of Epidemics

The earliest recorded epidemic is said to be in 3180 BC and is recorded in an ancient Egyptian script (Marks and Beatty, 1976). Epidemics have been a concern for human well-being for a long time. Outbreaks of the bubonic plague was first recognised in the sixth century Common Era (C.E) (Benedict, 1996). The bubonic plague was a devasting global epidemic and reached pandemic proportions on three occasions (Benedict, 1996). The first plague spread through the Mediterranean and Middle East and in the fourteenth century it spread from western Asia to the Middle East and the Mediterranean before spreading to Spain and France and later reaching England, Scandinavia, Germany, and Poland (Benedict, 1996). The third emergence of the bubonic plague appeared in Hong Kong and Canton in the nineteenth century and was carried to global ports as far as the United States and Scotland and lasted well into the twentieth century (Benedict, 1996).

Even with scores of epidemics that have occurred throughout history, preparedness has remained particularly pervasive, even in more modern periods (Quah, 2007). History has shown that epidemics typically take countries by surprise and have a sudden impact on unprepared people (Quah, 2007).

In the 1980s a new disease was identified. A new silent killer that seemed to have originated in the developing world (Hein et al., 2007). This sparked researchers to work full steam ahead to determine the cause and pattern of distribution of the new disease that radically changed the face of public health across the globe (Hein et al., 2007). Human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) not only separated disease from class but also debunked the so-called division between the developed and the developing world. Infectious disease was no longer associated with chronic conditions in a developed world and infectious disease in the developing world. Instead, it highlighted the key role of politics within the public health sector as well as the need for different sectors, organisations, and actors to cooperate to adequately fight the disease (Hein et al., 2007).

By the 1990s, HIV/AIDS was recognised as the disease of the poor, of women and of the developing world (Hein et al., 2007). These aspects defined the public health challenge and highlighted that public health needed to be pursued, not only at the national level but that the health sector alone could not deal with these challenges in isolation (Hein et al., 2007). HIV/AIDS helped shape the global approaches to health (Hein et al., 2007). The disease was recognised as a security concern of global dimensions and initiated national intelligence talks to generate joint global action to disclose disease rates, particularly within developing countries (Hein et al., 2007). Simultaneously, a series of other emerging diseases began to gain the attention of policy makers (Hein et al., 2007). Policy makers had begun to see the increased potential that at least some of these emerging diseases would generate large-scale or worldwide epidemics (Garrett, 1994). At the time, AIDS was considered the most recent example of this global threat.

HIV/AIDS was a well-known global threat particularly as the first treatment regimes became available (Hein et al., 2007). The disease also highlighted the neglect of the poor developing world by the wealthy developed world in terms of addressing health issues and acquiring funding to address health concerns in the developing world (Hein et al., 2007). As Garret (2007) emphasizes, the increase in funds for global health was likely a direct consequence of the HIV/AIDS epidemic (Hein et al., 2007), and perhaps the attention required to understand that investment in health and not only generated development but also addressed other social justices and the fight against poverty (Hein et al., 2007). Thus, the beginning of new alliances and partnerships at all levels of governance including the involvement of private sector,

pharmaceutical companies, funding mechanisms as well as the development of new organisations to collectively address health issues on a global scale.

In 2014-2015, the west African Ebola virus disease emerged and is considered a major tragedy due to the failure of the functions needed from governance structures (Peters et al., 2017). Peters et al. (2017) reveal that research began too late and only one vaccine was developed as a candidate of probable effectiveness.

The WHO has been criticised for their slow reaction in declaring the Ebola virus a Public Health Emergency of International Concern (PHEIC), mobilising resources on an international level and providing technical expertise (Lee & Piper, 2020). The Ebola virus outbreak is an example of a lack of coordination amongst actors to address the health emergency. In addition, there was also evidence of conflicts in research leadership. Thus, governance arrangements should not result in organisations with leadership roles that have intrinsic conflicts of interest (Peters et al., 2017). Subsequent to the Ebola virus outbreak in west Africa, concerned agencies have since taken steps for improved preparedness.

Peters et al. (2017) emphasize that for research related to epidemics, key stakeholders need to be coordinated. These key stakeholders include national governments, the WHO and other multilateral organisations, humanitarian organisations, academic institutions, pharmaceutical companies, NGOs, civil society organisations and individual experts. These key stakeholders all need to coordinate and work in tandem to ensure governance of epidemics. Unfortunately, these key stakeholders were not well coordinated during the Ebola outbreak. Therefore, formal, and ad-hoc connections of these stakeholders working independently of each other need to be resolved for new governance mechanisms. Stakeholders should coordinate to ensure their interests are aligned, and that their ideologies, capabilities, mandates, and authorities support each other (Peters et al., 2017).

Quah (2007) suggests that the implementation of guidelines and policies can impact crisis management in a positive or negative way. This is dependent on the chosen policies and the country's socio-political context and cultural norms (Quah, 2017). Typically, a top-down approach is adopted by authorities to contain an epidemic. This approach is important to support behavioural changes (Quah, 2007). However, a swift response to an epidemic is dependent upon the abilities of actors to coordinate operations and bring in specialised expertise (Peters et al, 2017). Moreover, the capability to support and carry out research during a crisis is also key to a rapid response to a health emergency (Peters et al., 2017). An additional

consideration to ensure a coordinated effort in preparing for a health emergency is for actors to agree on working principles (Peters at al., 2017). Thus, it is important that consensus building, and deliberative processes demonstrate legitimacy, authority, inclusiveness as well as public accountability (Peters et al., 2017). However, each health emergency is likely to pose novel governance challenges (Lee & Piper, 2017). The 21st century poses additional challenges to health emergencies, due to increased connectivity, non-linear dynamics and multidirectional patterns of change and emerging properties and challenges (Lee & Piper, 2017). The COVID-19 pandemic is a reminder that infectious disease may begin with one person, but it can soon become a national and global problem.

1.3.2 Global Governance of the COVID-19 Pandemic

There is limited literature on the governance and responses to the COVID-19 pandemic due to its short and fast-paced time frame. Therefore, lessons are still emerging from the COVID-19 pandemic as it continues to impact society. The extent of the economic and social life impacts on society are still largely unknown.

International organisations provided coordination and policy advice to aid governments' response to the COVID-19 pandemic. The WHO declared the COVID-19 disease outbreak a PHEIC and played a unique role in gathering essential intelligence on the COVID-19 disease, convening collaborations for scientific research as well as compiling technical guidelines on diagnostics, clinical trials and prevention and mitigation strategies for governments (Lee & Piper, 2020). This resulted in governments taking drastic measures to reduce transmission of the novel COVID-19 disease. Many governments declared states of emergency. This helped to convey the urgency and risks associated with the disease. After governments declared state of emergencies, their subsequent measures to reduce transmission included mitigation policies (Gupta et al., 2020). These policies were designed to slow transmission and limit physical contact between people.

The WHO helped to prepare governments in their response to the disease by developing guidelines. In particular, WHO assisted developing countries in their preparations and responses by offering country and technical guidance. The WHO published technical guidance documents for COVID-19 on critical preparedness, readiness, and response; clinical care; essential health services and animal-human interface and food safety (WHO Technical

Guidance Documents, 2021). The WHO trained and mobilised health workers to assist countries to ensure they were supported by experts. Furthermore, the WHO provided accurate information on the disease and ensured that misinformation was not circulated across the globe; safeguarding society from misleading information and ensuring the real dangers and threats of the disease were known. The WHO facilitated the allocation of vital supplies in preventing the spread of the disease, including PPE, and testing kits. Moreover, the WHO has facilitated the management and research necessary to develop a vaccine against the COVID-19 disease.

Governments took drastic measures and implemented policies to respond to the COVID-19 disease. Their approaches were guided by the information gathered by the WHO science-based approach. The key to tackling the COVID-19 pandemic for many member states was to implement policies that reduced disease transmission but that also encouraged economic activity (Gupta et al., 2020). Implementing personal freedom restrictions such as the prohibition or reduction in mobility and reduced/limited economic activity is considered an unusual goal for democratic governments. Frey et al. (2020) has acknowledged that democratic member states experienced larger declines in movement at the same level of policy stringency, while autocratic country government's policy was less effective in reducing mobility. Frey et al. (2020) also investigated the influence of varying cultures on COVID-19 movement restrictions and identified that some cultures resulted in more compliant and obedient individuals compared to others. Additional studies have also identified that individualistic countries who have higher economic growth, tend to have a dynamic advantage in terms of capacity to deal with a crisis like the COVID-19 pandemic (Gorodnichenko and Roland, 2011). But the individualistic culture can result in collective action challenges, particularly in coordinating a response to a crisis like the COVID-19 pandemic (Frey et al., 2020). Typically, individualistic cultural traits are associated with negative attitudes towards government decisions and interventions (Frey et al., 2020). Thus, according to Frey et al (2020), less individualistic countries experienced a sharper decline in mobility through the implementation of policies.

Developing countries have generally less developed health care systems, younger populations, and the burden of local epidemics. Intergenerational dwellings and crowds in informal areas also facilitate increased transmissions via household contacts which is difficult to control, even by controlled national lockdowns (Alon et al., 2020). Alon et al. (2020) conducted a quantitative analysis of how lockdown policy should differ for developing and developed

country economies. The findings suggested that blanket lockdowns are less effective in developing countries, saving less lives and resulting in modest welfare gains (Alon et al., 2020). A focus on protecting the elderly by implementing age-dependant policies to keep the older population under lockdown and allowing the rest of the population to resume normal economic activity is considered an optimal lockdown policy (Alon et al., 2020). Alon et al., 2020 found that the closure of schools during peak periods of infection can effectively reduce intra-household transmissions between the young and elderly (Alon et al., 2020), particularly in informal areas. Therefore, it is evident that governments had to assess their social and economic circumstances to efficiently adapt policies to slow the spread of the COVID-19 disease.

Human behaviour has also been critical in shaping the response to the COVID-19 pandemic. Thus, the actions of individuals are an additional consideration in the overall governance of a crisis. Fischer et al. (2020) highlights those individuals that assumed that others were not adhering to the regulations and restrictions put in place by governments, were actually self-motivated to more strictly adhere to the regulations. Individuals recognised that by adhering to the regulations benefits one's own well-being, even if others do not cooperate. Therefore, fear of the consequences of non-conforming by other individuals motivate cooperation (Fischer et al., 2020). Fischer et al. (2020) also indicates that the similarity of the threat also motivates cooperation, as all parties are affected by the same pandemic.

Gupta et al (2020) identifies that the effectiveness of social and physical distancing measures put in place by governments and the international community is largely based on individuals' personal reactions to the information provided by international organisations and governments. Thus, the dissemination of information from governments to individuals plays a significant role in the behavioural actions of society (Gupta et al., 2020). Moreover, governments used a combination of the dissemination of information and implementing fines or consequences as a method to strengthen behavioural changes, particularly when there is a threat to public health (Gupta et al., 2020). As such, the pandemic facilitated global societal behavioural changes and these changes were facilitated through a combination of the dissemination of information and attaching consequences in the form of fines to unwanted actions from individuals (Gupta et al., 2020). Gupta et al. (2020) highlights that the mechanism of social distancing was key in responding to the pandemic as the theoretical mechanism supporting majority of the mitigation policies implemented by governments was social distancing. This fostered behavioural changes and help to diminish the spread of the disease (Gupta et al., 2020).

There are a number of additional considerations impacting behavioural changes in society, and an important challenge to consider, is the intergenerational effects. For example, social interaction is generally greater for young adults, whose heath threats are not as great compared to older adults (Gupta et al., 2020). Therefore, there is the possibility that older adults will follow mitigation measures more stringently compared to younger adults. These intergenerational affects also highlight the coordination challenge of free riders. The disease impacted entire populations; therefore, a large number of actors are involved. Either those contributing to the problem or those affected by the problem (Harring et al, 2020). The larger the extent or scale of the collective action problem, the smaller the probability of spontaneous collective action. Thus, the pandemic has highlighted that many people are not willing to make sacrifices by accepting personal costs for benefits that are collective. Moreover, actors are generally more likely to cooperate if others cooperate too (Harring et al, 2020). For example, the elderly is at greatest risk to the COVID-19 disease, thus cooperation from this generation is likely fully supported. However, younger populations were likely inclined to free ride as they perceived their risk to the disease to be minor even though the disease was representable to populations through patients and deaths. Government lockdown actions, particularly hard lockdowns however negated the problem of free-riders as those free-riding were outweighed by the collective coordination implemented by governments.

The pandemic has emphasized that it is possible to act swiftly, mobilise resources and that behavioural changes can be adopted by society in a short period. The pandemic has also highlighted that when crises develop, governance is required to ensure the highest resilience to ensure the utmost prospect for survival (Martin, 2013). Martin (2013) describes that there are two potential approaches to a global crisis: (i) a stiff governance approach or (ii) a flexible governance approach (Martin, 2013). A stiff approach is limited in that it can be difficult to deal with other types of threats. However, flexible governance responses are based on the capacity to adapt, change direction, and improvise and allows for a variety of threats to be dealt with (Martin, 2013). Systems involved in flexible governance are generally based on participation, robust debate, and mutual respect. Therefore, the COVID-19 pandemic is an example of flexible governance where methods for making and implementing decisions allowed for rapid adaptation to a changing situation.

The COVID-19 crisis resulted in high demands on governments and indicated that institutions can be agile and adaptive (Janssen and van der Voort, 2020). National governments, public and private actors had to adapt particularly swiftly within healthcare sectors to ensure hospital capacity, testing and contact tracing, medical equipment supply and PPE, as well as implement measures to keep economies afloat and ensure food security. Martin (2013) describes flexible governance as the most effective approach in a crisis as it involves four key features: the participation of significant numbers of people; resources including food, transport and particularly communication; openness, tolerance and inclusion ensuring involvement with different sectors of the population and finally; learning skills for struggle and developing strategic acumen. These four features of flexible governance are mutually supportive and require participation on a large scale to coordinate collective change or responses (Martin, 2013). This is promising, as governments, institutions and individuals have been asked to do the same for years to address the climate change crisis. However, to-date, we have not seen proportionate action as the entrenched power of remaining with the status quo is the biggest differentiation between the responses to the COVID-19 pandemic and climate change. Therefore, in order to solve the climate crisis, political will, collaboration of multi-lateral institutions and the successful organisation of collective action is required; globally and nationally.

1.4 Similarities and Differences between Climate Change and COVID-19

The climate change crisis and COVID-19 pandemic are similar in many ways. They are both global challenges that present a threat to human well-being and society. Both challenges require global organisations to facilitate coordination in defeating them. Both global challenges are dependent on knowledge. Knowledge about these crises is stratified i.e., personal, cultural, and scientific and the importance of data and quantification of the data is key to solving these challenges. Moreover, the navigation of the relationship between science and policy is required to fully understand the risks in order to implement mitigation measures to address the challenges.

There are a number of differences that distinguish the global challenges from each other. The temporality of these global challenges differs. Climate change is a global challenge that is considered an old issue with slow evolution, while the COVID-19 pandemic is a novel issue that is rapidly evolving (Janko, 2020). The visibility of these crises differs. Climate change is

directly invisible and can only be visualised and attributable with its signs and impacts are long-term, not instantaneous (Janko, 2020). COVID-19 is invisible to the naked eye but is visualisable and representable through patients and deaths (Janko, 2020). There has been a vast difference in the behavioural changes of society in addressing each challenge. Society's behaviour towards climate change has been lacking. Lifestyle changes has been slow, particularly through conscious buying and less waste (Janko, 2020). COVID-19 has resulted in rapid lifestyle changes and behavioural changes by populations. People resorted to panic buying, were forced into lockdowns, restricting movements, and banning travel. Although both challenges impact generational conflict the climate crisis is more dangerous to youth and the unborn generations. The COVID-19 disease is opposite and is more dangerous and threatening to the elderly and those that suffer from comorbidities.

From and economic and political standpoint, both crises impact social norms. However, the politics surrounding the climate crisis have been slow, dubious, and limited in results and accountability (Janko, 2020). Contrastingly, the politics related to the COVID-19 pandemic have been rapid, have resulted in a two-way outcome with governments and people being held accountable (Janko, 2020), although global economies were sacrificed. Finally, the two crises have been controlled through different global platforms. Until now, the climate crisis has been globally governed by international organisations such as the IPCC with little civic movement. Whereas the COVID-19 pandemic has predominantly been governed by national governments with guidance and coordination from international organisations such as the WHO. These similarities and differences between the two crises are explored further to identify the varying roles of international organisations, governments, and individuals in the fight against these two global challenges.

1.4.1 Role of International Organisations

International organisations serve diverse functions across the globe. International organisations typically collect information and monitor trends and deliver services to the global public. Many international organisations also inform political institutions and structures through which governments work together to achieve a common goal. International organisations therefore play a vital role on achieving common objectives and foster coordination and cooperative behaviour, on a global scale.

The pandemic is considered a rapidly developing crisis. It has rapidly evolved and is only visualisable and representable through patients and deaths. Therefore, the health impacts of the COVID-19 pandemic are almost immediate. International organisations have played a critical role during the COVID-19 pandemic. The WHO provided policy advice and facilitated the coordination of responses to help slow the spread of the disease. The WHO has strong research capacity and is an institution that works to strengthen global, regional, and local health systems. Therefore, WHO has the ability to provide technical assistance to countries to ensure health concerns are integrated into their adaptation plans and strengthen health systems to respond to risks (Michonski and Levi, 2010). WHO facilitated global funding, in particular to support developing countries to ensure sufficient PPE, medical equipment and medication was available. Moreover, the WHO acted as a platform for legitimising information, providing knowledge on the disease and debunking misinformation. Multilateral development banks have swiftly adapted the global pandemic by addressing the crisis through restructuring funding and including emergency components to existing programmes to address the impacts of the pandemic, particularly within developing countries. World Bank's support in addressing the global pandemic has supported countries in addressing the crisis and driving a transition to recover through a combination of saving lives, protecting poor communities, and securing economic foundations by strengthening policies and driving resilience. World Bank has harnessed existing programmes and projects through restructure and emergency components as well as the deployment of disaster finance to target key areas including saving the lives of those threatened by the pandemic, protecting the poor and vulnerable, helping to secure jobs and save businesses and finally working to build a resilient recovery. Thus, these global financial institutions helped to coordinate and accelerate the international response and support countries required to manage the global health emergency.

Climate change is a slow moving crisis. Climate change is an ‘old’ issue that has had a slow evolution. It is directly invisible and results in long-term impacts that will affect future generations. International and multilateral organisations have played a critical role in responding to climate change and COVID-19. In particular the UN IPCC has been instrumental in advancing international negotiations and agreements and driving research in order for science and technology to support policymakers’ decisions in tackling the climate crisis. UNFCCC has facilitated the strengthening of government solidarity in tackling the climate crisis and provided a platform for countries to unite together to address a global crisis. The UN has developed the Sustainable Development Goal (SDGs) in an effort to harness sustainable

development in developing countries, to not only address the changing climate but also address social and environmental inequalities that exist in developing countries.

Moreover, the Organisation for Economic Co-operation and Development (OECD) has played an integral part in international climate negotiations and has increased efforts to assist countries in achieving there national and international climate commitments. OECD focusses on driving policies to address environmental, economic, financial, and social dimensions that are critical in developing low-emissions and climate resilient pathways. The organisation has help to guide policymakers in developing policy to ensure sustainable development to reduce the impacts of climate change. Multilateral development banks fund climate change adaptation and mitigation components and drive renewable energy projects, there has been slow progression since the Paris Agreement was formalised. Multilateral development banks like the World Bank aims to reduce poverty through economic development therefore plays an important role in funding climate adaptation and mitigation activities, particularly in developing countries. The World Bank significantly influences global carbon markets and has developed a number of carbon funds as well as investment in renewable energy and energy efficiency projects (Michonski and Levi, 2010).

It is evident that international organisations have important roles in directing governments by providing platforms that provide legitimate information, have research and monitoring capabilities that guide governments in science and technology based approaches and legitimatise information and knowledge. Moreover, these organisations ensure that misinformation is dismissed as trust and the truth ensures cooperation and coordination from actors.

1.4.2 Role of Governments

Governments played a critical role in reducing the transmission of the COVID-19 disease by taking drastic measures. Many governments declared states of emergency – helping to convey the urgency and risks associated with the disease. After governments declared state of emergencies, their subsequent measures to reduce transmission included mitigation policies. This resulted in varying speeds of mitigation policy development and implementation to address the COVID-19 pandemic. Governments have, however played less of a significant role in addressing the climate crisis. Although countries have ratified the Paris Agreement and have

pledged to reduce GHG emissions; countries' commitments have not resulted in radical changes to mitigate and adapt to the changing climate. Thus, the Paris Agreement pledges have not resulted in enough drastic action to limit global warming (CAT, 2021).

The effects of climate change are extremely variable across continents and countries (chaotic) with large spatial and temporal distances. While the COVID-19 pandemic is more synchronous across nations and regions (spatial spreading). These differences have resulted in varying mechanisms that governments have employed to contain the problems. In order to address the COVID-19 pandemic governments implemented nationwide lockdowns and restricted freedom of movement, banned international and national travel, large social gatherings. These drastic measures resulted in a coordinated response and harnessed collective action from citizens. Governments took drastic and unprecedented measures to contain the spread of the disease. COVID-19 harnessed a rapid two-way response to the global challenge. There was a fast, easy channelisation of personal interest into public interest. The responses to the pandemic have been rapid and constantly evolving and governments have been held accountable for their actions. Governments have responded fairly differently to the climate crisis. Governments have relied on multilateral organisations to help inform mitigation and adaptation measures. However, governments are not legally liable or accountable for their actions or inactions. Although the Paris Agreement has harnessed global governance in the fight against climate change, it has failed to hold governments legally accountable for inadequate GHG emission reductions. Climate change responses by governments have been slow and prolonged.

Governments also relied on private sector organisations during the fight against the COVID-19 pandemic. The private sector rapidly gathered and dispersed funds to address COVID-19 in many countries. They also provided expertise to contribute to relief efforts during national lockdowns. Governments do not think and act globally, while non-state actors often have greater global perspectives on global challenges (Kaul et al., 2011). Thus, the coordination between governments and private sector in many countries strengthened the cooperation and coordination to slow the spread of the COVID-19 disease. Contrastingly, the role of the private sector in tackling the climate crisis has been less stark. To-date the private sector has not played a strong enough role in harnessing climate change action from governments. Moreover, many private sector institutions have not been proactive in developing new strategies to align with sustainable development practices to suit the changing climate. The interactions between non-state actors and governments have not been fluid on the topic of climate change. Although,

there has been progress in harnessing increased, social, and environmental awareness associated with climate change, corporations have not committed drastically and radically change to reduce the impacts of climate change.

1.4.3 Role of Individuals

The two global challenges faced by society require global coordinated and collective action, but coordination and collective action from individuals cannot be harnessed without political guidance and public policy. Although global and national responses to global challenges such as climate change and the COVID-19 pandemic are critical to drive collective action, individuals play a significant role too. Governments enforced nationwide lockdowns which forced individuals to stay home, resulting in national and international travel bans and the restriction of freedom movement. This also resulted in the closure of businesses and schools. Governments disseminated information to best handle and reduce the risk of contracting the novel disease. These measures required personal behavioural changes from individuals. Individuals were advised to wear PPE (i.e., face masks), practice social distancing and follow good hygiene practices (i.e., hand washing and sanitising). Indicating the direct cause-effect relationship of the COVID-19 disease. COVID-19 has the potential to result in adverse health impacts over a short period of time. In contrast, the cause-effect relationship for individual actions for climate change is more indirect and diffuse, as climate change impacts are difficult to comprehend and quantify now but result in long-term adverse impacts to society and the environment.

The evolution of the COVID-19 pandemic resulted in rapid action by governments to alter individuals' lifestyles to harness social and personal behavioural changes. Individual actors have played less of a significant role in tackling the climate crisis. There has been a slow change in conscious buying, less waste and personal dietary choices from individuals to reduce impacts of climate change. This slow transition is likely a result of the free-rider problem, absence of accountability for individuals, and the invisible long-term impacts of climate change. Moreover, personal interests have often gone against public interest, resulting in slow and limited individual behavioural changes.

1.5 Policy Learning for Global Governance

The COVID-19 pandemic and climate crisis highlight how essential it is to overcome challenges through learnings that emerge from dealing with public policy. Dunlop and Radeaelli (2013) simply define policy learning as adjusting understandings and beliefs related to public policy. Policy is a broad concept that encompasses a number of different dimensions (Torjman, 2005). The purpose of public policy is therefore designed to achieve a goal that is considered to be in the interest of all members of society (Torjman, 2005). Thus, it has a clear and unique purpose and provide guidance for addressing specific public concerns (Torjman, 2005). The formulation of policy therefore involves a number of actions, including learning and identifying the problems and their potential solutions. Policy formulation is essentially the discovery and investigation of a range of actions that can be used to respond to a concern (Tojman, 2005). As such, policy learning refers to the ways in which policy systems use and generate knowledge about the rationales, design, operation, and the impacts of the policies (Torjman, 2005). Policy learning thus, refers to the demands of the organisational capabilities to frame the problems and subsequent solutions that the policy is set out to achieve (Moyson, Scholten & Weible, 2017). Policy learning and development is therefore a crucial component of governance.

Policy builds on learning from experiences of other policies, their design and implementation, including adaptations made over a period of time through feedback mechanisms (Moyson, Scholten & Weible, 2017). Witting (2017) suggests four steps to understand and respond to policy learning: (i) people interpret their world through the lens of their beliefs, values and learn by combining analytical processing and heuristics; (ii) people will have different learning outcomes based on their roles; (iii) learning is a political process as people interact through their social environment. Noting that some people influence the process more than others, and finally (iv) policy learning from scientific evidence needs to move beyond specific roles. Therefore, Witting (2017) considers policy learning is as much about interaction and leadership, as information.

Policy learning requires organisational capabilities to frame issues in terms of problems and their associated solutions. In order to do so, a holistic understanding is required as well as the consideration of the potential future needs (Johnson, Lorenz & Lundvall, 2001). Johnson, Lorenz & Lundvall (2002) describe the knowledge required for learning processes and group processes into four basic categories: (i) know how: the ability to do something; (ii) know what: the knowledge about facts; (iii) know why: the knowledge on principles and laws and finally

(iv) know who: referring to the knowledge about who knows what. Subsequently, Kemp and Weehuizen (2005) defined learning through a variety of modes such as experience, observation of others, systematic study, and interaction.

Hall (1993), Kemp and Weehuizen (2005) and Van der Steen and Groenewegen (2008) further distinguish the learning processes based on the depth of learning, which they differentiate as 'first order', 'second order' or 'third order'. First order and second order learning typically target policy instruments and results in incremental changes (Kemp and Weehuizen, 2005; Van der Steen and Groenewegen, 2008). First and second order learning deciphers core beliefs, fundamental design, activities, and goals of the organisation and scrutinises these features of the organisation (Kemp and Weehuizen, 2005; Van der Steen and Groenewegen, 2008). First and second order learning encompasses internal learning, and in particular processes within governmental organisations, which usually leads to organisational changes. These changes are more frequent within well-defined organisational framework's where environments are constant (Kemp and Weehuizen, 2005; Van der Steen and Groenewegen, 2008). Hall (1993) explains that first and second order policy learning is routinised decision making, while third order change typically results in new policy instruments that can move towards strategic action.

The influence of an individual's socio-economic and physical context also influences the resources available to them to be able to network and learn within a given time (Heikkila and Gerlak, 2013). Culture is also expected to change incrementally and slowly (Kemp and Weehuizen, 2005 and Van der Steen and Groenewegen, 2008). This can either result in slow, incremental changes due to a lack of information, or can drive more rapid and unpredictable changes and learning. These unpredictable changes could be a result of severe weather events, changes in public opinion or man-made disasters (Heikkila and Gerlak, 2013). These events or external forces usually trigger learning and/or highlight policy short falls. Consequently, when rapid exogenous changes occur it can be seen as an opportunity for policy makers to frame novel challenges in a light that focusses on similarities in their understandings of the change required and the potential solutions to the challenge.

The idea of rapid external changes to align policymakers understanding to novel challenges could be identified as third order policy learning (Hall, 1993). Third order learning refers to a change in 'paradigms shift' for an organisation or system. This is marked by the radical changes in the overarching terms of policy discourse (Hall, 1993; Kemp and Weehuizen, 2005; Van der

Steen and Groenewegen, 2008). This method of learning addresses the goals and strategies and policy approaches that represent a more disjunctive process (Hall, 1993). Hall (1993) describes the third order learning as changes in policy that are much broader and subject to powerful influences from society and the political arena. This process of learning usually involves a wider set of actors and can lead to radical changes within policy frameworks and policies. These changes generally occur when structures are unstable and tensions exist between competing objectives (Kemp and Weehuizen, 2005; Van der Steen and Groenewegen, 2008). This form of policy learning is often associated with life-threatening external events, scarcity of resources or emerging new subjects (Kemp and Weehuizen, 2005; Van der Steen and Groenewegen, 2008). This can be likened to the climate crisis and the novel COVID-19 disease.

Thus, the use of evidence within policy can reflect the characteristics of previously established policy through rules, norms and/or strategies. The individuals use of this information therefore defines what they can or cannot do within the present context (Heikkila and Gerlak, 2013). However, it is also argued that policy designs i.e., their content and structural logic; institutionalises patterns of people's behaviours (James and Jorgensen, 2009). Thus, these elements can help to predict who individuals are likely to engage with (James and Jorgensen, 2009). Moreover, Leach et al. (2014) describe that policies can regulate access to specific networks, depending on their contents. Therefore, policies have the ability to not only regulate access to networks but also define the tasks, functions, and responsibilities of individuals (Leach et al., 2014). This statement indicates that collaborative policy designs can harness significant stakeholder participation, while policies that outline decisions and their processes indicate that the actors involved trust the procedure.

The mechanisms of policy learning suggest that individuals have already accumulated some knowledge that is likely to influence how they frame the evidence of a challenge. In addition, how they are able to define the challenges and the associated solutions. In particular, for exogenous or radical challenges, individuals do not know the optimal choices and subsequent actions that should be made. This is because little information is known but, individuals are usually forced to determine how to engage in a collective action prior to knowing what the outcome may or may not be (Witting, 2017). Therefore, individuals respond based on predictable and unexpected cues from their surrounding environment, but some are more well positioned to be more rational than others when determining their responses or actions.

Therefore, policy learning can occur via a variety of processes and may involve a number of actors. Policy learning occurs through a variety of modes such as experience, observation of others, systematic study, and interaction. These modes or processes of learning result in the depth of learning, which can be differentiated as either first, second or third order policy learning.

1.6 Collective Learning for Global Governance

Collective learning is the process that results in the production of knowledge. It is defined as the ability of a species to share information; efficiently and precisely enough that learning takes place, not just at an individual level, but also at the level of the community of the species (Anderson, 2016). Knowledge is institutionalised in the form of routines, rules, structures, discourse, and strategies that provide guidance for action (Garavan and Carbery, 2012). Learning occurs due to interactive mechanisms through the sharing of individual knowledge. Knowledge is disseminated and diffused which further develops via appropriate interactions, thus collective learning is an evolutionary process (Garavan and Carbery, 2012). Learning and factors that affect learning are pertinent to influencing the collective learning process and subsequent collective action.

The process of learning is setup through a variety of mechanisms that include (i) acquisition; (ii) translation; and (iii) dissemination of knowledge (Heikkila and Gerlak, 2011). This learning process can occur across a number of different settings, including interest groups, coalitions, legislative committees, and advisory councils (Heikkila and Gerlak, 2013). The idea of this process of learning via a series of steps is widely supported by policy scholars (Heikkila and Gerlak, 2013). The acquisition phase of information refers to deliberative or intentional actions by an individual or the act of searching and/or noticing information about an organisation whereby knowledge is acquired by learning by observing (Heikkila and Gerlak, 2013). The translation phase of the collective learning process involves the interpretation of new information, alternatively the application of existing information within a new context by individuals within a group that acquired the information (Heikkila and Gerlak, 2013). At this point, information is understood to become knowledge, resulting in individuals experiencing cognitive learning (Heikkila and Gerlak, 2013). The final phase, dissemination, is possibly the most important phase within the collective learning process as it is through dissemination or the transference of information across a group that an individual-level knowledge is developed,

and in turn develops into shared knowledge among a group (Heikkila and Gerlak, 2013). However, it should be noted that individuals that take part in the acquisition and interpretation phase of new knowledge do not necessarily accept or adopt the idea (Heikkila and Gerlak, 2013). Collective learning outcomes therefore commonly result in cognitive or behavioural change.

Cognitive changes refer to strengthened or new ideas or beliefs and values across a group of individuals while behavioural changes refer to collective actions that include shared strategies, policies, routines, programs, or institutions that are shared across a group of individuals (Heikkila and Gerlak, 2013). Cognitive products are important but for the context of this research; behavioural products are of interest. Behavioural changes generally include policy and institutional changes that result from collective learning. Behavioural changes can also include the adoption of new policies and strategies by a group of actors (Heikkila and Gerlak, 2013). The possible mechanisms required to reach behavioural changes are considered to be the processes of acquisition, translation, dissemination as well as cognitive change (Heikkila and Gerlak, 2013).

These processes therefore depend on how individuals or groups of actors acquire and shape knowledge. Moreover, if and how the knowledge is turned into action. Particularly in group settings or an organisation, different collective learning outcomes are fostered (De Latt & Simons, 2002). De Laat and Simons (2002) compared collective learning processes against the potential learning outcomes at both an individual level and a collective level. De Laat and Simon (2002) identified four potential learning outcomes: (i) individual learning processes with individual outcomes; (ii) individual learning processes with collective outcomes; (iii) learning within social interactions where the process of learning is collective, but the outcome is individual; and finally, (iv) collective learning processes with collective learning outcomes (De Laat and Simons, 2002). The various outcomes of collective learning indicate that when individuals undergo or undertake learning together, they can learn without an intended or actual outcome (de Laat & Simons, 2002). Although de Laat and Simon (2002) apply these learning processes and outcomes within the workplace, this concept can be applied in the collective learning context for global governance. Workplaces are continually faced with managing and creating knowledge to respond to flexible changes within the working environment (de Laat & Simons, 2002). Therefore, these learning processes can be used in the context of individuals learning from interaction organisations and governments. Moreover, that these international

organisations and governments can manage the information in a way that the collective learning processes manifest into collective learning outcomes.

Collective learning can be considered an essential process when developing policies. Institutions therefore have the responsibility to promote the availability of information, ensure the presentation of information is understandable and disseminate the information in a manner that promotes collective learning. In the context of the global pandemic and the climate crisis, collective learning is essential to drive behavioural changes. However, it is crucial that individuals are exposed to the correct information in order for cognitive learning outcomes to be achieved and can be translated into behavioural changes. There are also external influences that may affect individuals learning process. Heikkila and Gerlak (2013) emphasize that research suggests that actors or a set of actors in powerful positions have the ability to restrict or promote the availability of information or the method in which information is translated by individuals so that it can be relevant for a group. Moreover, Heikkila and Gerlak (2013) explain that actors that hold power also have the ability to control the dissemination phases of the collective learning process as they generally have access to ideas and information that others do not have access to.

Additional factors that may influence collective learning that translates into behavioural changes includes (i) the structure of organisations and the coordination of the responsibilities and functions of the actors in the organisation; (ii) the interrelationships and communication arrangements between the actors in the collective setting; (iii) the technological resources and tools that actors can use to undertake activities within a group, including products, services and outputs; and finally (iv) external influences that don't directly create or manage and control the actors in the collective setting (Heikkila and Gerlak, 2013). Therefore, the collective learning process involves the acquisition, translation and/or dissemination of information that results in collective learning processes that either result in cognitive or behavioural changes y individuals. A number of factors can include the learning process and outcomes, including external factors such as politics, science, technology, and economic changes.

1.7 Large-scale Collective Action

The phenomenon of collective action and the foundation of collective action problems have been extensively research for local level collective action problems but insights on large -scale

collective problems are somewhat lacking. These large-scale collective action problems are at the forefront of society's most challenging crises such as climate change and the COVID-19 pandemic. Collective action harnessed during the COVID-19 pandemic can provide lessons in addressing challenging large-scale collective action problems such as climate change.

Jagers et al. (2019) have defined the characteristics of large-scale collective action problems and explained that voluntary or spontaneous large-scale collective action among individual actors becomes increasingly unlikely the greater the scale of the collective action problem. The climate change crisis and the COVID-19 pandemic are examples of large-scale collective action problems where grand interventions are required to coordinate collective action. By coordinating collective action, behavioural change on a global scale can be initiated. Jagers, et al. (2019) suggests that large-scale collective action problems require grand interventions by external influences or third parties in order for collective action to be harnessed.

The coordination of collective action is often overcome through simple governance tactics including mechanisms such as trust, reciprocity, and reputation (Jager et al., 2019). However, large-scale collective action challenges such as climate change require bilateral as well as multilateral mechanisms to coordinate collective action. Larger problems are unlikely to have actors that are able or willing to coordinate themselves (Jager et al., 2019). Moreover, the actors are unable to monitor implementation or foresee the actions of other actors. As such, a mediator or organisation with the capacity to provide guidance from a cognitive, behavioural, and normative standpoint is necessary (Jager et al., 2019). This is usually where international organisations and governments are critical in providing guidance for individual actors.

Global collective action challenges have a number of stressors that influence their outcomes. Analysing the nature of a collective action problem through the identification of the fundamental causes and mechanisms that facilitate the problem can therefore provide an opportunity to identify successful methods and policy instruments to overcome it. Examples of characteristics of large-scale collective action problems include: (i) the number of actors involved in a large-scale challenge; (ii) spatial distance, (iii) temporal distance and (iv) complexity.

A large number of actors increases the difficulty to coordinate actors and ensure cooperation from actors (Jager et al., 2019). Moreover, the facilitation of coordination among large groups

often requires some individuals to act as representatives for the group (Jager et al., 2019). However, representatives often act with self-interest rather than on behalf of the group. For example, climate change requires collective action on a global scale, and involves billions of individual actors and groups.

Spatial distance plays an important role in large-scale collective challenges, particularly if multiple countries, continents, or the whole world is affected. Climate change is a global challenge where the geographic distribution is related to the number of actors affected by or causing the problem. Temporal distance or the time lag between the causes and direct effects of the large-scale challenge influences the emergence of coordinated collective action.

Greenhouse gases will have an impact on global warming for hundreds of years, therefore multiple generations will be affected by the changing climate. Large-scale collective challenges are complex. Particularly for climate change, it can be difficult for actors to understand the problem and to comprehend the consequences. Furthermore, large-scale problems like climate change are interconnected. GHG emissions, sea level rise and biodiversity loss are all interconnected large-scale dilemmas society faces. By pinpointing the characteristics of a large-scale collective action challenge the stressors that influence and impact the coordination of collective action can then be identified and the potential solutions to the large-scale collective action challenge can be implemented.

Jager et al (2019) also identify the stressors associated with large-scale collective action challenges. The stressors include (i) anonymity; (ii) lack of accountability; (iii) heterogeneity; (iv) risk and uncertainty; and (v) emotional detachment and cognitive limitations. An increased number of actors result in actors being anonymous to one another (Jager et al., 2019). As such, spatial and temporal distances are intensified. The climate crisis is an extreme case where anonymity spans generations, some yet to come. This is detrimental to coordinating collective action as actors cannot engage, exchange promises or hold one another accountable for their actions. The lack of accountability within a large group of actors across varying spatial and temporal distances usually results in individual actors free riding as the impact of an individual actor in a global crisis like climate change is psychologically considered substantially small (Jager et al., 2019).

The heterogeneity of people's identities, socioeconomic statuses, cultures, traditions, and religions threaten the coordination of collective action due to differences in levels of trust and perceptions amongst actors (Jager et al., 2019). This further decreases the potential for establishing a common relationship across different spatial and temporal distances. This is particularly prevalent for climate change where all beliefs, traditions and cultures, socioeconomic status and identities need to be considered. Risk and uncertainty are stressed by large-scale collective challenges including environmental risk and uncertainty surrounding actors' lack of knowledge about the challenge or there might be social uncertainty and risk where the actors lack knowledge about other actors' decisions and actions (Jager et al., 2019). Furthermore, the uneven distribution of information or communication can also lead to inaction.

Finally, emotional detachment and cognitive limitations of complex challenges are further exacerbated particularly for climate change as it has an inter-generational impact and spans across territories (Jager et al., 2019). Actors can become emotionally detached from complex large-scale challenges that span spatial and temporal distances, leading to inaction. The consequences of climate change can be spatially, and temporally distant as direct impacts or consequences are not experienced, leading to emotional detachment and unwillingness to act on information due to the lack of emotional intensity or an abstract understanding of the consequence or impact (Jager et al., 2019).

In order to manage large-scale collective challenges, interventions are required to harness and enhance the coordination of collective action to overcome the challenge. Interventions can function in different ways to reduce the stressors associated with the large-scale collective challenge. Interventions by facilitators or third-party actors can reduce stressors such as uncertainty and anonymity by providing information through monitoring and reporting (Jager et al., 2019). This can also support social norms, values and trust among actors and enhance pro-social behaviours (Jagers et al., 2019). This is typically coordinated by governments; however third-party interventions can originate from other organisations too.

Interventions can also directly influence actors' behaviour by altering the characteristics of the large-scale collective challenge (Jager et al., 2019). These interventions include policy instruments that are incentive based, regulatory measures, technological standards, subsidies or control and command mechanisms (Jagers et al., 2019). Finally, these interventions can be

implemented in tandem (Jager et al., 2019). The COVID-19 pandemic and climate change can be considered large-scale collective action challenges where voluntary and spontaneous collective action is hindered. As such, in order for large scale collective action to be harnessed and to drive collective action; the relationship between core characteristics of the global challenges; the stressors and the coordinated and cooperative behaviour from actors can be harnessed through alternative interventions from external parties or organisations. Therefore, governance structures are central to driving coordinated collective action in addressing large-scale collective action challenges.

Large-scale collective action challenges generate a number of stressors including anonymity, lack of accountability, uncertainty and heterogeneity which negatively impact mechanisms that usually facilitate collective action among groups and individuals. In order to facilitate collective action, interventions are required to manage the large-scale collective action challenge. These interventions can function in a few ways, including those that reduce the stressors and support facilitators or directly change the characteristics of the large-scale collective action challenge; or both mechanisms can be implemented simultaneously.
A global temperature of well below 2°C is a GPG that extends to countries, people, and generations. Long-lasting and long-term impacts of climate change will likely be severe, pervasive, and irreversible for people and the natural environment. There will be an increased risk of extreme weather, sea level rise, ocean temperature changes, ecosystem changes and human related impacts that will extend across continents and impact future generations (IPCC Summary for Policymakers, 2018; Masson-Delmotte et al., 2018). International organisations have demonstrated that they have the expertise and power to provide the knowledge and guidance. For example, the IPCC was specifically created by the UN to provide a platform for policymakers. The purpose of the IPCC is to conduct scientific assessments and provide information on climate change, it's risks and potential impacts. This international organisation has played a critical role in informing the climate change negotiating decisions and assists governments by providing knowledge to inform policies.

Although international organisations provide the platform to better understand an issue, it is ultimately up to governments to endorse this information through policy and action. As such, it is up to governments to implement and bind agreements. For example, the Paris Agreement (2015) has been ratified but to-date, governments have failed to implement policies that significantly reduce their GHG emissions. However, (Kaul et al, 2011) highlight that

governments do not think and act globally. In other words, governments' focus on the provision of public goods within their countries and don't necessarily consider the global community. This is of particular concern for the climate crisis as the climate change public good challenge is a global challenge. However, Kaul et al (2011) state that specific criteria should be met between international organisations, governments, and non-state actors to enable coordinated collective action. Kaul et al. (2011) describe that the criteria to coordinate collective action should encompass international organisations, governments, and non-state actors. This suggests that international organisations need to ensure regular dialogue and be fully representative. Additionally, that consultation and dialogues between governments and non-state actors should be more fluid. The relationship building between different actors namely, international organisations, governments and non-state actors therefore has the potential to pave the way for coordinated collective action.

2. A Conceptual Framework for Global Governance

Collective action in managing global challenges is essential to provide GPGs. Public health and climate change; particularly reducing the levels of atmospheric GHG emissions to achieve a global temperature of well below 2ºC are examples of GPGs challenges. These GPGs are externalities and create incentives to free-ride and both require international governance for their provision. These public goods raise different governance issues and thus have different challenges for their provision. This section introduces a conceptual framework to identify potential conceptual notions and processes that inform or are interlinked to be able to provide GPGs on a global scale. The framework combines the concepts of policy learning, collective learning, and collective action.

Climate change and the COVID-19 pandemic can be seen as complex GPG challenges. Moreover, these global challenges operate on multiple scales, namely international, national, and individual as they require collective action from international organisations, governments, and individuals. Thus, in order to coordinate collective action to address these challenges, international organisations need to ensure regular dialogue and be fully representative and increased consultation and dialogue between governments and non-state actors. The relationship building between different actors namely, international organisations, governments and non-state actors therefore has the potential to pave the way for coordinated collective action. The tensions between individual and collective rationality are another factor that impacts the governance of these global challenges. The size of the group or number of actors involved usually exacerbates the free-rider problem, therefore global challenges such as COVID-19 and climate change tend to incentivise individuals or countries to free-ride. Therefore, the processes or interventions required to discourage free-riding and harness a cooperative and coordinated response to a global challenge needs to be recognised. As such, the conceptual notions of policy learning, collective learning and large-scale collective action challenges are explored for global governance.

2.1 Policy Learning for Global Governance

Policy learning encompasses a variety of processes and modes that result in learning. The depth of learning varies according to the learning processes and the modes adopted by an individual or group. The processes involved in the learning process include: (i) knowing how or the ability to do something; (ii) the knowledge about facts; (iii) the knowledge on principles and laws,

and (iv) the knowledge about who knows what, influences the learning modes of individuals and groups (Johnson, Lorenz & Lundvall, (2002). Learning takes place through a variety of modes such as experience, observation of others, systematic study, and interaction (Kemp and Weehuizen, 2005). Other aspects influencing the learning process is that individuals and groups learn through the lens of their beliefs and culture, they are influenced by their social environments, are dependent on their roles in society and the scientific evidence available (Witting, 2017).

Learning modes and processes result in different depths of learning. The factors influencing the learning process, therefore impact whether first, second order or third order policy learning occurs. First and second order policy learning result in incremental changes and typically describes beliefs, fundamental design, activities, and goals of organisations and scrutinises these features of an organisation. Third order policy learning typically results in new policy instruments that can initiate strategic action and usually occurs due to emerging new subjects, or life-threatening external events which can be likened to the COVID-19 outbreak and the climate crisis. *Figure 1* illustrates the progression of policy learning based on the processes, modes and finally the outcome of learning depth which results in varying levels of policy changes within an organisation or government.

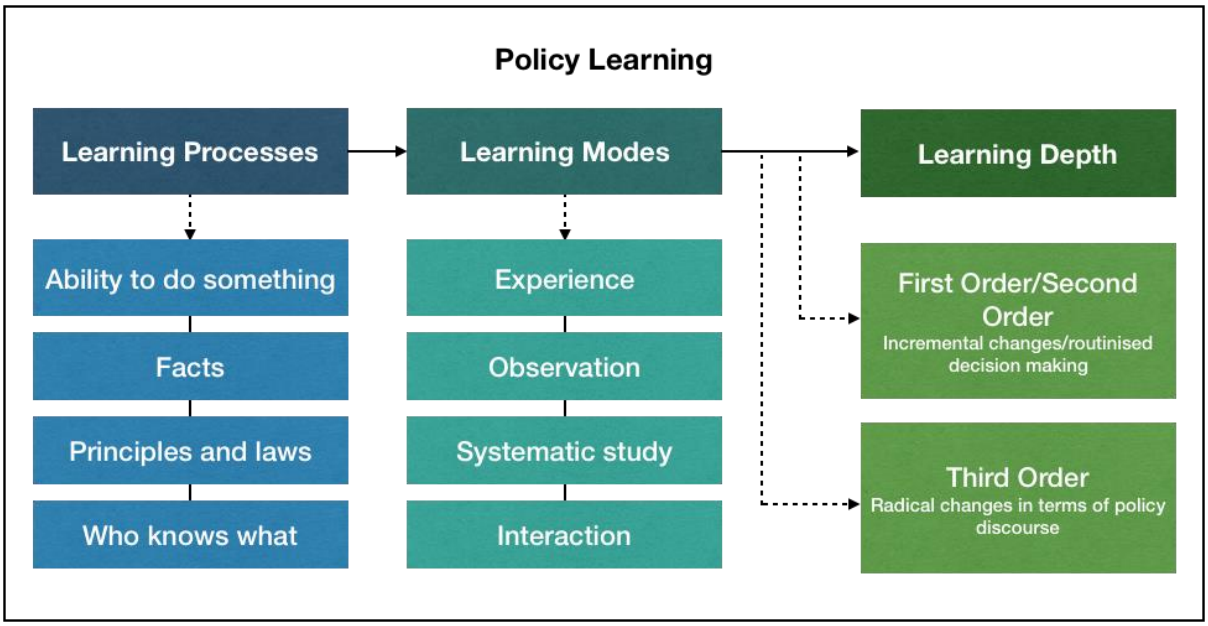

Figure 1. *Progression of policy learning indicating the factors influencing the learning process, the modes of learning and the depth of the learning outcome. (Adapted from: Hall (1993), Johnson, Lorenz Lundvall, 2002; Kemp and Weehuizen, 2005 and Van der Steen and Groenewegen, 2008)*

The COVID-19 pandemic is a life-threatening global event that has resulted in radical policy responses globally. Moreover, the climate change crisis threatens resources and is expected to increase extreme weather events that threaten human lives. Based on the definitions of policy learning presented, it can be assumed that in order to respond to crises or global challenges such as the COVID-19 pandemic and climate change, third-order policy learning is essential for radical changes. However, in order to coordinate collective cooperation and coordination among populations, individuals also need to experience collective learning.

2.2 Collective Learning for Global Governance

The purpose of collective learning is the production of knowledge. As such, the learning process requires interactions so that knowledge is acquired. The collective learning process described by Heikkila & Gerlak (2013) is divided into three simple steps: (i) acquisition; (ii) translation; and (iii) dissemination of information into knowledge. The acquisition phase refers to the deliberative or intentional actions by individuals. The acquisition of knowledge can also occur through the deliberate act of searching for information or noticing information, whereby learning by observing occurs (Heikkila and Gerlak, 2013). The translation phase of the process involves the interpretation of the new information, or the application of existing information within a new context by individuals within a group that acquired the information (Heikkila and Gerlak, 2013). The final phase in the process is the dissemination phase. This is when the transfer of information across a group occurs. This is when individual-level knowledge is developed and translates into shared knowledge among a group (Heikkila and Gerlak, 2013).

These collective learning processes result in two potential collective learning outcomes, namely cognitive or behavioural outcomes. Cognitive changes are usually represented by strengthened or new beliefs and values across a group of individuals (Heikkila and Gerlak, 2013). If the outcome of the collective learning process is behavioural changes, it usually represents shared strategies, policies, routines, programs, or institutions experience collective actions among individuals. Behavioural changes also represent the adoption of new policies and strategies by a group of actors (Heikkila and Gerlak, 2013).

The collective learning processes differ according to how individuals or groups of actors acquire and shape knowledge. External influences may also impact the learning process. These influences include political factors, the role of science and technology and the level of scientific

understanding of the subject in question as well as the economic changes and contexts of the challenges. *Figure 2* illustrates the outcomes of collective learning and how these outcomes have the potential to affect or shape collective learning outcomes. It also summarises the potential impact contextual characteristics can have on collective learning processes.

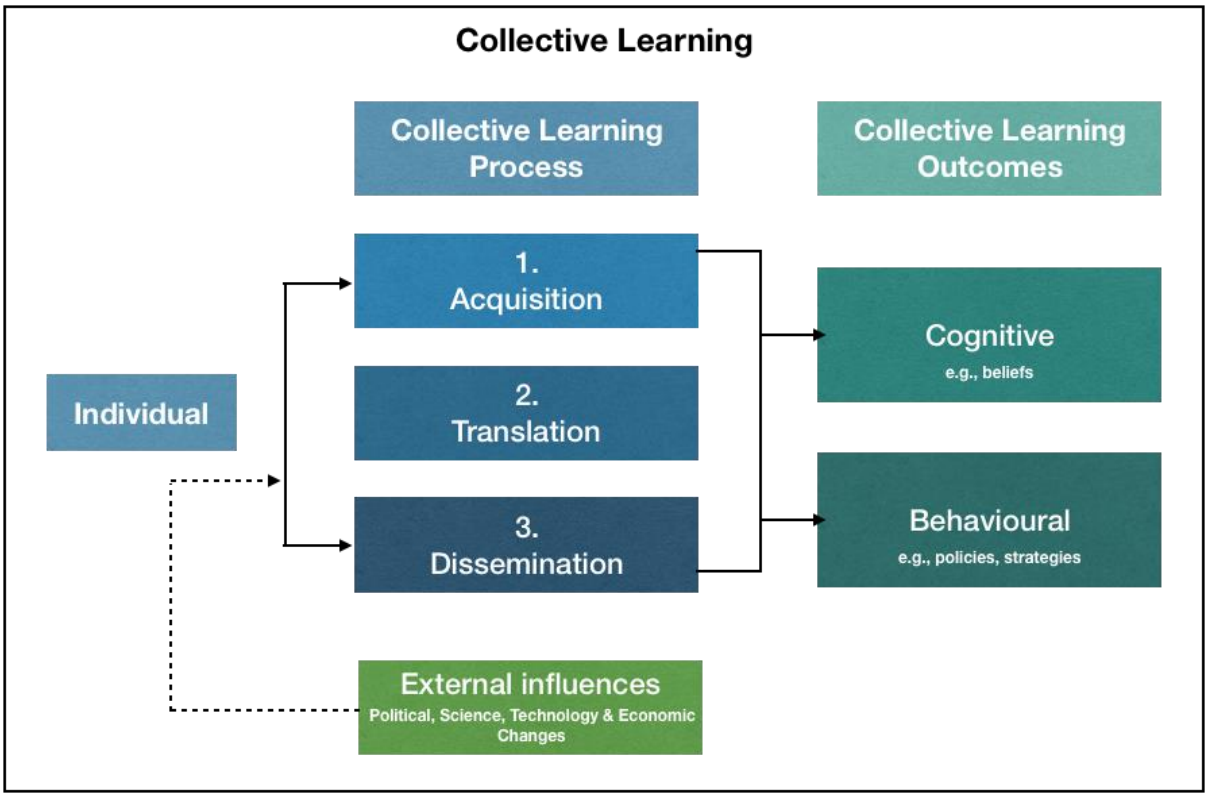

Figure 2. *The collective learning processes that influence individuals collective learning outcomes. These outcomes are also affected by external factors including politics, science and technology and economic changes that occur. There are two primary collective learning outcomes; cognitive learning and/or behavioural learning. Adapted: Heikkila and Gerlak, 2013.*

These ideas can be applied to the coordination of collective action in times of crises. As such, the set of actors, or organisations have the ability to shape information in a manner in which either inhibits or promotes collective learning which in turn either inhibits or promotes coordinated collective action that results in behavioural changes.

Collective learning is therefore an essential process when policy learning is applied by governments and international organisations. International organisations and governments have the responsibility to promote the availability of information, ensure the presentation of the information is understandable and finally disseminate information in order to promote and foster collective learning to address policies. This is essential to coordinate and drive collective action.

2.3 Large-scale Collective Action

Large-scale collective action challenges are defined by their characteristics. Jager et al. (2019) defines large-scale collective challenges as challenges that have a large number of sectors involved and require bilateral and multilateral mechanisms for collective action to be coordinated. Large-scale collective action challenges also have spatial and temporal distance challenges. These distance factors influence time lags between causes and direct effects. The geographic distribution related to the number of actors also influences how collective action is coordinated on a large-scale (Jager et al., 2019). In addition, the complexities of largescale challenges, particularly climate change; represents interconnected natural systems. The risks and uncertainties associated with these complex, interconnected systems influences the manner in which collective action can be or is coordinated.

These characteristics of the large-scale collective action problem result in a number of stressors that hinder the success of large-scale collective action. Therefore, the defining characteristics of the large-scale collective action and the mechanisms (i.e., stressors) result in unwanted impacts. Characteristics such as number of actors, spatial distance, temporal distance, and complexity can be considered defining characteristics; either in isolation or in combination, that determine what can be constituted as a large-scale collective action problem (Jagers et al., 2019). These defining characteristics give rise to a number of stressors that negatively impact the prospects of coordination and collective action. Thus, these stressors have the potential to identify why large-scale collective action is less likely to occur.

Anonymity, lack of accountability, heterogeneity, risk, and uncertainty and/or emotional detachment and cognitive limitations could be considered as some of the more apparent stressors that are likely to impact collective action as a solution to large-scale challenges (Jagers et al., 2019). Large-scale challenges involve a large number of actors, as such it is likely that actors will be anonymous to one another which is further exacerbated as the spatial and temporal distances increase (Jager et al., 2019). Furthermore, if the large-scale challenge pans across multiple generations or generations to come the anonymity stressor is further reinforced. Hence, it becomes increasingly more difficult to drive cooperation and reduce the occurrence of free riding as actors are less likely to engage and exchange promises or communicate. An increasing number of actors results in a relative decrease in the individual's contribution to the

collective action problem and creates the viewpoint that individual actions do not carry an impact (Jagers et al., 2019). Accordingly, individuals lack accountability.

Large-scale collective action challenges give rise to various forms of heterogeneity, including cultures, socioeconomic status, identities, religions, and power asymmetries (Jagers et al., 2019). These heterogeneities reduce the potential to foster cooperation amongst actors. Thus, sustaining collective coordination becomes less likely when a large number of actors are coupled with vast spatial and temporal distances

Collective action challenges are typically associated with many risks and uncertainty. These risks and uncertainties consequences are accentuated in large-scale challenges, including the status of knowledge regarding these consequences (Jagers et al., 2019). The negative effects of uncertainty are usually exacerbated by the uneven distribution of information as well as when there is a lack of trust in institutions or organisations that disseminate the information. Moreover, actors' lack of knowledge regarding the large-scale challenge or the lack of knowledge about other actors' actions may increase the potential of absence of coordination and cooperation (Jagers et al., 2019).

Cognitive limitations and emotional detachment play an important role in large-scale and complex challenges. Kahneman (2003) suggests that human problem solving is limited due to human's cognitive ability which impacts decision making. Therefore, when actors are confronted with large-scale or complex challenges, emotional detachment may occur as these challenges are characterised by large spatial and temporal distances (Jagers et al., 2019). Moreover, emotions are less intense as psychological distance is increased (Jagers et al., 2019). Although an actor may be informed and aware of the potential negative impacts of the large-scale challenge, the more abstract a large-scale challenge is and spatially or temporally distant, the less emotional intensity exists. These factors limit the emotional attachment to the large-scale challenge and reduces the prospects of coordination and collective action. Therefore, it is less likely that spontaneous collective action will occur, the larger the scale of the collective action problem.

Interventions are required to reduce the stressors in order to facilitate a large-scale collective action process. The stressors of large-scale collective action problems suggest that collective action on a large-scale requires third-party interventions. Ostrom (1998) notes that unless there

are small groups of actors with a common interest, rational and self-interested individuals will not achieve a group or collective interest (Ostrom, 1998). Interventions therefore require input from facilitators such as third parties. Third parties are then required to determine and implement mechanisms to reduce the stressors by weakening or removing the collective action stressors or by reinforcing the role of collective action facilitators (Jagers et al., 2019).

Interventions harnessed by altering the characteristics of the large-scale collective action problem can be used as a more direct effort to change actors' behaviour (Jagers et al., 2019). These interventions could be initiated through market-based instruments, incentive-based policy instruments, command and control and regulatory methods that focus on subsidies or technological standards. Interventions harnessed by reinforcing the role of third parties may involve governments, city governors, regional authorities, community leaders as well as businesses or international organisations (Jagers et al., 2019). However, these organisations will require legitimacy and acceptability among the target audience of actors to be effective in coordinating collective action and minimising free rider behaviour.

Thus, by identifying the stressors of the large-scale challenge, instruments can be adopted to influence actors' behaviour. These interventions are typically driven by directly altering the stressors associated with the large-scale challenge in the form of policy instruments that incentivise or regulate behaviour and actions or alternatively through third parties such as institutions and governments. *Figure 3* summarises the factors influencing large-scale collective action. The figure summarises the potential characteristics that may define a large-scale collective action challenge and its associated stressors that have the potential to heighten the challenge, particularly in coordinating collective action on large scales.

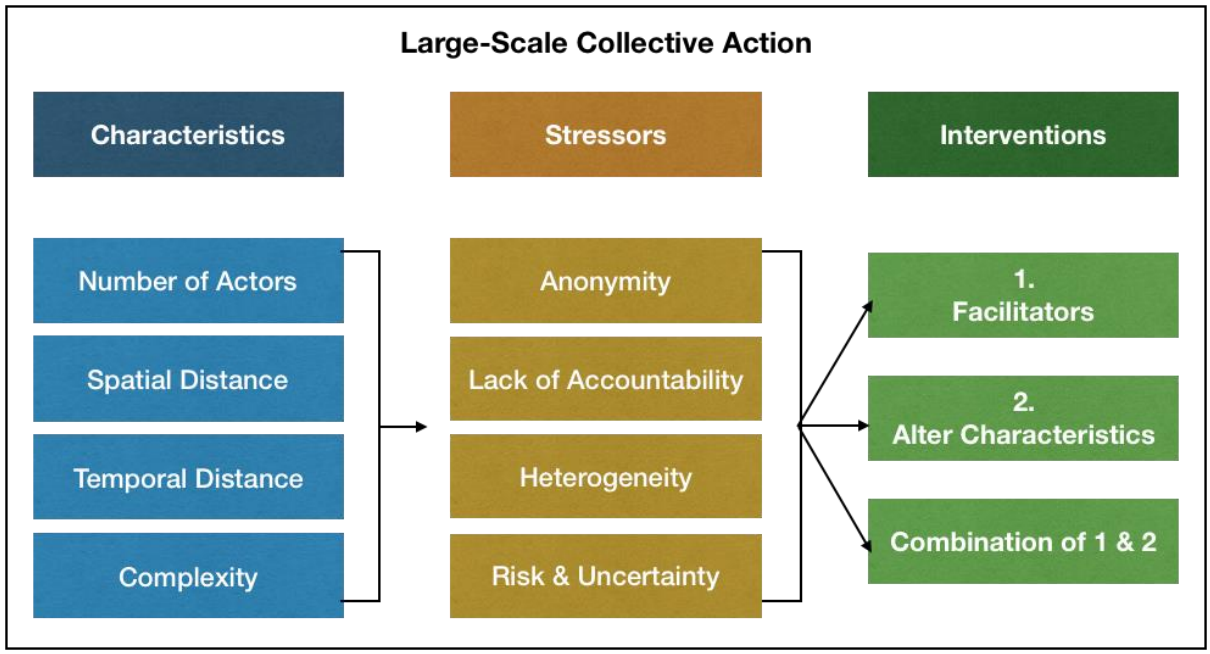

***Figure 3**. The general characteristics and potential stressors influencing a large-scale collective action challenge and the potential interventions that can be harnessed to generate and sustain large-scale collective action (adapted from Jagers et al., 2019).*

Large-scale collective action challenges generate a number of stressors including anonymity, lack of accountability, uncertainty and heterogeneity which negatively impact mechanisms that usually facilitate coordinated collective action among groups and individuals. Thus, interventions are required to overcome the collective action problem. The interventions can function in a few ways by directly altering the characteristics of the stressors or through third party interventions that target facilitators or by adopting both mechanisms to coordinate large-scale collective action.

2.4 A Conceptual Framework to Assess Global Governance

The conceptual framework is based on the literature and information on how policy learning, collective learning and collective action works and for whom these processes work. *Figure 4* proposes conceptualising governance of global challenges as intertwining processes between policy learning, collective learning, and collective action. These conceptual notions therefore indicate that a number of characteristics and complexities exist and require an equal number of interventions or the conscious acts of learning, through experience, observation, acquisition, and translation of information and subsequent interventions that remove stressors from known characteristics of a governance or large-scale challenge.

Figure 4. *A conceptual framework of global governance that suggest the linkage and intertwining nature of the processes between policy learning, collective learning, and collective action.*

Policy learning encompasses a number of learning processes that are developed through modes such as experience, observation, interaction, and systematic study. Based on the modes developed through the learning process a specific depth of learning by actors occurs. First order and second order learning generally target policy instruments and results in incremental changes (Hall, 1993). These policy learnings happen frequently and usually only within organisations that have well defined mandates. Whereas third order learning results in changes that drastically impact organisations or systems, in particular the kind of organisations where competing objectives amongst actors exist (Kemp and Weehuizen, 2005; Van der Steen and Groenewegen, 2008). Actors involved in the policy learning process are usually a group or individual that is directly or indirectly affiliated to the policy process and this includes individuals within governments, businesses, NGOs, civil society organisations, communities, or individuals. However, policy is usually formulated by a group of actors, as such these groups

arrive at a common objective through policy learning. This common objective is arrived at through the process of collective learning.

Collective learning is pertinent in shaping collective action within a group of actors. The process of learning is facilitated through a number of mechanisms that include the acquisition of information, the translation of this information and subsequently the dissemination of this information. Information becomes knowledge through this process. The collective learning outcomes either translate into cognitive collective learning or behavioural collective learning. Cognitive collective learning refers to knowledge gained about beliefs and values within or across a group of actors. Behavioural collective learning refers to changes in shared strategies, policies, programs, or organisations across a group of actors or individuals. Ideally, behavioural collective learning should take place for a group of actors to adopt changes within an organisation that relate to policy or strategy changes. It should be noted though that in order for behavioural collective learning to occur, the individual or group of individuals need to also adopt cognitive changes. The collective learning process can therefore be applied to coordinate collective action.

The coordination of collective action has proven to be difficult to harness at a large-scale. Individual actors become increasingly unlikely to drive collective action voluntarily or spontaneously among peers in a group or organisation. However, research has shown that collective action can be harnessed through simple mechanisms that promote trust, reciprocity, and reputations. However, large-scale collective action problems has greater stressors. The number of actors, the spatial and temporal distances and complexity of global collective action problems requires an alternative approach to forming trust, ensuring reciprocity, and considering organisations or governments reputations. Each collective action problems have their own stressors that influence actors, therefore the key to driving collective action on a large-scale is ensuring collective learning among actors and identifying the mechanisms that can reduce the stressors hindering the collective learning process and third-party interventions. Global collective action problems require third-party interventions from either multilateral organisation, governments, civil society, or the private sector. Relationship building between these actors is also key to harnessing a coordinated effort to drive collective action which results in long-term behavioural changes.

2.5 Conclusion

International organisations and national governments play important roles in providing frameworks and regulations to incentivise individual's collective learning outcomes and these actors are also responsible for policy learning to identify the changes or responses required to harness collective learning and coordinated collective action on a large-scale. To enable coordinated collective learning, governments need to share and expand knowledge on a 'third order' scale but in order for this to take place, 'first order' and 'second order' learning is necessary to solve the problem of the exchange of information that facilitates collective learning. However, the nature of the problem plays an important role.

To achieve third-order policy learning governments need to first have achieved learning within their structure and have a grip on the core beliefs, fundamental design, and their goals. Third order learning is then more easily achieved when a life-threatening external event occurs as the emergence of new information or subjects require scrutiny in order for the policy learning to evolve into policy responses. This is where collective learning is important as it facilitates the learning process of the new information into knowledge which then leads to cognitive and behavioural changes. Collective learning is important within government structures as without cognitive and behavioural learning outcomes, coordinated collective action cannot be achieved. Cognitive and behavioural learning outcomes supports the identification of interventions required to remove stressors and address the characteristics of the collective action problem. Therefore, by identifying the nature of the challenge (i.e., large-scale challenge like climate change or the COVID-19 disease) and the interventions required to remove or reduce stressors; governments can then initiate collective action.

International organisations play an integral role in this process; particularly for large-scale collective action challenges, as governments generally cannot initiate these processes without the help of international organisations. International organisations have the ability to manage information that translates into knowledge. Actors within these organisations determine the state of knowledge, particularly for emerging subjects, scarcity of resources and for life-threatening events. These organisations have the ability to drive the depth of learning from first order, second order to third order through the availability of funding and resources. Therefore, these organisations can provide the basis for policy learning by identifying the cognitive and behavioural changes required to address a challenge, identify the interventions to reduce the

stressors. Therefore, the knowledge provided by international organisations can provide policy learning, collective learning, and collective action. But it is up to governments to bind policy learning and collective learning to coordinate collective action within their country policy structures.

The conceptual framework suggests that policy learning, collective learning and collective action needs to be institutionalised in international organisations, governments and between non-state actors (i.e., corporates) and individuals to have a long-term impact. The need for the feedback loop to succeed between these conceptual notions should influence or change how actors coordinate and cooperate. Therefore, the interconnected characteristics of each conceptual notion of policy learning, collective learning and collective action is necessary for global governance.

It should be realised that the good imperatives of international organisations need to be institutionalised within national governments as there are various externalities within governments which may impede the adoption of even the best policies agreed and ratified globally. Therefore, although governments (a typical facilitator or third party) may manage to concede to an agreement on how to cope with a global challenges like the COVID-19 pandemic and climate change, the next challenge is for the third party to design and implement policies and policy instruments that will effectively drive the coordinated collective action or behavioural changes from the respective actors (consumer and/or producer) who are required to implement the behavioural changes necessary for the overall challenge to be addressed and overcome.

The COVID-19 pandemic and climate change crises are examples of challenges where the importance of facilitators (third parties) can play a critical role in reducing and weakening the collective action stressors. The Paris Agreement serves as a useful example of a successful form of international cooperation, as it was the first treaty and collective effort by the global community to address climate change. As such, the Paris Agreement was viewed as a highly successful form of international cooperation to effectively tackle a large-scale collective action problem that addresses a wide array of actors (governments, industry, and individuals), across a wide spatial and temporal distance. Possibly also from a complexity standpoint as there are several factors that improve the characteristics and stressors linked to them. Some factors are that there is strong scientific consensus regarding the causes and potential solutions to the

climate crisis; availability and access to the most up-to-date physical understanding of the climate system and climate change; high-level summaries of the understanding of the current state of the climate for policymakers; the availability of reasonable substitutes for fossil fuels; the continuous advancement of technology as well as unilateral action and support by influential governments.

However, climate change does give rise to potent stressors and associated consequences that are not easy to predict. There are also constantly evolving climate models that many actors find contradictory; and there are vast differences between government and organisations' cost-benefit analyses. Finally, there is no single simple solution to address the inter-disciplinary nature of climate change. Therefore, these stressors impede the adoption of policies required to be considered to adequately address the externalities that are key to institutionalising coordinated and collective efforts to address large-scale challenges.

3. Methodology

3.1 Approach

A framework of analysis was developed to investigate the governance of two global challenges in terms of policy learning and collective action. The COVID-19 pandemic and anthropogenic climate change pose critical challenges to the well-being of humans. These challenges depend on collective responses from international organisations, governments, non-state actors and individuals to contain them. The framework of analysis was developed to explore the concepts of policy learning, collective learning, and collective action in addressing a large-scale challenge such as the COVID-19 pandemic and climate change.

The framework provides a structure to understand the concepts and generate themes and comparisons within and between the COVID-19 pandemic and climate change. This will identify the governance structures and global responses to both global challenges. The responses were assessed by developing timelines for each crisis from an international organisation perspective. The timelines provide evidence on the scale, timing, and functions of responses for each global crisis.

The assessed responses comprised of organisational responses & policy measures that were implemented. The nature and comparison of the international responses were explored to determine where policy learning occurred and who harnessed and coordinated collective action. Finally, the concept of policy learning, collective learning and collective action can identify the lessons of governance and responses during the COVID-19 pandemic to inform the collective coordination of multilateral actors, the participation of the global public and the implementation of policies that can address the climate crisis and drive long-term climate friendly behavioural changes.

3.2 Rationale for Case Selection

International organisations have provided the collective goods for coordinated national responses to the climate change crisis. However, effective responses are yet to be executed. The various international public policy responses to the COVID-19 pandemic thus provides the opportunity to identify a method for large-scale coordination of collective action to adequately address the climate crisis. A number of factors influence the policy learning process and subsequent depth of policy learning, coordination of collective learning and subsequent

collective action. Therefore, by investigating the governance of the two global challenges in terms of policy responses and the comparative analysis between the two crises, it can be identified where policy learning, collective learning and collective action were harnessed to govern the global challenges.

3.2.1 The COVID-19 Pandemic Analysis

The role of international organisations during the COVID-19 pandemic was assessed to determine the global governance structures of managing a crisis. A timeline of responses by international organisations was developed to understand the acquisition, translation, and dissemination of information amongst international organisations and from international organisations to member states . The analysis of international organisations and their role during the COVID-19 crisis can help to highlight the dissemination of information across the global network. The key responses from an institutional perspective and a brief analysis on policy measures adopted and implemented by these organisations is explored. The external influence of politics, science and technology are considered too.

3.2.2 Climate Change Analysis

The analysis of policy responses to climate change focussed on the current global climate governance structures. The evolution of these global governance structures was assessed over the period from 1985 to 2020. The overview and timeline of climate change governance explores the role of international organisations and the role of governments in shaping the current climate change regime. Although international organisations have played a key role in providing collective goods for national responses to the climate crisis, effective responses have not been implemented by governments. Therefore, the purpose of the analysis of these responses is to identify where and how second order policy learning can be initiated to adequately translate collective learning and collective action into long-term behavioural changes that positively address climate change within countries and at an individual level. Moreover, a limited assessment of the external influence of politics, science, and technology in the evolution of progress in addressing the climate crisis is also considered.

3.3 Data Collection

The qualitative data used to investigate the governance of the two global challenges in terms of policy learning and collective action was derived from historical information, international organisation portals and government policy responses.

3.3.1 Data on Policy Responses to the COVID-19 Pandemic

The analysis of the responses of international organisations in responding to the pandemic was researched. The timing of the policy responses was gathered from information provided by governments and international organisations. This information was collected through organisations that tracked fiscal policy responses of international organisations. The online policy response trackers such as the Policy Response Tracker developed by the International Monetary Fund (IMF) and the Government Response Stimulus Tracker developed by KMPG were used. The stimulus tracker provided a summary of the measures implemented by governments and institutions in their response to the COVID-19 pandemic.

3.3.1.1 IMF Policy Tracker

The policy tracker developed by IMF summarises the key economic government responses that were taken to limit the economic and human impact caused by the COVID-19 pandemic. The tracker covers 196 economies and has been updated throughout the pandemic to capture the developments as circumstances change.

3.3.1.2 KPMG Government Stimulus Tracker

Klynveld Peat Marwick Goerdeler's (KPMG) government tracker details government aid packages that were offered by international organisations to mitigate the impact of the COVID-19 pandemic. The tracker details mitigation measures such as automatic tax changes, direct aid payments or loans and state-insurance systems. The stimulus tracker has updated the measures implemented by governments as the pandemic has evolved.

3.3.2 Data on Climate Policy Responses

An analysis on the history of international policies, responses and the role of international organisations and governments in shaping the responses to climate change were researched. A review of literature on the evolution of policies and international negotiations was conducted by investigating the literature on climate change policy and politics for the period 1985 to 2020. The review of the literature involved researching the political actions, activist efforts and policies developed through international negotiations or forums. The role of politics, multilateral organisations and governments was used as a basis to develop the timeline to gain

insights into what shaped the evolution of the climate change regime and the resultant outcomes of negotiations and the subsequent policy responses. The timeline focuses on what is considered to be significant feats for climate change, the evolution of information through the role of science and technology and the role of international organisations, governments, and policymakers over this period.

3.4 Methods of Analysis

A comparative analysis of the two crises climate change and the COVID-19 pandemic were conducted to determine the similarities and differences between the two global crises. Factors explored included causes, attributes, effects, the depth of social cooperation, role of global organisations, governments, and the science-policy relationship.

3.4.1 Governance of the COVID-19 Pandemic

The role of international organisations in the response to the COVID-19 pandemic was assessed by developing a timeline of responses by international organisations such as the WHO, IMF, and UN. The timeline therefore aims to illustrate the pace and scale of responses by these international organisations and the influence of decisions and responses on member states. These policy responses were explored to determine the functions that worked and for who they worked. The purpose for the framework of analysis to assess where policy learning, collective learning and collective action was coordinated. The identification of these conceptual notions and the response through governance decisions provides the opportunity to determine how the COVID-19 pandemic was governed in 2020.

3.4.2 Governance of Climate Change

The role of international organisations in the response to the climate crisis was assessed by developing a timeline of the multilateral decisions, agreements, and role of international organisations in tackling the climate change crisis. The timeline thus aims to illustrate the pace and scale of responses by these international organisations and the influence of these multilateral agreements on decision on member states responses to the changing climate.

Therefore, by identifying the successes and failures of the policy responses during the COVID-19 pandemic and climate change, the framework of analysis can be applied to identify where the conceptual notions of policy learning, collective learning and collective action were

coordinated and how these notions are interconnected for global governance of a global challenge.

3.4.3 Operationalising the Conceptual Framework for Global Governance

In order to understand and determine the lessons that can be learned by assessing and comparing the two global crises, climate change and the COVID-19 pandemic, the concepts of policy learning, collective learning and collective action have been simplified. *Table 1* summarises the concept of policy learning, the depth of learning and the role of actors in policy learning.

***Table 1**. The concept of policy learning detailing the potential outcomes based on the depth of learning, what the key functions are, and the actors involved in the policy learning process*

Policy Learning			
Depth of learning	**Description**	**Key**	**Actors**
First / Second Order	Incremental changes	Policy instruments, core beliefs, fundamental design, activities and goals of organisations	Governmental International organisations Groups (i.e. NGOs, corporates)
Third Order	Paradigms, radical changes	Enable policy paradigms, radical changes within policy frameworks and policies	Involve a wide set of actors. Possibly across organisations. Governments International organisations

Policy learning involves a number of actors including governments, international organisations as well as non-state groups such as NGOs, corporates, or civil society groups. There are different outcomes of policy learning based on the depth of learning and associated actors. Therefore, by assessing the actors, type of policy, the depth of learning can be identified for each actor based on the policy outcome.

Table 2 summarises the concept of collective learning. There are two main outcomes of collective learning, including: cognitive and behavioural learning. Each level of learning is associated with different actors and outcomes.

***Table 2**.The concept of collective learning detailing the potential outcomes based on the learning outcome, what the key functions are, and the actors involved in the collective learning process*

Collective Learning			
Learning Outcomes	**Description**	**Key**	**Actors**
Cognitive	Beliefs, new ideas, values. Information becomes knowledge	Strengthened or new ideas, or beliefs and values across a group of individuals	Individuals
Behavioural	Shared policies, strategies, routines, programs	Policy and institutional changes	Group of individuals

Collective learning involves the individual or a group of individuals. The outcome of collective learning is dependent upon the acquisition, translation, and dissemination of information. The translation phase of collective learning involves the interpretation of new information and the point at which information is understood to become knowledge. When information is translated into knowledge, the individual learns cognitively. In order for behavioural changes to occur during collective learning, the dissemination phase of collective learning is critical. When the dissemination of knowledge across or among a group occurs, this information becomes shared knowledge. Generally behavioural changes translate into policy and institutional changes that result in collective learning. Therefore, by assessing the role of organisations and the way in which information was acquired, translated and disseminated provides clues in identifying policy learning processes. The use of ideas or beliefs, values, strategies, and policy responses can help identify how and where individuals or groups were exposed to information to result in cognitive or behavioural changes. The concept of policy learning also influences coordinated collective action by a group. Therefore, the conceptual notions of collective action for a large-scale challenge are summarised in *Table 3*. There are two potential intervention mechanisms that can be harnessed to coordinate collection action. This can be harnessed through facilitators or by altering the qualities or removing characteristics of the large-scale challenge. Both interventions require participation from international organisations, governments, non-state actors and individuals.

***Table 3**.The concept of collective action detailing the potential interventions that can be harnessed to adequately address the large-scale/global challenge in order to harness collective action. Collective action for large-scale/global challenges involves a number of actors, including international organisations, governments, non-state actors and individuals.*

Collective Action			
Interventions	**Description**	**Key**	**Actors**
Facilitators	Third parties	Stressors such as anonymity, lack of accountability, heterogeneity, risk & uncertainty, and anonymity	International Organisations Governments Corporates Civil society groups
Alteration of characteristics	Identify characteristics based on spatial and temporal distances, number of actors involved and complexity of problem	Alter characteristics of the collective action problem through policy instruments, regulatory measures, technological standards, control & command and subsidies	International Organisations Governments Civil society groups

Large-scale collective action challenges generate a number of governance challenges such as anonymity, lack of accountability, uncertainty and heterogeneity which negatively impact mechanisms that aim to facilitate collective action among groups and individuals. As such, third party actors can intervene by altering the characteristics of the large-scale collective action problem or third party actors can help to facilitate cooperative action by assisting through policy response mechanism. Therefore, global governance challenges can be conceptualised as an interconnected relationship between policy learning, collective learning, and collective action. As such, the processes, and the associated outcomes of the processes for each conceptual notion will help to analyse where these conceptual notions occur in global governance. Moreover, if elements of all three conceptual notions are required for global governance.

3.4.4 Methodological Choices

Policy and subsequent coordinated collective action are important components in addressing global challenges. Anthropogenic climate change poses a critical challenge to human well-being and the natural environment. The COVID-19 pandemic is currently a global critical challenge that also impacts human well-being. The pandemic has illustrated that in order to contain the spread of the disease collective responses are required on both an international and national scale. Therefore, the driver of these collective responses to the pandemic needs to be identified. The COVID-19 pandemic provides the ideal platform to assess policy learning, collective learning, and collective action to determine the drivers of behavioural changes and how global governance should be structured to achieve this. Thus, the framework of analysis provides a basis for understanding the global responses for climate change by using the current COVID-19 pandemic as a case study to inform what is required to harness global governance

that coordinates collective action and subsequent behavioural changes for a large-scale challenge like climate change.

The two global challenges will be analysed in terms of their governance structures and policy responses. The responses to the crises will be analysed to determine how policy learning, collective learning and collective action has functioned or failed. A brief analysis of the policy responses to the COVID-19 pandemic will be explored by looking at the role of international organisations. Thereafter the historical analysis of responses, negotiations, and agreements to address climate change will be assessed. The following section will analyse the role of international organisations in developing policy responses to the COVID-19 pandemic and the evolution of climate change governance between 1985 and 2020.

4. Analysis of Global Governance

4.1 Analysis of the Policy Responses during the COVID-19 Pandemic

The COVID-19 pandemic resulted in unprecedented global action to ensure radical measures were implemented to slow the spread of the COVID-19 disease. The role and responses from international organisations and governments can provide insights into the concept of governance of global challenges as interconnecting processes between policy learning, collective learning, and collective action.

A timeline of significant policy responses from international organisations spanning from January 2020 to December 2020 is assessed to determine the characteristics and complexities that existed, and the actions taken to initiate global governance of the COVID-19 pandemic. The timeline is used to determine the interventions or the conscious actions of learning, through experience and observation, acquisition, and translation of information. The subsequent interventions to remove stressors and address the characteristics of the global challenge will be determined through the policy responses or actions by international organisations.

International organisations are essential actors within the global community. They provide a platform for political initiatives, and act as catalysts for coordinated and collective action among countries. They also facilitate mechanisms to respond to economic and social issues. International organisations have played a crucial role throughout the COVID-19 pandemic. They were responsible for initiating and supporting collective action to inform government responses. International organisations assisted from a financial perspective and informed research in understanding the COVID-19 disease. These organisations helped to manage GPGs to adequately address the pandemic on a global scale. *Figure 5* illustrates some of the key responses and steps taken by international organisations to address COVID-19 and their role in supporting collective action and GPGs. The response by these organisations is colour coded to represent the importance of the responses. The colour blue represents significant COVID-19 responses on a global scale by the international community. Green represents significant information that impacted the global response to the COVID-19 pandemic. Purple represents significant actions taken by international organisations and orange represents the significant scientific findings or revelations about the novel COVID-19 disease.

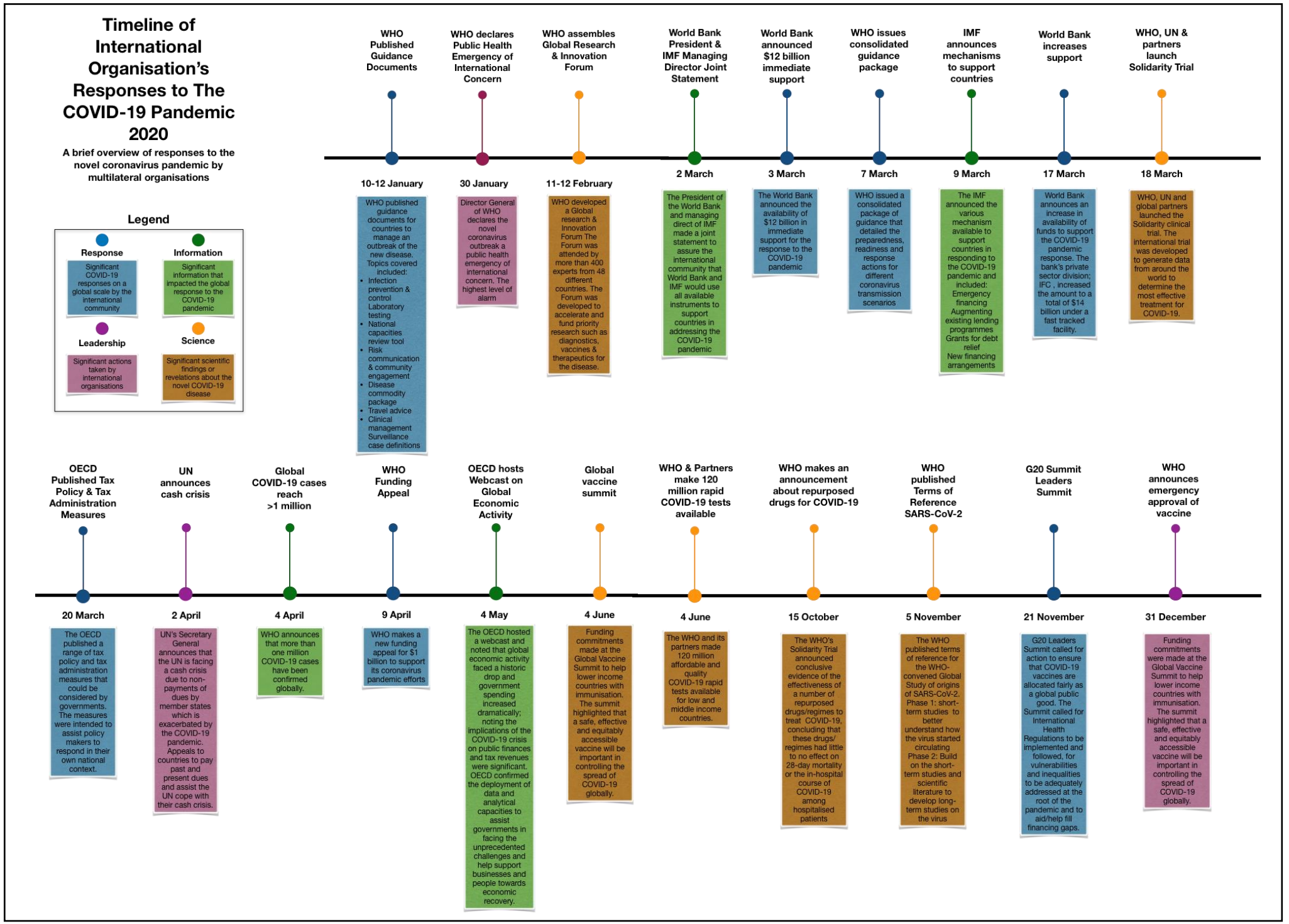

Figure 5. *Timeline of International Responses to the COVID-19 Pandemic from January 2020 to December 2020. The response by international organisations is briefly summarised and colour coded to represent the significance of the responses.*

4.1.1 Overview of the COVID-19 Pandemic Timeline

4.1.1.1 January – May 2020

During mid-January 2020, the WHO published guidelines to assist governments' responses to the COVID-19 pandemic. This was based on their current state of knowledge about the novel COVID-19 disease. By the end of January 2020, the WHO had declared the outbreak of the novel disease a global health emergency. In February 2020, The WHO requested that the UN Foundation create a fund to address the global pandemic. In partnership with the Swiss Philanthropy Foundation, the UN developed a COVID-19 Solidarity Response Fund. By developing this fund, the UN was able to create a global COVID-19 fund to support the WHO's initiatives to respond to the COVID-19 pandemic. Donations to the fund were from companies, individuals, and philanthropies (Klynveld Peat Marwick Goerdeler [KPMG] Government Response, 2020). At the launch of the fund large corporations such as Facebook and Google made significant donations. The fund helped to facilitate WHO's coordinated global effort to support countries in preventing, detecting and responding to the pandemic.

The money raised through the COVID-19 Solidarity Response Fund would assist the WHO to develop activities that would understand the spread of the COVID-19 disease, ensure patients received the care they required; help to purchase essential supplies (i.e., PPE) for frontline workers; produce evidence based guidelines and advice to ensure health workers received the training and information required to detect and treat affected patients; produce guidance for the general public to support measures that would slow the spread of the disease and finally accelerate the efforts in developing tests, treatments and vaccines (WHO COVID-19 Response Fund, 2021). The funds acquired through the Solidarity Response Fund, supported the launch of the WHO and UN's global partner's clinical trial. The trial was developed to generate data from around the globe to determine the most effective treatment for the COVID-19 disease. These efforts supported research, science, and technology innovation. The UN and WHO have been instrumental in facilitating research and collaboration, data and knowledge sharing to address and cope with the impacts of the COVID-19 disease.

Over the course of March 2020, global financial institutions such as the World Bank and International Monetary Fund (IMF) announced financial support mechanisms for countries. The IMF, along with the World Bank announced that instruments would be put in place to

address the global pandemic. The IMF put a number of mechanisms in place to support countries. In particular the IMF provided emergency financial assistance to member countries without usual requirements such as fully fledged programs (IMF, 2020). The loans could amount to up to 50 billion US dollars for low income, developing countries and distributed quickly in order to implement policies that address the pandemic. The IMF also used existing lending programmes to accommodate urgent needs of country members. The Catastrophe Containment and Relief Trust (CCRT) enabled the IMF to provide grants for debt relief for the poorest and most vulnerable countries. This mechanism was used to support countries such as Liberia, Sierra Leone, and Guinea during the Ebola outbreak in 2014 (IMF 2020).

In addition to providing financial support to countries, the IMF also developed a technical series on COVID-19 to support and assist countries in determining policy measures to address the pandemic (IMF, 2020). These institutions made funds available for immediate support for countries, with particular focus on developing countries' whose social and environmental contexts were at highest risk to the impacts of the COVID-19 disease outbreak. Moreover, the OECD published guidelines for governments on tax policy and tax administration measures.

The World Bank embraced a similar approach to that of the IMF and announced availability of immediate support for the response to the pandemic. The finance made available by the World Bank and other international financial institutions such as the International Bank for Reconstruction and Development (IBRD) was primarily to address the initial health response to the pandemic, including preventing and limiting local transmission through improved trace and tracking and training of frontline workers; goods and services such as PPE; building or expanding health care facilities (i.e., preparing quarantine facilities, improving intensive care units or inpatient facilities); and strengthening collaboration for research and responses to develop vaccines and therapeutics (IMF, 2020).

Other private sector financial institutions like the International Finance Corporation (IFC) made funds available to collaborate with commercial bank clients in order to expand their trade finance and working capital lines and directly support their corporate clients, with particular focus on strategic sectors like pharmaceutical companies and companies that produce and develop medical equipment (IMF, 2020).

The OECD Forum on Tax Administration's Enterprise Risk Management Community of Interest developed some considerations that could be taken to support governments to help address the impact of COVID-19. Thereafter the OECD Forum on Tax Administration (FTA) published a reference document that detailed actions that FTA tax administrators could use to support taxpayers (Organisation for Economic Co-operation and Development [OECD], 2020). Some of the measures the OECD recommended included: a temporary welfare payment that was more generous as well as income support; waiving or deferring social security contributions and payroll related taxes for employers and those self-employed; providing tax concessions for workers within the healthcare and emergency health sector; deferring payments of VAT, customs or excise duty, simplification of procedures for claiming relief from VAT on bad debts; speeding up refunds of excess input VAT; and preparing for recovery through tax policies (OECD, 2020).

OECD also published recommendations for ways that governments and tax administrators could ease the burden on taxpayers and support businesses and individuals with cash-flow problems (OECD, 2020). Some of the recommendations by OECD included extensions on deadlines; deferral of tax payments, suspension of penalties for late filing or payment; adjusted taxpayers services, i.e., digital channels, telephonic hotline services; webpages and media communications; undertaking business restoration planning by including and considering the distinguishing features of the pandemic that will likely persist throughout the recovery period i.e., the continued health risk, future outbreaks, potential impacts on staff and administration systems as well as the volatility and potential length of the recovery period due to the severe scale of the economic shock of the pandemic, on a global scale (OECD, 2020).

In April 2020, the WHO appealed for support for funding to support its efforts in addressing the COVID-19 pandemic and appealed for one billion dollars. The UN Secretary General indicated that the non-payment of dues by member states was mounting pressure on the organisation’s activities. Members were urged to pay past dues and assist the UN to cope with their cash crisis in order to address the COVID-19 pandemic (KPMG, 2020). Moreover, the WHO announced a new funding appeal to raise as much as $1 billion to support their efforts in their response to the COVID-19 pandemic.

4.1.1.2 June – December 2020

By June 2020, most of the global focus was on treating those impacted by the COVID-19 disease and determining the best possible cure and treatment to reduce the health impacts of the novel disease. Much of the discussions facilitated by the WHO centred around the safe, effective, and equitable access of a vaccine across the globe and on the repurposing of drugs to treat COVID-19 as well as provide terms of reference for the study of the origins of the disease. By December 2020, the WHO was facilitating the emergency approval of vaccines and facilitating funding commitments to assist lower income countries with immunisation.

Universal global organisations such as the UN and the primary global health response organisations, the WHO had instrumental roles during the COVID-19 pandemic in coordinating cooperation from governments and other global partners to respond and address the outbreak of the novel disease. Global financial organisations such as the World Bank and IMF also played instrumental roles in assisting governments to access funds to be able to strengthen healthcare systems. Moreover, the OECD played an instrumental role in guiding governments determine best-practice in dealing with tax, social welfare, and cross-border issues, thus helping governments to respond based on their social and environmental contexts. These international organisations were able to harness large-scale collective action through policy learning and the collective learning processes.

4.1.2 Policy Learning during the COVID-19 Pandemic

The responses of the UN and WHO to the outbreak of the COVID-19 disease resulted in third order learning. The WHO declared the COVID-19 disease a global health emergency. Thus, the WHO highlighted the seriousness of the potential impacts of the novel disease. The WHO also provided guidelines and technical documents to assist governments in managing the outbreak of the disease. The WHO played a critical role in gathering essential intelligence on the COVID-19 disease. The organisations also collaborated to drive scientific research and produced guidelines on diagnostics, clinical care as well as prevention and mitigation strategies for governments. The WHO assembled the Global research and Innovation forum to strengthen and accelerate research, diagnostics and finding to better understand the COVID-19 novel disease. These measures, particularly the guidance provided to governments, facilitated third order policy learning as drastic changes were taken. The WHO facilitated systematic study

through experience of dealing with health emergencies and interacted with global partners and governments to emphasize the seriousness of the COVID-19 disease and ensure urgency and rapid actions by global partners and governments. The UN assisted organisations like the WHO to rally global partners to respond to the global health emergency. In doing so, the UN interacted with these global partners and translated and disseminated information to harness a reaction and subsequent responses. The UN facilitated the development of the Solidarity Clinical Trial to generate data from around the world to better respond to the pandemic.

The seriousness and uncertainty of the COVID-19 disease was clearly communicated by the UN and WHO. Their actions facilitated the depth of learning required to best address the severity of the pandemic and their actions portrayed the importance of treating the COVID-19 disease as a global commons problem.

The UN and WHO also coordinated actions from other international organisations, particularly financial institutions. The World Bank and IMF announced financial support mechanisms for countries. Therefore, additional instruments and capital was allocated to respond to the global health emergency. These organisations leveraged of existing institutional policies and programs to provide the additional grants as well as debt relief for the most vulnerable countries. These actions helped to limit the exclusion of the provision of GPGs that were needed to respond to the COVID-19 pandemic. These responses can be attribute to first/second other learning allowing incremental changes to existing programs and policies in order to support governments.

The OECD further supported government's responses by providing guidance documents and guidelines to assist governments with social welfare, taxa administration and income support for populations. The provision of these guidelines helped to ensure governments identify how and which policies they could leverage off to best support their population and private sector/non-state actors. The purpose of these guidelines was for governments to identify where they could leverage off their existing policies and social welfare structures.

4.1.3 Collective Learning during the COVID-19 Pandemic

The UN facilitated collective learning that resulted in behavioural changes by rallying global partners together to share strategies, policies, programs, and knowledge to help respond to eh

global health emergency. The WHO was also able to harness behavioural changes through collective learning processes by sharing information and forming the Global Research and Innovation Forum. The Forum itself provides a platform for collective learning. Global partners and governments are able to gain knowledge through the Forum to inform response policies. This is particularly relevant for the uncertainty surrounding the novel COVID-19 disease and provided a platform for new and developing information to be disseminated and shared.

The financial organisations (World Bank and IMF) as well as the OECD facilitated cognitive learning among governments. Information and the provision of financial support facilitated incremental changes among individuals within government structures in order to strengthen existing structures in their countries and provide their populations and non-state actors financial support as well as provide medical resources and healthcare services and provide the public health goods necessary to respond to the pandemic.

4.1.4 Collective Action during the COVID-19 Pandemic

The WHO, UN, IMF, OECD, and the World Bank organised collective action through the facilitation of coordinating all global partners swiftly. These actions facilitated the collective action required to identify the characteristics of the large-scale challenge of the COVID-19 disease. The declaration of the novel COVID-19 disease as a global health emergency facilitated awareness of the spatial and temporal extent of the disease. The formation of the Forum for the acceleration of research and to support diagnostics and to better understand the disease helped to reduce the risks and uncertainties associated with the disease. Moreover, the scientific research and coordination of global partners helped to ensure transparency and avoid anonymity. The financial provisions through IMF and the World Bank helped to ensure that government were able to provide healthcare as a public good as far as possible; particularly for developing countries. These actions and responses acted as interventions to help reduce the stressors of the large-scale challenge and supported the coordination of collective action on a global scale.

4.1.5 Conclusion

The UN and WHO provided an early warning to global partners and governments of the potential risks and threats of the COVID-19 novel disease. The development of guidelines and

call for solidarity and support initiated the shared and coordinated response to the challenges by governments, and organisations across the globe. Their leadership in coordinating the global effort while supporting countries allowed cognitive and behavioural collective learning to be initiated via information provided for the prevention, detection, and responses to the pandemic. These actions resulted in a cooperative and coordinated response by bringing governments, organisations, and individuals together to help respond to the COVID-19 outbreak.

Global financial institutions like the World Bank and IMF supported first/second order policy learning by providing governments with information and developing guidelines to employ incremental changes and alterations to existing policies and strategies to support governments' social welfare structures and provide funds for the provision of resources (i.e., PPE, test kits and medication) to support healthcare systems. Moreover, to ensure that governments were able provide healthcare as a public good to citizens. The organisations reinforced cognitive learning by supporting knowledge gains on values and principles for governments to respond to the pandemic, enabling cooperation and supporting collective action.

The support and guidance by these global organisations, their communication and coordinated efforts accelerated the global response to the pandemic. These organisations prepared and assisted member states through the provision of comprehensive information and guidance documents, facilitated national capacity for member states, and supported training and preparedness to respond. These international organisations were able to coordinate responses in a short amount of time. These measures helped to facilitate policy learning, collective learning, and collective action on a global scale, essentially driving global governance to respond to the COVID-19 pandemic.

4.2 Analysis of the Policy Responses to address Climate Change

The Paris Agreement was adopted in December 2015 at the 21st Conference of the Parties to the UNFCCC, concluding the long process of devising a new international climate regime. The Paris Agreement represents the first treaty and collective effort by the global community to address climate change. Climate Change has been a prevalent issue for decades; however, the most significant coordinated progress has transpired within the 21st century. *Figure 6* summarises some of the history of the climate change regime, emphasizing the significant milestones that were achieved by multilateral organisations and governments. The analysis of the history of climate change begins from 1985. The year 1985, represents the Villach Conference where the WMO and UNEP attracted the participation of policymakers to the conference in the first attempt to identify the global challenge of climate change as a political issue. The timeline concludes with the proposed multilateral events scheduled for 2021 and 2022. The multilateral responses are colour coded to represent the type of the response. The colour blue represents significant responses to tackle climate change on a global scale by the international community. Green represents significant international negotiations that impacted the global climate regime. Purple represents significant actions by governments and/or country parties (i.e., leadership) to the Paris Accord and orange represents the significant scientific findings or revelations on climate change.

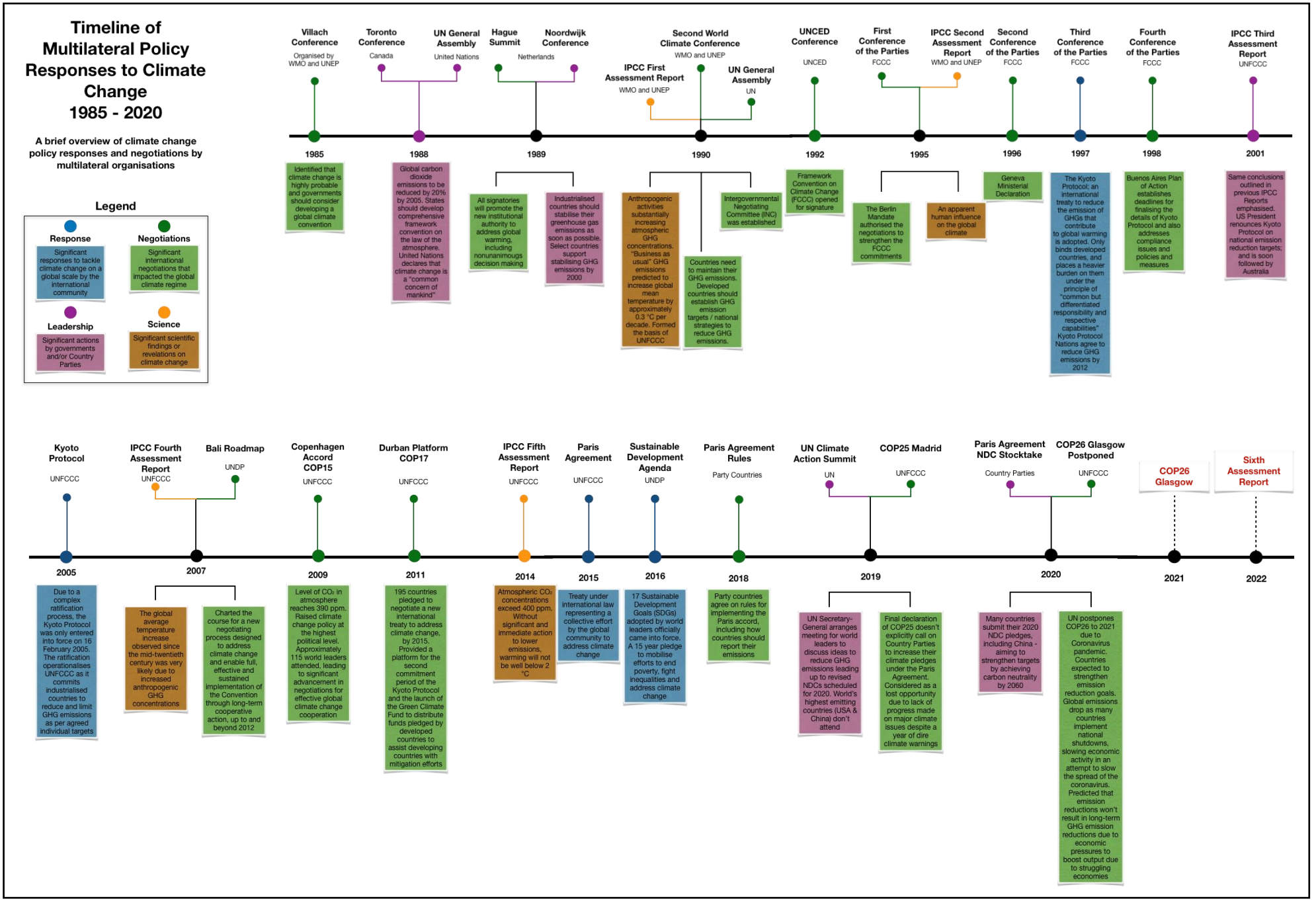

Figure 6.*Timeline of International Responses to address climate change from 1985 to 2020. The response by international organisations is briefly summarised and colour coded to represent the significance of the responses.*

4.2.1 Overview of Climate Change Timeline

4.2.1.1 1985 - 1992

The significance of climate change was mostly realised through environmental activity. The Villach Conference organised by the World Meteorological Organisation (WMO) and United Nations Environmental Programme (UNEP) in 1985 was held to attract participation by policy makers in an attempt to identify climate change as a political issue. Although the Villach Conference was not considered a success in attracting policy makers, it provided a platform for states to consider developing a global climate convention based on the significant information that indicated climate change was highly probable (Bodansky, 2001). Furthermore, the discovery of the stratospheric "ozone hole" and the publication of the Brundtland Commission report, Our Common Future (World Commission on Environmental and Development, 1987) in 1987 (Bodansky, 2001) provided evidence of a changing climate.

The Brundtland Report served as the global agenda for change and was developed by the General Assembly of the UN to propose a long-term environmental strategy to achieve sustainable development by the year 2000 and beyond (Brundtland, 1987). By the late nineties, climate change was being discussed at the UN General Assembly Conference as well as the Toronto Conference in 1988, where climate change was identified as a concern for humanity, furthermore that states should develop frameworks on the law of the atmosphere and reduce global carbon dioxide emissions by 20 % by 2005 (Bodansky, 2001). The outcome of these conferences was attributed to the careful assessment of the historical temperature record that indicated the average temperature was increasing over time; and had been increasing since the middle of the twentieth century (Bodansky, 2001).

The period 1985 to 1988 was therefore an important transformation of climate change from a scientific issue into a policy issue forming the agenda-setting period for the future of climate change. As such, by 1989; the Hague Summit and Noordwijk Conference in the Netherlands recognised that combatting global warming would need to involve nonunanimous decisions and that industrialised countries should begin stabilising their GHG emissions (Bodansky, 2001). This ultimately led to the pre-negotiations for the formal intergovernmental negotiation phases that lead up to the opening of signatures of the Framework Convention on Climate

Change (FCCC) in 1992 at the United Nations Conference on Environment and Development (UNCED) (Bodansky, 2001).

The IPCC First Assessment Report (AR1) and the Second World Climate Conference organised by the WMO and UNEP in 1990 were landmark conferences that set the stage for understanding the potential impacts of climate change, with the IPCC AR1 identifying that the global mean temperature would likely increase by 0.3 °C per decade based on the scenario "business as usual" (IPCC First Assessment Report [AR1], 1990; Houghton, 1990). Additionally, the Second World Climate conference identified the need for countries to stabilise their GHG emissions and establish emission targets through national programs or strategies (Bodansky, 2001).

4.2.1.2 1995 – 1999

The mid-1990s was a period where scientists gained a better understanding of climate change. The international scientific community produced reports and warnings of the risks linked to climate change. In 1995 the IPCC's Second Assessment Report was published. It reported on science, impacts and responses to anthropogenic climate change; confirming the risks analysed and reported on in First Assessment Report in 1990. The second assessment report was important material for governments during the lead up to the adoption of the Kyoto Protocol. Thus, following the release of the Second IPCC Assessment Report, the First Conference of the Parties (COP) was held in Berlin, Germany which led to the Berlin Mandate. The Mandate required GHG emission targets to be set for each country and was to be agreed by 1997. This would be established through the Kyoto Protocol (Taylor, 2014). The Second COP was held in 1996 in Geneva, Switzerland where the Geneva Ministerial Declaration was adopted by the United Nations Economic Commission (UNECE) for member states. This declaration reiterated the importance of governments and other stakeholders within the UNECE to promote the 2030 Agenda for Sustainable Development.

In 1997, the third COP was held in Kyoto, Japan where the Kyoto Protocol was signed and ratified by 192 countries. The international treaty was the first global agreement to fight climate change. The purpose of the treaty was to operationalise the reduction of GHG emissions in accordance with agreed individual targets for industrialised countries and economies to limit their GHG emissions. In 1998, the fourth COP was held in Buenos Aires, Brazil where the two-

year Buenos Aires Plan of Action was adopted and aimed to reduce the risk of global climate change (Bodansky, 2001). The action plan established deadlines for finalising the Kyoto Protocol. This two-year plan focussed on outstanding details on preparing the way forward for industrialised countries to take action to reduce GHG emissions. Moreover, the two-year plan aimed to address compliance, policies, and measures for the Kyoto Protocol.

The Buenos Aires Plan of Action also set out to facilitate the transfer of climate friendly technologies to developing nations (IPCC 2007; Pachauri and Reisinger, 2007). Prior to COP2 in Geneva, Switzerland; many member states questioned the science of climate change and opposed the idea of the IPPC's conclusions. This marked the change in developed country's idea of climate change. Thus, the scientific basis for climate change was questioned which led to doubts about the impacts of climate change. This overview was carried across and provided the basis for the negotiations. This resulted in countries opposing the idea of climate change and included Australia, the Russian Federation and Organisation of the Petroleum Exporting Countries (OPEC) states. However, the United States of America (USA) and Europe supported the binding of emissions targets (Taylor, 2014). This was a clear change in positions by countries and governments within international negotiations. The positions of governments shifted from ethical-based positions to a more economic based position (Taylor, 2014). Governments argued that there were special needs for fossil fuels in the development of economies.

The period between 1995 and 1999 signifies a transition to an economic rationalist control of public policies and dialogues (Taylor, 2014). The international stance on climate change shifted towards a national interest based on economic development. This led to a reduction in funding for programmes focused on renewable energy, energy efficiency and alternative sources of energy. Furthermore, the marginalisation of environmentalists became prevalent and reports on climate science was discouraged; particularly by government funded institutions (Taylor, 2014). This transition of thinking likely affected the efforts of countries in reducing their GHG emissions as agreed through the Kyoto Protocol international treaty. As over time, it appeared that the Kyoto protocol resulted in a modest step towards stabilising GHG emissions. Furthermore, the treaty predominantly focussed on industrialised nations to lessen their emissions, while less developed nations were asked to comply on a voluntary basis. The Kyoto Protocol was signed by more than 100 developing countries, including China and India who were exempt from the Kyoto Protocol entirely. Yet, China is one of the biggest economies

globally, today. The stage of political scepticism and denial was increased when the USA renounced the Kyoto Protocol national emissions reduction targets, and were joined by Australia, soon after (Taylor, 2014). Australia and its government were one of the first countries to voice their aversion to reducing GHG emissions as fossil fuels were at the forefront of economic development during this period. The differences between country's views on the climate change problem and the reduction of GHG emissions impacted the facilitation of policy learning and global collective learning. It created a divide among countries, some of which represented large, industrialised economies. Moreover, the doubt cast on the scientific findings of the IPCC assessment report by some governments initiated the start of a shift in thinking by some governments indicated the power of these countries and their ability to control the dissemination phase of the collective learning process, including their ability to shape information in a manner which inhibited GHG emission reductions.

4.2.1.3 2001 – 2011

The Third IPCC Assessment Report (AR3) was published in 2001 outlining, in greater detail the findings of the preceding IPCC Assessment Reports. The AR3 provided greater regional detail. It also included scientific probabilities and uncertainties associated with potential risks and impacts linked to the changing climate (Taylor, 2014). The year 2001 also marked the year that the USA renounced on their national emission reduction targets of the Kyoto Protocol (Taylor, 2014).

In 2007, the IPCC Fourth Assessment Report (AR4) was published and indicated that the global average temperature increase observed since the mid-twentieth century was very likely a result of increased anthropogenic GHG concentrations (IPCC, Pachauri and Reisinger, 2007). The year 2007 also charted the course for a new negotiating process via the Bali Roadmap. It was designed to address climate change and enable effective and sustained implementation of the convention through long-term cooperative action at least up to 2012 and beyond (United Nations Development Programme [UNDP], 2007). By 2009, the level of atmospheric CO_2 had reached 390 parts per million (ppm), indicating the impact of anthropogenic activities on GHG emissions, globally. In 2009, the UNFCCC hosted the 15th COP where 115 world leaders gathered to raise the climate change policy to its highest political level. This led to significant advancements in negotiations for effective global climate change cooperation resulting in the Copenhagen Accord (UN, 2009). Although the Copenhagen Accord was a defining moment

and endorsed the continuation of the Kyoto Protocol, it was not a legally binding instrument. Instead, it was a political framework, with no details of emissions reduction targets for industrialised countries and emissions mitigation actions for developing countries. But the Accord did set a deadline (start of 2010) to encourage countries to put forward pledges of what they were prepared to do to limit their GHG emissions. Additionally, the Accord acknowledged that progressive reductions in global emissions to steady the global temperature increase to below 2 °C was required (UN, 2009). This period in climate change history could be considered another turning point or regrouping session, where a large group of actors agreed on a coordinated and collective way forward to reduce GHG emissions. However, by other accounts the Copenhagen Accord could be considered an agreement for 'business as usual' as it is not legally binding and contains no long-term targets for reducing GHG emissions and setting long-term targets.

In 2011, at the Durban Platform (UN COP17), 195 countries pledged to negotiate a new international treaty by 2015 to address climate change. This included commitments from both developed and developing countries (UN, 2011). It was also agreed that the new international agreement would have legal implications to force a reduction in GHG emissions by countries (UN, 2011). As up until 2011, there were no consequences for governments for failing to reduce their GHG emissions. The Durban Platform provided a basis for strategy development for the second commitment period of the Kyoto Protocol. This was due to commence in 2013 in order to avoid a gap in GHG emission reduction commitment efforts. The Durban platform also facilitated the launch of the Green Climate Fund. The purpose of the Fund was to distribute resources pledged by developed countries to assist developing countries with climate change mitigation efforts (UN, 2011).

The Durban Platform (2011) committed country parties to formulate a new marker mechanism under a 2015 agreement and secured the extension of the Kyoto Protocol. However, Russia, Canada and China did not agree and sign up to the new targets under the second Kyoto Protocol commitment period (UN, 2011). Moreover, the USA was not legally bound to reduce emissions until the next decade as the country never actually ratified the Kyoto Protocol (Lopez, 2003). At the time, these countries were responsible for at least 85 % of the global GHG emissions (Lopez, 2003). Although the Durban Platform provided firm commitments from both developed and developing countries to enter into a "legally binding" international climate agreement, the details surrounding what actions would be taken were not discussed or agreed.

This created uncertainty regarding the content and extent of change the new deal would formulate. The refusal of countries to agree to a legally binding global agreement once again hindered the progress of global climate change governance. Moreover, the countries responsible for the highest GHG emissions were the very countries refusing to join the agreement. This marked another international negotiation where cooperation from all countries was not achieved.

4.2.1.4 2014 – 2020

In 2014, the IPCC released the Fifth Assessment Report (AR5) which provided an overview and update of the state of knowledge on the science of climate change. The AR5 also echoed the same results since the AR4 was published in 2007. The IPCC AR5 indicated that global atmospheric CO_2 concentrations had exceeded 400 ppm and without significant and immediate action to lower global GHG emissions, global warming would not be restricted to well below 2 °C (IPCC Fifth Assessment Report [AR5], 2014; Pachauri and Meyer, 2014). Furthermore, sea level rise of 1.0 – 3.0 m was guaranteed as scientific reports had indicated that irreversible melting was projected, particularly for the West Antarctic Ice Sheet (Pachauri and Meyer, IPCC AR5, 2014). Essentially, the IPCC AR5 indicated that drastic and radical change is required to limit global warming to well below 2 °C. The AR5 also highlighted the detrimental impacts of climate change, emphasizing that adaptation and mitigation efforts were key to addressing the potential irreversible changes projected across the globe.

After approximately 25 years of climate consultation, the world's governments negotiated and finalised the Paris Agreement (2015). The Paris Agreement assembled almost 200 countries to agree to a global effort in reducing GHG emissions. This was the most significant accord coordinated on a global scale to address climate change. The Paris Agreement represents a collectively agreed accord emphasizes the consensus that climate change is driven by human behaviour, that threatens environmental and human society. The Paris Accord highlighted that global action was the only way to reduce the threat of global climate change. The Paris Agreement also harnessed the two predominant antagonists; China and USA to ratify the agreement. In fact, the USA played an integral role in paving the way for the agreement with President Barack Obama defining climate policy as a legacy issue (Obergassel et al., 2016). This moment in the history of climate change was the first time coordinated collective action

was harnessed among member states across the globe. This was the first time policy learning and collective learning effectively harnessed large-scale collective action.

The Paris Agreement adopted a mechanism of "naming and shaming" to ensure implementation and transparency on a global scale. The agreement also embodies a mechanism of ratcheting country parties' ambitions by ensuring the enhancement of contributions every five years (Paris Agreement, 2015). The global stocktake ensures transparency and accountability; facilitating a global coordinated effort to assess progress and determine objectives, based on the best available science and considering mitigation, adaptation, and implementation efforts. As such, the Paris Agreement represented a catalyst for national developments to consistently revisit policies and agendas in order to achieve GHG emission reductions. Furthermore, concentrated political and international attention would be fostered every five years to take stock of efforts in reducing GHG emissions; globally.

Although the Paris Agreement doesn't have penalties for falling short of reaching proposed targets; it does require countries to monitor, report and reassess their efforts (Paris Agreement, 2015). The global stocktake process therefore established a feedback system that connects short-term targets to achieve the long-term goal. Sustainable development and the eradication of poverty is an additional core component of the Paris Agreement. To this end, world leaders agreed to 17 global goals known as the SDGs. These goals officially came into force in 2016 to drive and mobilise 15 years of action to end poverty, fight inequalities and mitigate and adapt to climate change (UNDP, 2015). The SDGs were developed with particular concern for developing countries to ensure efforts to combat climate change are incorporated into their development plans.

In 2018, the country parties of the Paris Agreement adopted the rules and guidelines of the accord; officially testing the robustness of the agreement and assessing the collective response towards achieving the goals set out in the agreement. The guidelines and rules were established in 2018 to ensure that the first global stocktake scheduled for 2023 is conducted in a comprehensive and facilitative manner. All aspects of mitigation, adaptation, and implementation thereof, in light of equity as well as the best available science will ensure collective coordination in achieving NDCs and ramping-up efforts to address climate change and reduce GHG emissions, on a global scale.

The Paris Agreement mostly relies on national climate plans by governments in their efforts to reduce GHG emissions and develop mitigation and adaptation strategies. However, the agreement helped facilitate and recognise that non-state/non-party actors can contribute to limiting the impacts of global warming (Paris Agreement, 2015). Thus, the UNFCCC became a facilitator and orchestrator for non-state actors and created a multi-level governance system (Obergassel et al., 2016). Cities, corporations and NGOs have developed their own 'rules and standards' and are no longer just complying to directives of governments and states or intergovernmental treaties. Non-state actors have essentially become influencers/governors in their own right by dislodging their authorities (Backstrand et al., 2017). Some argue that this change may be a sign of states losing their global climate governance and authority (Hoffmann, 2011). But it should be noted that the Paris Agreement institutionalises the complex interplay between non-state actors and state and ultimately forms multilateral and transnational action to address the climate crisis. Because the Paris Agreement comprises of Country Parties voluntarily pledging their NDCs (which are not legally binding), the agreement does initiate the domestication of global climate politics. Thus, in many countries the domestic politics do not align with global/international politics.

The UN Secretary General hosted the Climate Action Summit in 2019. The purpose of the Summit was to boost and accelerate ambitions and actions for implementation in accordance with the Paris Agreement. Global GHG emissions continued increasing since the ratification of the Paris Agreement in 2015, showing no signs of peaking, therefore the UN Secretary General used the Summit to call on all leaders to enhance their NDCs by 2020. The purpose of the Summit was to call on leaders to reduce emissions by as much as 45 % over the next decade, and to zero emissions by 2050 (UN Climate Action, 2019). The Summit reiterated the that a global warming of well below 2 °C was only achievable if world leaders urgently enhanced efforts to work towards achieving net zero emissions by 2050. The absence of many countries, including Australia, Canada, and the USA, resulted in a disappointing outcome in raising the ambitions in tacking climate change and a clear indication of the lack of urgency in addressing the climate crisis. Shortly after the UN Action Summit, in November 2019, the USA President, Donald Trump announced the withdrawal of the United States form the Paris Accord. The withdrawal of the United States was a reminder that climate denialism and scepticism was and remains a predominant force hindering progress in tackling the climate crisis.

However, the Summit harnessed participation from business leaders, subnational actors, indigenous people, youth as well other civil society stakeholders. The involvement of stakeholders, other than global leaders was pivotal in raising awareness and emphasizing the criticality of the climate crisis. Countries such as the USA, Australia, Canada, Brazil, Argentina, Mexico, and others very clearly demonstrated that the urgency and radical changes required to tackle the climate crisis were not a priority for many key role players in the effort for global coordination. Thereafter, the withdrawal of the United States from the Paris Agreement, cited the dismantling of global climate change coordinated action as the United States continues to be one of the largest contributors to GHG emissions globally. The withdrawal of the US also incited increased support for climate scepticism and denial amongst civil society. The US was the only country to withdraw from the Paris Agreement; a global solution to a global crisis, therefore raising questions of trust and a potential catalyst for unravelling the global collective effort.

Soon after the US's withdrawal from the Paris Agreement, the twenty fifth UN COP was held in Madrid, Spain and was considered a missed opportunity in the fight against climate change despite a year of dire climate warmings and the science surrounding the changing climate becoming increasingly accepted, there was no explicit call on Country Parties to increase their climate targets and pledges in line with the Paris Agreement and failed to determine the Paris rulebook (Obergassel et al., 2020). However, the COP25 did expose growing unhappiness from the public. Reactions from the public relating to the outcome of COP25 were harsh (Obergassel et al., 2020). This was exemplified by the large presence of public climate change activists present in Madrid during the conference.

Despite the delay in agreements and the shelving of many of the tasks on the agenda, COP25 indicated a clear sense of direction for future global plans to address the climate crisis. The UNFCCC remained a crucial element to advance coordination across the globe in tackling the climate crisis. Nations did agree to improve emission reduction targets plans at the next COP, in 2020. In particular the European Union (EU) announced their ambitions for a net zero GHG emissions target which was thought to increase global ambitions and an indication that the global climate process and the Paris Agreement was still at the forefront of policy makers and government agendas. However, COP25 did magnify the stark differences and the growing disconnect between what is required by countries to adequately deal with climate change and what governments have actually pledged to do. However, the strong presence of protestors that

ranged from indigenous people, youth climate activists and other environmental groups – a clear sign of the growing public unhappiness with the efforts in addressing climate change (KPMG, 2019). This was particularly prevalent amongst the 'Millennial' and 'Gen Z' demographics. Highlighting the power of consumers and their future choices. This may have consequences for companies and sectors ignoring the impacts of climate change. Furthermore, some governments, indicated clear directions for climate policy, committing to a reduction in emissions and pledging to reduce emissions to net zero by 2050 (KPMG, 2019). These countries represented as much as two-fifths of the global gross domestic product (GDP) (KPMG, 2019). These pledges therefore indicate that the decarbonisation trend will surely become unstoppable over time. There is increased involvement of civil society and private sector corporations in emphasizing their presence and role in the global effort to tackle the climate crisis. This highlights the additional layer of actors that are required in the conceptual notions of policy learning and collective learning processes. The conceptual idea that the governance of global challenges requires the interconnecting processes between policy and collective learning to harness large-scale collective action has become unambiguous. Therefore, civil society and non-state actors may have a larger role to play in harnessing the global governance to increase efforts in tackling the climate crisis.

The year, 2020 marked five years of the Paris Agreement and the subsequent NDC update cycle. However, the UN postponed COP26 due to the novel COVID-19 disease. COP26 was expected to strengthen the emission reduction targets of country parties. The COVID-19 pandemic resulted in national lockdowns, subsequently reducing the concentration of GHG emissions globally. Many experts expect that many governments will be under pressure to boost economic output and disregard climate change pledges and targets in an attempt to recover from the global recession as a result of the novel disease. However, many countries have proposed and/or submitted NDC updates of their post-2020 climate actions. These climate actions will essentially determine whether the world achieves the long-term targets of the Paris Agreement and whether the peak of GHG emissions will be reached as soon as possible. According to the Climate Action Tracker (CAT), 34 countries submitted new NDC targets, of which four countries submitted stronger NDC targets: Chile, Norway, the United Kingdom, and the EU (Climate Action Tracker [CAT], 2020).

In 2020, nine countries also proposed to develop new NDC targets, four of which proposed stronger NDC targets: Argentina, China, Kenya, and Ukraine (CAT, 2020). COP26 will likely

spur critical climate policy and more ambitious targets as governments have been afforded an opportunity to spend more time assessing the impacts of the global pandemic, the outcome of the US presidential election as well as assess their efforts in combating climate change. Furthermore, the pandemic may provide a platform for the coordination of a green recovery plan by addressing both the climate crisis and the impacts of the COVID-19 disease. The Paris Agreement was the most significant demonstration of environmental multilateralism that has delivered a solid global coordinated effort to address the climate crisis. It successfully forged government coalition. There are some criticisms surrounding the method of transforming structural unsustainable economic systems into sustainable systems, through an agreement under international law. However, the agreement has achieved ambitious pledges by country parties to combat climate change.

The Paris Agreement has only just begun the process in effectively driving sustainable development, but has it provided enough momentum to steer political will and force amongst country parties? The upcoming COP26 now scheduled to take place in 2021 will require the global community's cooperation and every effort to coordinate the fight against climate change. The COVID-19 pandemic offers multilateral organisations, governments, and non-state actors the opportunity to work together to harness large-scale collective action. The interventions to reduce GHG emissions requires a more drastic effort. The characteristics (i.e., number of actors, spatial and temporal distances, and complexity) of the climate collective action problem cannot be altered. This requires all parties to act as facilitators to reduce the stressors. The risks and uncertainties regarding the climate crisis are known and have been known for decades. International organisations, governments, and non-state actors, including individuals need to be held accountable for their actions. Anonymity cannot continue, and organisations, governments, non-state actors and individuals need to be held accountable.

4.2.2 Policy Learning within the Climate Change Regime

The IPCC has facilitated the comprehensive, objective, and transparent basis of the scientific understanding of climate change and have provides the patterns of risks and potential benefits that are shifting due to the changing climate. The IPCC also provides the basis of technical and socio-economic information that is relevant in the understanding of the risk to human well-benign and the natural environment. Therefore, the IPCC has provided the necessary information for policymakers to ensure they are aware of what is known about the changing

climate and what is unknown. That transparency and objective information that the IPCC provides ensures that policymakers understand the scientific consensus, where there are differences of opinion and where additional research, and understanding is needed. Therefore, the IPCC had provided the necessary information for incremental and drastic policy changes to be developed and supported by governments and other actors. The IPCC also ensures consistent evaluations of the scientific understanding of the climate crisis. This ensures that policymakers are able to make first/second order policy changes over time but also providing the understanding and basis for drastic changes to be implemented by governments.

4.2.3 Collective Learning within the Climate Change Regime

The IPCC assessments reports have also provided the basis for the negotiations of the UNFCCC since the first assessment report was published in 1990. The UNFCCC has allowed for the translation and dissemination of the information to strengthen new ideas, or findings from these assessment reports. Moreover, the UNFCCC supports the COP negotiations where governments negotiate agreements and pledges to reduce GHG emissions. These mechanisms help to facilitate interventions to reach GHG emission reduction targets. The collective learning process is consistently being facilitated by the UNFCCC as it hosts the COP annually to address and take stock of the efforts by governments in reducing their GHG emissions. It also ensures that governments understanding of the crisis is up-to-date and facilitates collective learning among governments and policymakers.

4.2.4 Collective Action within the Climate Change Regime

The development of international agreements among country parties (i.e., governments) to the UNFCCC is a result of the coordination of collective action. The UNFCCC has acted as the facilitators for negotiations during COP sessions. The Paris Agreement was a historical moment within the climate change regime as it was the first time that the UNFCCC was able to coordinate collective action of this global magnitude. The Paris Agreement is an example of large-scale collective action in addressing a global challenge. The Paris Agreement is therefore facilitating cooperation and coordination from governments to address climate change.

4.2.5 Conclusion

The analysis of the history of the climate change regime highlights the slow pace at which the global community has united against climate change. The historical analysis of the climate crisis also highlights the changing narratives adopted by powerful member states to suit their development plans, thus highlighting the difficulty in coordinating collective action, even when conceptual notions of policy learning and collective learning are occurring. Thus, the power of country's leadership cannot be ignored and impacts the collective global goods problem.

The international organisations within the climate regime have been able to facilitate the conceptual notions of policy learning, collective learning, and large-scale collective action among governments. However, to-date governments have been unable to drastically reduce their GHG emissions and implement policies to facilitate mechanisms that support sustainable development and less carbon intensive economies. Therefore, there is a lack of policy learning, collective learning and collective action being carried across from governments to non-state actors including civil society, businesses, and industry.

Collective action needs to be harnessed between non-state actors and governments. The extent to which non-state actors are able to enhance transparency and accountability of the UNFCCC and the Paris Agreement can be leveraged. Although stocktakes are an integral part of the Paris Agreements transparency and accountability mechanism, this method omits the opportunity for non-state actors and states to hold each other accountable for their failures in reducing GHG emissions. The global stocktakes focus on aggregate state contributions. Non-state actors are also expected to reduce their GHG emissions on a voluntary basis to support state NDC contributions and to cooperate with best practice monitoring and reductions. Therefore, non-state actors will need to be transparent and also take on the role of observer to ensure best practice. Effectiveness of international policy therefore revolves around aligning non-state and intergovernmental action. As such, policy learning, collective learning and collective action processes will need to be harnessed to facilitate the governance required for the complete participation of non-state actors and governments.

5. Discussion

This section provides an overview of the findings from analysing the international organisations responses to the COVID-19 pandemic and the role of international organisations and governments in establishing the climate change regime and how climate change has been governed for the period 1985 to 2020.

5.1 COVID-19 Analysis

The analysis of the global governance of the COVID-19 pandemic focussed on assessing the timeline of responses from multilateral organisations and identifying their role in harnessing governance to address the global COVID-19 emergency. A brief summary of some of the policies and mechanisms adopted by these governments were assessed. The framework of analysis formed the basis of conceptualising how governance was harnessed and if governance was harnessed through the interconnection of the conceptual notions of policy learning, collective learning, and collective action.

Multilateral organisations such as the UN and WHO were able to harness global coordinated action to address the COVID-19 pandemic. These organisations harnessed third order policy learning by recognising the unprecedented challenges that communities and economies were faced with and imposed by the global threat of the novel COVID-19 disease. Their early warning, development of guidelines and call for solidarity and support initiated the shared and coordinated response to the challenges brought upon governments, and organisations across the globe. Their leadership in coordinating the global effort while supporting countries allowed cognitive and behavioural collective learning to be initiated through information and guidelines provided on diagnostics, prevention, and detection and responses to the pandemic. These actions resulted in a cooperative and coordinated response by bringing governments, organisations, and individuals together to help respond to COVID-19 outbreak.

Global financial institutions such as the World Bank and IMF supported first/second order policy learning through the provision of funds. These actions were the first steps to assist and help facilitate policy learning and collective learning for governments to be make incremental changes to existing policies within their government structures. These global financial organisations rapidly made additional funds available for their country members. The financial

support, extension of loans and rapid deployment of funds helped governments to be better equipped to support healthcare systems in their countries. The rapid availability of funds helped cash-strapped governments mobilise resources within a short period of time. In doing so, these global financial organisations reinforced the cognitive learning process and supported collective learning through information transfer and knowledge gains on values and principles. These notions supported the coordination of collective action to provide populations with healthcare to be better equipped to fight the COVID-19 disease. The management of finance by the World Bank and IMF supported the provision of healthcare as a GPG.

International organisations were able to collectively learn among each other and develop policy responses through consultation and experience which was disseminated to member states. Thus, the conceptual notions of policy learning, collective learning and collective action among international organisations and governments ensured global governance in responding to the COVID-19 pandemic.

The framework of analysis has therefore clarified the processes that worked to coordinate a global collective response to the COVID-19 pandemic. The UN and WHO facilitated a top-down approach to coordinate a rapid response and support research to better understand the novel disease. Moreover, continued consultation between international organisations helped to align interests, and to support each organisations ideologies, capabilities, and mandates. These actions facilitated policy learning and collective learning among the organisations. Thus, international organisations worked in tandem to harness a rapid coordinated collective response which would support member states across the world. This top-down approach supported behavioural changes. This was achieved by consensus building, and deliberative processes that demonstrated legitimacy, authority, inclusiveness as well as public accountability. International organisations were able to harness policy learning, collective learning, and collective action among each other as well as between governments. The cooperation and coordination of collective action by international organisations therefore disseminated into government structures.

5.2 Climate Change Analysis

The history of the climate change regime between 1985 and 2020 provided an analysis of the global governance of climate change and its evolution. A brief summary of the role of organisations, mandates and agreements developed, and mechanisms adopted by governments were assessed. The framework of analysis formed the basis of conceptualising how governance was harnessed and if governance was harnessed through the interconnection of the conceptual notions of policy learning, collective learning, and collective action.

International organisations have provided the basis of the educational dimension of the development on the scientific analysis of global warming. These organisations have created an enabling environment for governments and the global community to address climate change as a GPG. They have created effective partnerships, encouraged strong engagement between actors and have been instrumental in enhancing the acquisition of information, its translation and dissemination among organisations and governments. However, the historical analysis of the climate change regime has highlighted that these organisations require endorsement by governments. Although international organisations have developed platforms for this engagement, there is still misalignment of interests and some governments do not support the ideologies, the capabilities and mandates of international organisations or other governments. Therefore, the conceptual notions of policy learning, collective learning and collective action are hindered. Therefore, although international organisations ensure interaction, observation and the systematic study of the large-scale problem and provide governments with the tools to do the same, many of the identified stressors are not receiving the interventions that are required to address climate change. required interventions. As such, only incremental changes by many governments have been implemented to tackle climate change.

Governments have therefore played a significant role in narrating the governance of climate change. The historical analysis of the global governance of climate change for the period 1985 to 2020 has shown the changes in opinion and priorities of governments. A significant moment in climate change governance was in 1985 when climate change was no longer recognised as an environmental issue but as a political issue. This shaped the future role of governments in the climate change regime. Another defining moment, which could be considered a set-back for global governance of climate change was in 1997 when the scientific basis of climate change was questioned, and the IPCC's conclusions opposed. Countries such as Australia, the

Russian federation and OPEC states opposed the binding of emissions targets through the Kyoto Protocol. Thus, creating a divide between countries/governments within international negotiations. Governments were focussed on developing their economies which resulted in increased GHG emissions to achieve this.

By the second commitment period under the Kyoto Protocol, there were still countries opposed to signing new emissions targets to reduce GHG emissions. Governments that did not agree were responsible for majority of the GHG emissions at the time (i.e., Russia, China, and Canada). In addition, by this time the USA had actually not ratified the initial Kyoto Protocol agreement in 1997, so were also not legally bound to reduce their GHG emissions. These important moments within the climate change regime signal suggest a lack of policy learning and collective learning among governments and highlights the power of governments in coordinating a collective response to a large-scale challenge. These setbacks or delays in climate action emphasize the importance of the policy learning and collective learning processes across organisations to drive collective action. Therefore, suggesting that without the conceptual notions of policy learning, collective learning and collective action working simultaneously across organisations, global governance is weak.

Therefore, the Paris Agreement is considered the most ground-breaking agreement in the governance of a global challenge, as it orchestrated almost 200 countries to agree to reduce global GHG emissions and coordinate collectively to do so. Although the Agreement has coordinated and encouraged engagement between international organisations and governments through the alignment of mandates, there is still a lack of conceptual notions of policy learning, collective learning and collective action between governments and its citizens and non-state actors (corporates, NGOs etc.). These are noticeable gaps within the climate change regime.

Non-state actors have the ability to leverage a strong presence and play a vital role in the climate change crisis. To-date, the climate regime has relied heavily on international organisations and governments to negotiate and coordinate actions in reducing global GHG emissions through agreements and mandates. However, non-state actors play a significant role in producing GHG emissions. Therefore, non-state actors need to be transparent and held accountable to reduce their GHG emissions. In addition, civil society also needs to play a significant role in reducing GHG emissions through behavioural changes. However, this usually only occurs via facilitation which must be coordinated by international organisations,

governments, and non-state actors. Therefore, the feedback loop between the conceptual notions of policy learning, collective learning and collective action is necessary to coordinate global governance.

The comparison and analysis of the governance of the COVID-19 pandemic and climate change has indicated interconnection of the processes and modes of policy learning, collective learning, and collective action. The success of the rapid and large-scale coordinated response to the COVID-19 disease outbreak has indicated that these conceptual notions are required for global governance and that they can be harnessed on a large-scale to address a GPG or commons problem. therefore, in order to more effectively address the GPG problem of climate change, these conceptual notions of global governance need to be harnessed between international organisations, governments, and non-state actors.

6. Conclusion

Anthropogenic climate change, if left unchecked poses an unprecedented threat to human welfare and the natural systems of the planet that sustain human livelihoods, while the COVID-19 pandemic has posed unprecedented challenges for public health, the global economy and food systems. Climate change and the COVID-19 pandemic pose global problems and require drastic intervention and rapid remediating intercession globally and nationally. Therefore, by investigating the governance of these two global crises in terms of policy learning and collective action to determine how policy learning and collective action was coordinated in the global governance of the COVID-19 pandemic and climate change and what lessons can be learned from the global governance of the COVID-19 pandemic for collective action on climate change.

The COVID-19 pandemic has clarified that timely action, multilateral coordination and cooperation, trust and gaining public support for mitigation actions and the strong relationship between science, technology and policy can collectively address a global crisis. The framework of analysis rationalised the processes that worked to coordinate a global collective response to the COVID-19 pandemic. The UN and WHO facilitated a top-down approach to coordinate a rapid response and support research to better understand the novel disease. Moreover, continued consultation between international organisations helped to align interests, and to support each organisations ideologies, capabilities, and mandates. These actions facilitated policy learning and collective learning among the organisations. Thus, international organisations worked in tandem to harness a rapid coordinated collective response which would support member states across the world. This top-down approach supported behavioural changes. This was achieved by consensus building, and deliberative processes that demonstrated legitimacy, authority, inclusiveness as well as public accountability. International organisations were able to harness policy learning, collective learning, and collective action among each other as well as between governments. The cooperation and coordination of collective action by international organisations therefore disseminated into government structures.

International organisations and governments have played a significant role in narrating the global governance of climate change. International organisations have provided the basis of the educational dimension of the development on the scientific analysis of global warming.

These organisations have created an enabling environment for governments and the global community to address climate change as a GPG. They have created effective partnerships, encouraged strong engagement between actors and have been instrumental in enhancing the acquisition of information, its translation and dissemination among organisations and governments. The historical analysis of the climate change regime has highlighted that these organisations require endorsement by governments. Until the ratification of the Paris Agreement in 2015 there was still misalignment of interests, and some governments did not support the ideologies, the capabilities and mandates of international organisations or other governments. Therefore, the conceptual notions of policy learning, collective learning and collective action were hindered between international organisations and governments until 2015. Despite the coordinated and encouraged engagement between international organisations and governments via the Paris Agreement and the alignment of mandates, there is still a lack of conceptual notions of policy learning, collective learning and collective action between governments and non-state actors (corporates, NGOs etc.) as well as citizens. These are noticeable gaps within the climate change governance regime. Therefore, the top-down approach that has been solidified needs to be coupled with a bottom-up approach in the global governance of climate change.

The comparison and analysis of the governance of the COVID-19 pandemic and climate change has confirmed the interconnection of policy learning, collective learning, and collective action in global governance. The success of the rapid and large-scale coordinated response to the COVID-19 disease outbreak has indicated that these conceptual notions are required for global governance and that they can be harnessed on a large-scale to address a GPG or commons problem. However, it should be noted that not all actions taken by the global community to address the climate crisis and CVOID-19 pandemic are without any shortfalls. Therefore, in order to more effectively address the GPG problem of both crises, particularly climate change, these conceptual notions of global governance (policy learning, collective learning and collective action) need to be harnessed not only among the global community and between international organisations and governments but between governments and non-state actors.

7. Limitations & Recommendations

The responses by international organisations and governments were assessed in terms of the framework of analysis which defines governance as the interconnected processes of policy learning, collective learning, and collective action. The framework suggests that global governance of a crisis like the COVID-19 pandemic or climate change can be coordinated through these conceptual notions. However, the thesis did not investigate specific policy structures or mechanisms that can be used to address the climate change crisis. Instead, the thesis focussed on the use of a conceptual framework to determine how policy learning and collective action was coordinated during the COVID-19 pandemic and climate change to identify potential gaps in the governance structures of the global challenges. As such, further research is required to determine how they should be coordinated among and between actors to design better policies that will solidify and harness the governance required to address global challenges.

Further research should apply the notions of the conceptual framework on contrasting large-scale collective action problems to develop a better understanding of the unique nature of various large-scale collective actions problems and their associated stressors that need to be addressed and approached in order for the problem to be overcome. This may offer further insights into the succession and combination of interventions that would most successfully give rise to, and support coordinated collective action particularly for climate change. Moreover, additional studies should investigate the role of various actors and their associated influence as well as potential influence on coordinating collective action for large-scale challenges.

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