



# **Investigating the Possibility for an International Regime on Climate Refugees**

**- Master Thesis by Tina Nybo Jensen**

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**Cover photo:** Somali refugees flee flooding in Dadaab, Kenya. The Dadaab refugee camps are situated in areas prone to both drought and flooding, making life for the refugees and delivery of assistance by UNHCR challenging. (Photo: UNHCR / B. Bannon, November 2006). Available from < <http://www.unhcr.org/pages/49c3646c25d-page15.html> > [Accessed 27 June 2012].

## Abstract

The focus of this study is the possibility for the formation of an international regime on climate refugees. Climate change is widely accepted as one of the major challenges for the international society in the 21<sup>st</sup> century. At first the international society initiated mitigation effort (as e.g. the Kyoto Protocol) to prevent climate change - but it proved to be too little too late. Therefore, it is now necessary to develop adaptation strategies that will enable us to live in a world with slow-onset natural changes as well as dramatic hazards. One of the single largest impacts of climate change is predicted to be climate refugees. It is estimated that by 2050 150-200 million people will be forced to flee from their place of residence due to change in sea level, floods and droughts etc.

This paper research the possibility for the formation of a regime on climate refugees based on the current knowledgebase as well as the power relations in the international society: *How is the state of knowledge on climate refugees, and how do knowledge and power relations influence the formation of an international regime on climate refugees?* This research question is analysed through Dimitrov's Disaggregation of Knowledge theory and the two international relations theories: Realism and Liberal Institutionalism. It is a qualitative case study that goes in depth with the current state of knowledge on climate refugees, the implications of that knowledge as well as the influence of power and interests in the international community. Finally, it suggests some future steps towards a regime on climate refugees.

The main finding of the research is, that currently (based on the theoretical framework applied in this research) the possibility for a comprehensive global regime on climate refugees is vanishingly small. In general the issue area suffers from mainly being a future challenge, hence, much of the knowledge are future estimates and projections – an uncertainty that makes states reluctant to act now. Additionally, the least powerful countries are estimated to be most severely affected by climate change and climate refugees – a fact that can make a global solution indeed very difficult. This research suggests that future steps towards a global regime on climate refugees can either be less comprehensive or be based on compromises. Nevertheless, a regional regime would probably be a more feasible and more effective solution. Furthermore, additional research should be done on the relationship between governance and adaptation capabilities as well as the inclusion of other actors who have specialised knowledge – public-private partnerships, NGO's etc.

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## List of abbreviations

CEFMR	Central European Forum Migration Research
CSR	Corporate Social Responsibility
EC	The European Commission
EU	The European Union
FAO	United Nations Food and Agriculture Organization
FMGEC	Foresight: Migration and Global Environmental Change
GFP	Global Firepower
GNI	Gross National Income
GNP	Gross National Product
GATT	General Agreement on Tariffs and Trade
Glogov	The Global Governance Project
HDI	Human Development Index
HR	High Representative of the Union for Foreign Affairs and Security Policy
IAEA	International Atomic Energy Agency
IDMC	Internal Displacement Monitoring Centre
IMF	International Monetary Fund
IOM	International Organization for Migration
IR	International Relations
MDG's	Millennium Development Goals
NASA	National Aeronautics and Space Administration
NGO	Non-Governmental Organisation
NRC	Norwegian Refugee Council
OECD	Organisation for Economic Co-operation and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Conventions on Climate Change
UNHCR	United Nations Office of the High Commissioner for Refugees
UNSC	United Nations Security Council
U.S.	United States
WHO	World Health Organization
WTO	World Trade Organization

# Introduction

Notably since the United Nation Framework Convention on Climate Change (UNFCCC) was established in 1992 climate change has been on the agenda of politicians and the Media. Climate change is a complex problem that has consequences for a large range of aspects of how we live our life and how our societies function – globally (UNFCCC, 2012:a). It is realised that the climate change we have experienced since the pre-industrial time, and are likely to experience to a more extreme degree in the future, is mainly man-made (Huber and Knutti, 2012:34) and the International Community has agreed on some rather comprehensive agreements (such as the Kyoto Protocol) with the overall aim to combat climate change through reducing the global emission of the six greenhouse gasses<sup>1</sup>. But even though measures has been taken it is now evident that the mitigation efforts “have been far too little and far too late” (Biermann and Boas, 2010:60). Hence, a whole new reality faces us in twenty-first century – we will have to find a way to adapt to climate change. Adaptation is necessary and will influence large parts of international cooperation, such as e.g.: global health governance and the work of the World Health Organization (WHO), food security and the work of the UN Food and Agriculture Organization (FAO) (Biermann and Boas, 2010:60-61).

Nevertheless, it is argued that the single largest impact of climate change is *climate refugees*<sup>2</sup>, hence, millions of people will be (and are being) forced to flee from their place of residence and build up a new life – at present it is estimated that a two-three degree temperature raise will make the amount of climate refugees from Bangladesh outnumber the current number of refugees worldwide (Biermann and Boas, 2008:10; Brown, 2007:5, 9). It is anticipated that by 2050 there will be more than 200 million climate refugees – a number that necessarily holds a large margin of error since it is a future projective, but nevertheless, demands immediate actions if we as a global community want to be pro-active instead of reactive when it comes to climate refugees (Biermann and Boas, 2008:10). Large part of these refugees will be internally displaced while some will have to cross borders. Additionally, it

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<sup>1</sup> It is the developed countries, which are committed by the Kyoto Protocol (the 27 so called Annex B countries). This group consist of: all the countries included in the Annex 1 of the UNFCCC except from Turkey and Belarus. The six main greenhouse gases are: Carbon dioxide (CO<sub>2</sub>); Methane (CH<sub>4</sub>); Nitrous oxide (N<sub>2</sub>O); Hydrofluorocarbons (HFCs); Perfluorocarbons (PFCs); and Sulphur hexafluoride (SF<sub>6</sub>). For more information on the Kyoto Protocol follow this link: [http://unfccc.int/kyoto\\_protocol/items/2830.php](http://unfccc.int/kyoto_protocol/items/2830.php) (31-3-2012).

<sup>2</sup> The definition of climate refugees that applies here is: “People who have to leave their habitats, immediately or in the near future, because of sudden or gradual alterations in their environment related to at least one of three impacts of climate change: sea-level rise, extreme weather events, and drought and water scarcity” (Biermann and Boas 2010: 67).



has been argued, that displacements of large population groups do not only have critical influence on the affected populations' way of life but also poses a major threat to international security (Srichadan, 2009:6). The interdependency between migration and the environment (the so-called environment-migration nexus) has always existed – people have always moved due to change in the environment or natural disasters but currently climate change is making the relationship more complex and the need to address it more urgent by speeding up the natural degradation (International Organization for Migration (IOM), 2012). Thus, it becomes clear that: “non migration’ is not an option in the context of future environmental change: migration will continue to occur in the future and can either be well managed and regular, or, if efforts are made to prevent it, unmanaged, unplanned and forced” (Foresight: Migration and Global Environmental Change (FMGEC), 2011:13), hence, climate refugees will be a part of the future, whether we create a system that can accommodate and facilitate these refugees or not. Therefore, there is little doubt that climate refugees will pose a growing challenge for the international community in the coming decades.

One of the reasons why this issue area is under-discussed might be the problem of definition. Obviously, different actors, based on their different approaches and interests, have diverging explanations for the same concepts. Some intergovernmental agencies such as the United Nations Office of the High Commissioner for Refugees (UNHCR) and the IOM prefer the name ‘environmentally displaced persons’ or migrants, while other agencies as e.g. the United Nations Environment Programme (UNEP) has used the term ‘environmental refugee’ (Biermann and Boas, 2010:66). The first mentioned agencies reject the term refugee in this context due to the current, narrow legal definition of refugees in the intergovernmental system – the 1951 convention relating to the status of refugees defines that you are a refugee when:

“Owing to well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it” (United Nations General Assembly (UNGA), 1951:Article 1A(2)).

Hence, those people, whom are forced to flee permanently across borders due to climate change are not refugees but migrants, and thereby not covered by the existing legal framework (Biermann and Boas, 2008:11). Additionally refugee is often understood as a stronger term than e.g. migrants. The term of refugee has strong moral connotations and demands social protections, whereas migrants often have a connotation of intended movement where ‘drivers’ and pull-effects have played a large role in the migrants voluntary decision to leave the original place of residence (Biermann and Boas, 2010:67; FMGEC, 2011:9).

This research emphasizes the use of the term climate refugee, because, based on the former discussion, it can be argued, that that people fleeing from climate change are just as entitled to be covered by the strong moral connotation of refugee as the people covered by the 1951 Refugee Convention. Moreover, this definition invokes more attention and demands more action than the term migrant. Additionally, this definition is not contradicting the above mentioned – it includes more or less the same group of people - this discussion mainly represents a clash of framing and labelling of a concept. However, in this thesis the definition of climate refugees developed by Biermann and Boas (2010) will be applied<sup>3</sup>:

“People who have to leave their habitats, immediately or in the near future, because of sudden or gradual alterations in their environment related to at least one of three impacts of climate change: sea-level rise, extreme weather events, and drought and water scarcity”  
(Biermann and Boas, 2010:67).

This definition has been chosen due to the above mentioned qualities. Additionally, it is comprehensive in including different aspects of climate change, and consequently, it clearly outlines which driving factors categorise climate refugees – and hence, separates them from ‘normal’ migrants and traditional refugees.

While climate change is being widely discussed, it is difficult to find climate refugees on the agenda of Medias, politicians and to some extent even scientists. The aim of this paper is to produce knowledge and shed light on this rather under-discussed aspect of climate change by firstly try to understand and analyse the existing knowledge on the issue of climate change and refugees and secondly, evaluate the process of regime creation and finally suggest

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<sup>3</sup> Because of the debate about framing and definition of climate refugees, climate migrants, environmental migration etc. articles and researches will be applied on equal terms even though they have different definitions – but of course it will have to be taking into account when validating the projections and numbers, whether the paper work with a broad or narrow definition.

steps that can be taken towards a regime on climate refugees by important actors in international politics. Firstly, a literary review of some of the articles written so far on the issue will be given which will lead to the research question applied in this research.

## Literary Review

Even though it has been argued in the introduction that the issue of climate refugees is heavily under-discussed there has been some research in the area. In this paragraph an extract of the research will be assessed. In her report from 2007 Oli Brown focuses on the relation between climate change and forced migration. She emphasises the need for the international society to focus on more than merely climate change, while arguing for a more targeted adaptation and development strategy (Brown, 2007:29). Brown's call for a long term adaptation and development strategy is repeated in a project developed by FMGEC that focuses, inter alia, on the need to focus on growing urban populations in vulnerable area and the need for adaptation planning (FMGEC, 2011:10). Additionally, the project has focus on the drivers for migration and questions the amount of future climate refugees by arguing that climate change is equally likely to prevent migration as causing it – because the population in the most vulnerable areas will not possess the social, economic or human capital to migrate (FMGEC, 2011:9). This, the economic dimension of climate change, is discussed and described in great length in the influential Stern Review (2006). This review focuses on the economics in all spheres of climate change – and is one of the most cited texts when it comes to estimates on climate refugees (Stern, 2006).

While Brown's proposition and FMGEC's report assessments focus on the immediate victims of climate change and how we as societies can prevent such events occurring (or reoccurring), Shakti Prasad Srichandan's (2009) main focus is on climate refugees as a security threat to the European Union (EU). Thereby, he removes the focus from the immediate victims (namely climate refugees and affected regions) to the EU. He argues that climate change will destabilise some of the world's most vulnerable countries and that the refugee flows from these areas will be the biggest security concern for the EU in the nearest future. Therefore he argues that being a driving factor in environmental negotiations is both a 'responsibility' and a 'compulsion' of the EU (Srichandan, 2009:20). Hence, he changes the debate from being a development issue to a securitisation issue by focusing on neither climate change nor the impacts on climate refugees but on how a possible flow of refugees might threaten the wellbeing of the EU.

Frank Biermann and Ingrid Boas (2008, 2010) provide a policy approach to the issue of climate refugees. They have in their research on climate refugees focused largely on the establishment of a Global Governance System that will cope with the impacts of climate change – a part of this system should protect climate refugee. They suggest a Protocol on Recognition, Protection and Resettlement of Climate Refugees (Climate Refugee Protocol) to the UNFCCC. Hence, by making the protection of climate refugee a part of the UNFCCC umbrella it can build on the existing political support by the parties – and additionally build on the widely accepted principle of *common but differentiated responsibilities* (Biermann and Boas, 2010:60, 76). This is a rather legalistic and institutionalist approach – it gives the perspective that if global actors can agree on certain principles and rules the challenge of climate refugees can be overcome.

Hence, adaptation strategies to and the economics of climate change have been analysed in former research projects. The formation of an international regime on climate refugees has also been discussed in the articles by Biermann and Boas. But there appears to be a knowledge gap between the need to form a regime on climate change and the role of knowledge, interests and power in actually forming that regime. It has been argued that it is necessary to form a regime on climate refugees and even a certain design has been advocated for – however, no regime will be formed to protect climate refugees if the political will is more or less non-existing. The aim of this paper is to supplement this debate by bringing some additional arguments/dimensions on how to establish a regime on climate refugees by answering the research question:

*How is the state of knowledge on climate refugees, and how do knowledge and power relations influence the formation of an international regime on climate refugees?*

## **What is a regime?**

In order to be able to assess the role of knowledge and power in the formation of a regime on climate refugees it is necessary to establish what exactly a regime is. International regimes are all around us, whether we realise it or not – the Kyoto Protocol, the General Agreement on Tariffs and Trade (GATT) (World Trade Organization (WTO)), the International Atomic Energy Agency (IAEA), the International Monetary Fund (IMF), the Bretton Woods System but also everyday things are regulated through regimes as e.g. making it possible to post a letter in Denmark and realistically presume it to arrive in distant destination as well as the

managing of airplane traffic across the globe (Little, 2008:298). Regimes can at first glance be understood as rule-governed behaviour, but scholars in the area in general see this as a simplification and therefore apply more complex definitions (Little, 2008:300).

A commonly applied definition of a regime is Stephen Krasner's; he defines regimes as "sets of principles, norms, rules, and decision-making procedures around which actors' expectations converge in a given area of international relations" (Krasner, 1982:186; Little, 2008:300). Krasner's definition was operationalised by Radislav Dimitrov in 2003 to "a legal treaty or a series of treaties that involve international commitments for specific policy action to address a problem" (Dimitrov, 2003:123). Oran Young defines regimes as social structures: "regimes are social institutions governing the actions of those interested in specifiable activities (or meaningful sets of activities). As such they are recognized patterns of practice around which expectations converge" (Young, 1980:332). Additionally, he specifies that regimes may be more or less formalised and that they can be accompanied by organisational arrangements (Young, 1980:333). Furthermore, members of regimes are always sovereign states, while regimes are often structuring the behaviour of private actors (companies, banks etc.) (Young, 1980:333).

This is necessarily only a selection of definitions; Krasner and Young definitions are very different with Krasner's being very state-centric while Young's is a more constructivist social-centred approach. And whilst Krasner probably never would support Young in the notion of regimes as social structures, they nevertheless both recognise that regimes are patterns of practice - norms, rules and decision-making procedures around which actors' expectations converge. In the context of this paper a regime will be defined as Dimitrov's operationalisation from 2003, because it encapsulates aspects of both definitions, while still being state-centric. This is important in this context due to the theoretical framework – the two international relation (IR) theories applied in this context: *realism* and *liberal institutionalism* are both state-centred approaches. Hence, to meaningfully discuss a regime from the perspective of these theories states have to be the main actors.

Levy et al. developed in 1995 a simple and useful typology of regimes based on two dimensions: Converge of expectations and formality (Little, 2008:301):

**Table 1: Typology of regimes**

Convergence of expectations			
Formality		Low	High
	Low	No-regimes	Tacit regimes
	High	Dead-letter regimes	Full-blown regimes

(Little 2008: 301)

The convergence of expectations refer to “the extent to which states expect or anticipate that their behaviour will be constrained by their accession to an implicit or explicit set of agreements” (Little, 2008:301), while the formality refers to the degree of a regimes formalisation – from international organisation to merely based on precedence (Little, 2008:301). In the typology, it is clear that a low degree of both formality and converge of expectations lead to no-regimes, while in regimes where a low degree of formality is combined with a high degree of converge it is anticipated that informal rules will be observed (a so-called tacit regime) (Little, 2008:301). It is possible to have regimes where formal rules have been established without any expectation that they will be observed (a dead-letter regime) and finally there is a regime with high degree of formality and a high degree expectation that the rules will be observed – a so-called full-blown regime (Little, 2008:301). In the context of my research the focus will be on the aim to form a full-blown regime on climate refugees. The other classifications can nevertheless provide alternatives, while the typology in itself provides an overview over different regime-types.

Frank Biermann and Ingrid Boas developed in their article from 2008 *Protecting Climate Refugees: The Case for a Global Protocol* five principles that should be the objective of a future regime on climate migration (Biermann and Boas, 2008:12-13):

1. Focus should be on planned and voluntary resettlement as well as long-term re-integration of affected populations
2. Climate migrants cannot return to their original home, hence, they should be treated as permanent immigrants.
3. Opposite the 1951 Refugee Convention that targets individuals, a regime in this issue area must be tailored groups of people (villages, cities, provinces and even states).
4. Focus should be on protecting populations within their states and provide international assistance and funding.

5. Protection of climate migrants must be seen as a global problem and a global responsibility.

These principles advocates for a comprehensive and ambitious regime on climate refugees. Additionally, the principles show that a regime in this issue area possesses large demands to the party states – both economically and politically.

Hence, in this paper a regime will be understood as Dimitrov's operationalisation of Krasner's classic definition: "a legal treaty or a series of treaties that involve international commitments for specific policy action to address a problem" (Dimitrov, 2003:123), because it encapsulates the essence of both Krasner's and Young's definition while being possible to apply in an analysis based on state-centred IR theories. Moreover, it is clarified that when the possibility for the formation of a regime on climate migration is discussed the focus is on a full-blown regime that follows the five principles developed by Biermann and Boas.

## Methodology

In order to analyse the role of power and knowledge in the formation of a regime, I adopt the epistemological stance that it is necessary to apply theoretical 'lenses' to understand and explain the reality out there. This implies that I believe that what we see is determined by the discourses, the society, scientific paradigms etc. we are a part of, and hence, I relate to the tradition of *epistemological idealism* – this is seen in contrast to e.g. a positivistic approach.

Ontologically, I relate to *ontological realism*, meaning that I believe that there exists a world out there whether I recognise it or not (a stone is a stone whether I choose to call it a stone or not). Thus, I am ontological realist and epistemological idealist, which entails that the world exists independently from my recognition, but also, that my recognition of the world is determined by social and historical context as well as preconceptions (the 'lenses' I see the world through). Additionally, the epistemological stance implies that in this research I will not be able to reach an unambiguous objective truth – it will be a truth reflected by the lenses (theories) I put my empirical material and the discourses and preconditions that these lenses are a part of.

This study will be a qualitative case study. The main case is necessarily climate refugees – and I will have to map the knowledge on this subject before being able to analyse the possibility for the formation of a regime. Besides climate refugees, other regimes and non-regimes will be used as examples and to draw experiences from – this is done in order to

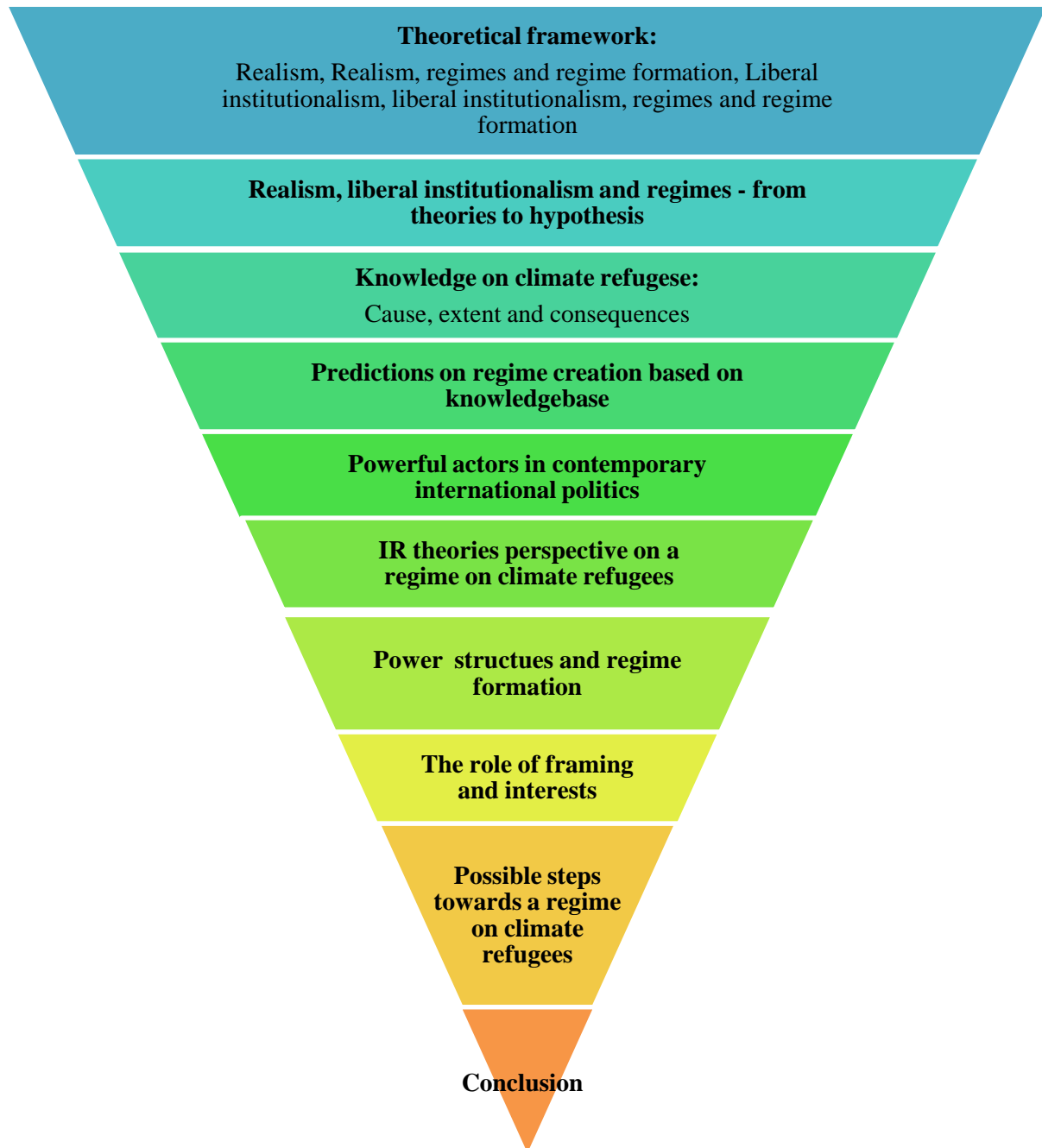
strengthen the argument and, in the end, possibility for generalisation. Due to the nature of the research question '*How is the state of knowledge on climate refugees, and how do knowledge and power relations influence the formation of an international regime on climate refugees?*' the research will be of descriptive and explanatory nature. It is descriptive in the sense that the research will outline the state on climate refugees and hopefully clarify whether the formation of a regime in this area is possible. Additionally, the aim is that the research can lead to new 'why and how' questions and thereby also provide a basis for generalisation in future research (De Vaus, 2001:2).

This paper is mainly deductive in nature because the theories guide the observation I make. Hence, I apply general theories on the specific subject of regime formation on climate refugees (De Vaus, 2001:6). This is done based on my epistemological stance, because I believe that theories and perspectives give us a better understanding of the world and can help examining the development and prospects for a regime on climate refugees. Nevertheless, by analysing the case of climate migration and by referring to other cases of (non)regime formation, I will hopefully be able to generalise some aspects of the research – hence, I move from a specific level to a more general level - this provides the analysis with some inductive elements (De Vaus, 2001:5-6).

As mentioned, this research will be of qualitative nature; it will be based on other scholar's research and findings, reports from international organisations, conferences and books. Knowledge on climate refugees is hard to establish as hard facts – because it is mostly estimations on future scenarios, and furthermore, as mentioned in the introduction, the definition and terminology of climate refugees are widely discussed, so scholars have had different starting points, when making their projections. Hence, the numbers on future climate refugees possibly holds a large margin of error because it is future projections – and this is of course something I need to keep in mind when using sources. Additionally, the tipping point between voluntary and forced migration (refugees) is in a grey area, thus, I have to pay attention to both aspects. The qualitative nature does, that I have to take the *double hermeneutics* in to account – I have to keep in mind that the sources and theories I am using to interpret the world is already someone else's interpretation of the world. It is their lenses I put on the reality.



## Structure of the Thesis



# Theoretical Framework

In this part of the paper different theoretical perspectives will be outlined in order to construct the theoretical framework. I will apply a two-stringed theoretical approach to the empirical material, which will make me able to conclude both on the role of knowledge and power in the formation of an international regime. Firstly, Dimitrov's theory on knowledge and regime formation will be examined in order to understand the role of knowledge in the formation of a regime. Subsequently, the focus will be on the macro-level international IR theories: neo-realism and liberal institutionalism. These theories are the progeny of respectively realism and liberalism and have dominated the mainstream scholars of international relations in especially the United States (U.S.) since the 1980s (Lamy, 2008:126). Historically, after World War II realism has to a large extent been the dominant theory of international relations, hence it was a natural choice to apply in this context (Reus-Smit 2009: 213). Liberalism in general provides a counterpoint to realism and liberal institutionalism (neo-liberalism) more specifically is interesting to apply together with (neo-)realism because both approaches accept the importance of the sovereign states and the anarchical condition of the international system – but they have a completely different understanding of the possibility for cooperation (Burchill, 2009:66). Hence, these two theories will provide different understandings of the possibility for, and the role of power in, the formation of an international regime.

By combining Dimitrov's theory on knowledge and the two IR theories it will hopefully be possible to conclude which one of the IR theories has most explanatory value in the formation of a regime on climate refugees.

## Disaggregating Knowledge

“Disaggregating knowledge reveals important aspects of the interplay between knowledge, interests, and power which otherwise remain hidden, and helps solve empirical puzzles and theoretical contradictions” (Dimitrov, 2003:123).

A connection is expected between the knowledge of an issue area and the formation of a regime, but in reality there is often a contradiction in this relationship, namely that states form regimes despite significant knowledge gaps and the existence uncertainty (Dimitrov, 2003:123). This is e.g. exemplified in the legal regime on ozone layer protection, where “the treaty was not fundamentally rooted in consensual knowledge” (Dimitrov, 2003:126). This has made Dimitrov oppose the traditional knowledge-based approaches to the study of

international (environmental) cooperation, which tend to treat knowledge as a single variable – he argues that disaggregation of knowledge and distinguishing between different types of information reveals important aspects of the interplay between knowledge, interests and powers that might not else be discovered (Dimitrov, 2003:123). Moreover, he argues that the knowledge on different parts of an issue area have different influence on regime and non-regime formation (Dimitrov, 2003:124-125).

He separates knowledge of an ecological problem in to three parts: (1) the *extent* of a problem, (2) the *causes of a problem* and (3) a problems *transboundary consequences* (Dimitrov, 2006:124). The first part is relevant to the identification of an ecological problem and an assessment of its extent e.g. with regard to the regime on ozone depletion: how much ozone is depleted and how is the development in the concentration of ozone? The second part focuses on the *causes* of the problem: what causes the depletion of the ozone layer and what relative contribution can be ascribed respectively human activities and natural factors. Lastly, transboundary consequences refer according to Dimitrov to knowledge on the socioeconomic consequences of an ecological development (Dimitrov, 2003:128). His main argument is then, that the knowledge on the different parts of an issue area influences the formation of a regime in different ways.

In his article from 2003, *Knowledge, Power, and Interests in Environmental Regime Formation*, Dimitrov analyses the formation of a regime on ozone depletion and the non-regime formation on deforestation. By looking into the knowledge base available in the two issue areas Dimitrov backs his hypothesis that different types of knowledge carries different weight when it comes to the formation of a regime. More than anything knowledge about the negative transboundary consequences appears to be a decisive factor, hence, a strong knowledgebase on the transboundary consequences are important for the formation of regime – this knowledge was present in the case of ozone depletion but not on deforestation, where solid knowledge on the extent of deforestation was present (Dimitrov, 2003:142). Thus, he does not only conclude that knowledge on transboundary consequences are of utmost importance but also, that knowledge that can seem highly relevant (about the extent and causes of a problem) indeed are not necessarily decisive when it comes to the formation of a regime (Dimitrov, 2003:142).

As outlined in the introduction to Dimitrov, he claims that disaggregation of knowledge reveals aspects of the relationship between knowledge, interests and power that else would not have been discovered. One finding in Dimitrov's article is, that sufficient knowledge concerning the consequences of an environmental problem makes rational

calculation possible and portrays the degree of interdependence involved in the issue, and thereby, interests can play a role in the formation of a regime (Dimitrov, 2003:143). Hence, knowledge can shape interests in a certain issue area. There is an underlining theory in the studies of power and knowledge that powerful political actors can exercise power in order to shape the information/knowledge available, but according to Dimitrov's findings "powerful actors were not able to suppress information that runs counter to their preferences, and do not even attempt to do so" (Dimitrov, 2003:143) – this was not the case neither with U.S., who took the leadership on the formation of a regime on ozone depletion, nor the Scandinavia countries, who was at the forefront for establishing a regime on deforestation. Thus, Dimitrov's research reveals that knowledge (particularly on transboundary consequences) can help shape interests when it comes to form a regime on an environmental issues, but also that even the most powerful actors do not manage nor attempt to produce knowledge that support their own interests.

Consequently, in order to apply Dimitrov's theory in this research I will try to map the knowledge on the *extent*, *causes* and *consequences* of climate migration.

## **Realism**

Under this heading elements from both realism and neo-realism will be discussed. Realism focuses on human nature and anarchy in the international order, while neo-realism finds essential explanations mainly in structures that emerge as a consequence of this anarchy (Donnelly, 2009:36). Nevertheless, neo-realism has played the most prominent role over the last three decades, and hence, will play the most prominent role in this section. Additionally, it is argued that there exists a degree of continuity between classical realism and more modern variants (Dunne and Schmidt, 2008:92).

(Neo)-realism is a rationalist theory constructed on assumptions of rational choice in decision making (Reus-Smit, 2009:216). Actors operate with fixed preferences (social interaction does not determine interests) and they try to maximise these preference within the existing constraints (Scott, 2000:127; Barnett, 2008:162; Reus-Smit, 2009:216). Rational choice in itself does not provide claims of actual patterns in world politics. Thus, both neo-realism and for example neo-liberalism can subscribe to this rationalist position but they arrive at different claims of patterns in international politics – not least as a consequence of their different assumptions on the effect of anarchy in the international order (Barnett, 2008:162). Rationalist theories predict state actors to act in a pre-social, self-interested and rational way (Reus-Smit, 2009:216).

According to Dunne and Schmidt (2008), three factors play an important role in a realist approach to international relations, namely statism, survival and self-help (Dunne and Schmidt, 2008:93). These factors shape the interests of states. Statism refers to states being the main actors in the international community. The state is considered “the legitimate representative of the collective will of the people” (Dunne and Schmidt, 2008:93). Outside the boundaries of the states, anarchy exists due to the fact that there is no overarching central international authority. Therefore countries compete about power and security. This competition takes the form of a zero-sum game. Thus, if one country gets more, another one gets less (Dunne and Schmidt, 2008:93, 100). In the state of anarchy, power is considered to be a relational and relative concept. Hence, one exercises power over *someone* and one’s power is always compared to other state actors’ powers. Waltz, and neo-realists with him, changed this conception of power slightly. Instead of merely military power, the focus is on the distribution of capabilities which includes military power but also, among other things, economic strength, political stability and population size (Dunne and Schmidt, 2008:101).

Survival is the pre-eminent goal in international politics (Dunne and Schmidt, 2008:101). In this respect there is a clear differentiation between offensive realism and defensive realism. Offensive realists (such as John Mearsheimer, 2001) are willing to risk national security to gain a hegemonic position in the international world order, whereas defensive realists (such as Kenneth Waltz, 1979) emphasise the search for security but reject the possibility of jeopardising national security (Donnelly, 2009:40; Dunne and Schmidt, 2008:100-101).

Self-help is the only way to obtain and maintain security (Dunne and Schmidt, 2008:102). Waltz (in Dunne and Schmidt 2008) argues that domestic politics is characterised by hierarchy, while international politics is dominated by anarchy. Thus, he argues that “self-help is necessarily the principle of action” in international politics (Waltz in Dunne and Schmidt, 2008:102). This is what leads to the security dilemma in international politics: one country’s quest for security will necessarily increase the insecurity in another country (Dunne and Schmidt, 2008:102). Hence, in domestic politics ‘band-wagoning’ is seen as a possibility to increase gains, whereas in the international anarchic domain it can be a disaster – you risk strengthening a party which might later turn on you. Thus, great powers are always perceived as a threat in an anarchic system (Donnelly, 2009:36-37). Instead states balance – that is, they ‘attempt to reduce their risks by opposing a stronger or rising power’ (Donnelly, 2009:37). This can be done through joining forces and by establishing a formal alliance and thereby securing relative gains (Dunne and Schmidt, 2008:94; Burchill, 2009:67). These three factors

- statism, survival and self-help - naturally fit hand in glove with creating interests that make states act rationally, self-interestedly and pre-socially - as outlined above<sup>4</sup>.

## **Realism, regimes and regime formation**

Realist scholars argue, that: “Regimes form [...] in situations when uncoordinated strategies interact to produce sub-optimum outcomes” (Little, 2008:305). Therefore, realists argue that regimes are the logic response of rational actors operating in an anarchic system (Little, 2008:302).

The *Balance of Power* is an essential concept to understand the relationship between regimes and power from a realist perspective. Realists are unambiguous when it comes to the role of hegemons - hegemons use their power to establish and maintain regimes that promote their long-term interests, and simultaneously they possess the power to veto on the formation of a regime if it goes against their interests (Little, 2008:305-306). Therefore, the position and interests of less powerful developing countries are often neglected – unless they have a power lever due to e.g. specific geographical conditions (Little, 2008:307). Thus, from a realists perspective it is essential for the formation of a regime on climate refugees that the most powerful actors (e.g. a possible hegemon) have an interest in it (Little, 2008:305-306).

In order to explain why some states adhere to regimes build on norms and principles they oppose – and ideally want to change – realists turn to game theory and argues that regimes are a mechanism for states to confront the problem of coordination (Little, 2008:306). This is especially illustrated by the game *Battle of Sexes*<sup>5</sup> - as you will see later in the outline of liberal institutionalism they see regimes as mechanisms to avoid competitive strategies, whereas realists argue that problems arise if states *fail to coordinate* strategies, because this increases the risk for mutually desired goals being missed (Little, 2008:305). Hence, one of the major challenges in the international system is communicating, because communication makes coordinating possible - and one way to establish communication is through a stable regime that all actors can treat it as a constant (Little, 2008:305). One very important lesson from Battle of the Sexes is that there can be more than one Pareto optimal outcome – and all

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<sup>4</sup> This chapter on Realism has been taken from a previous paper of mine: Jensen, T.N. (2011) “Different Views on Fairness in the Allocation of Emissions,” *Master Thesis*, Vrije Universiteit Amsterdam, p.11-13.

<sup>5</sup> Battle of Sexes is often illustrated by a couple, who decides to go out one evening – e.g. she wants to go to the opera and he wants to go to the cinema – but they have in common that they prefer to go together above going alone. This gives them four possibilities – she goes to the opera alone, he goes to the cinema alone, they go to the opera or they go to the cinema. And because they both prefer to be together going to the opera and the cinema together both becomes the Pareto optimal outcome.

of these are preferable to lack of coordination (cf. footnote 3). This argument is applied by realists to explain why some states adhere to the principles and norms of a regime, even though they basically wish to change the same principles and norms – “a failure to coordinate will move them into a less advantageous situation” (Little, 2008:307). So, when the developing countries trade with the developed countries they wish to do so on more advantageous terms, but they will still do it on the developed countries terms – because the alternative failure to coordinate leaves them in a worse situation (Little, 2008:307). It is argued by realists, that a new set of principles and norms to e.g. the trade regimes will represent another possible outcome in the Battle of Sexes game – but because of the balance of power in the existing world order few new principles will favour the developing countries (Little, 2008:307).

## **Liberal institutionalism**

As mentioned earlier, liberal institutionalism is a progeny of liberalism, therefore this chapter will include both elements of the former and the latter. This is done because in order to fully comprehend liberal institutionalism it is important to understand where it originates from.

Even though, realism has been the dominating theory of international relations, liberalism has historically been the alternative. Especially after World War I liberalism flourished with idealists, who considered war as an out-dated way to settle disputes between states - the same ideology that was behind establishing the UN following World War II (Dunne, 2008:110).

The four main defining elements of liberalism are: *democracy, juridical freedom, liberty* and *free trade* (Dunne, 2009:116). States that treat their citizens in accordance with these principles (hence, in an ethically correct way) and thereby produce an environment for an active civil society, are generally expected to act less aggressively in the international arena as well (Burchill, 2009:69). For liberalists, peace is a natural state on the international level, which is in opposition to the realists' notion of anarchy – this is one of the areas where liberal institutionalism differs remarkably from classical liberalism by sharing understanding with (neo)-realism in the notion of the anarchic international system. Anarchy is *a* state of the international society, but liberalist scholars argue that war and anarchy can be regulated by democracy, free trade and international organizations (Dunne, 2008:113; Burchill, 2009:61; Little, 2009:298). This is particularly inspired by the idea that countries, which become interdependent and share common interests in economic collaboration have a high degree on

convergence in political matters, and hence, are reluctant to turn to military forces and war – there is a ‘spill-over’ from cooperation in some fields to others (Dunne, 2008:112-113; Burchill, 2009:66:). According to Emmanuel Kant:

“Trade... would increase the wealth and power of the peace-loving productive sections of the population at the expense of the war-oriented aristocracy, and... would bring men of different nations into constant contact with one another; contact which would make clear to all of them their fundamental community of interests” (Burchill 2009: 65).

Thus, these contacts on levels of cooperation on e.g. free trade will create an understanding and an interdependence, which might shift the loyalty away from the narrow nation-state (Burchill, 2009:65). Based on this, liberalism actually answers to realism's notion of self-interest by arguing, that economic self-interest in this world-system would be a disincentive for war (Burchill, 2009:65). Partly from this originates *the democratic peace thesis* – where democratic countries due to the rule of democracy seem reluctant to solve problems through war. This appears to be typical behaviour between democratic countries and does not apply when it comes to non-democratic countries. (Dunne, 2008:112; Burchill, 2009:62).

Scholars within liberalism argue that states are individual in their preferences, and these preferences are shaped within the states and determine how they are acting on the international level. According to Andrew Moravcsik, “for liberals, the configuration of states preferences matters most in world politics” (Moravcsik, 1997:513). These preferences are not constant, but are continuously constructed by social actors inside the state, hence, there is an embedded belief in possible progress (Dunne, 2009:110). The social actors' interests will at any given time be shaped by the most influential social actor within a state, and they will then play an important role in determining how the state acts internationally (Moravcsik, 1997:518; Dunne, 2008:110). This points to an inside-out approach to international relations (with focus from the domestic to the international arena), which is criticised by realists for being reductionist, because it neglects the impact of the structures within which the states act on the international level (Moravcsik, 1997:519; Burchill, 2009:59).

So far liberal institutions and values are deeply embedded in Europe and North America – but as outlined in the introduction to liberalism it lacks recognition worldwide in the international system (Dunne, 2009:110). As stated by Stanley Hoffman: “The essence of



liberalism is self-restraint, moderation, compromise and peace” whereas “the essence of the international politics is exactly the opposite: troubled peace, at best, or the states of war” (Hoffmann 1987 in Dunne, 2009:110).

Liberal institutionalists argues, that states still are the key actors in the international system, but in order to achieve peace and prosperity it is necessary that states surrender some of their sovereignty in order to create integrated institutions (e.g. the EU) (Lamy, 2009:132). Hence, the role of international institutions and regimes are of outmost importance, as well as the necessity to cooperate in areas outside trade – security concerns can also be approached by regimes and institutions (Lamy, 2009:132-133). But liberal institutionalists realise that in areas where mutual benefits are not clearly existing cooperation can be very hard to achieve, hence, there are limitations to the ‘spill-over’ effect (Lamy, 2009:133).

### **Liberal institutionalism, regimes and regime formation**

Regimes help to overcome the problem of anarchy” according to liberal institutionalists (Little, 2008:302). Hence, they agree with realists that regime formation is the rational choice for actors operating within the anarchic international system (Little, 2008:302) – they just reason differently.

Although an anarchic system inhibits collaboration, liberal institutionalists apply ideas from microeconomics and game theory to explain why countries can or cannot collaborate and why regimes can overcome the difficulties. They do this by drawing an analogy between the international system and the economic market – because both are characterised by the anarchic structures (Little, 2008:303). This especially becomes relevant when looking at the concept of *Market Failure* – a situation in which the market neglects to produce *public goods*; sometimes it can even produce *public bads* (eg. pollution) – and in order to overcome this failure economic actors sometimes have to collaborate instead of compete. With regard to the economic markets the mechanism to facilitate collaboration is often state intervention – hereby anarchic structures of the market will be overruled by hierarchical structures (Little, 2008:303). But because there is no equivalent of a state on the international level, regimes have to facilitate this collaboration – the absence of a regime has clear consequences such as pollution, arms race and resource depletion, and these are all in the language of economics evidence of market failure (states have neglected to collaborate and have competed instead) (Little, 2008:303). Hence, regimes are both necessary and possible from a liberal institutionalist perspective.

The anarchic structure of the international system nevertheless makes collaboration very hard to achieve. Scholars of liberal institutionalism draw on the ideas of game theory to explain why.<sup>6</sup> Especially the game *Prisoners' Dilemma*<sup>7</sup> is applied by liberal institutionalists to reveal the dynamics of market failure (failure to collaborate). The logic associated with the Prisoners' Dilemma provides a rational explanation to a lot of irrational behaviour on the international level: overfishing in the seas, pollution, selling arms to unstable regimes etc. this is all market failures as a consequence of states competing instead of collaborating: "they fail to pursue collaborative strategies because they expect the other members of the anarchic system to pursue competitive strategies" (Little, 2008:303). Therefore, it appears that states pursue the competitive strategy because of their expectation – they need a mechanism that allows them to collaborate – scholars of liberal institutionalism believes that regimes *are* an expression that such mechanisms exist (Little, 2008:304)

Liberal institutionalists again apply the ideas from microeconomics and game theory to explain the formation of regimes. Micro-economists argue that not only state intervention can produce public goods – a dominant or hegemonic actor can be prepared to cover the cost. Liberal institutionalists quickly adopt this line of logic to the international system by arguing that in regime formation hegemons play an essential role – the economic regimes established after World War II owe their existence to the U.S. while the regime established in the 19<sup>th</sup> century to outlaw slave trade only became a success because the then hegemon Great Britain supported the regime – hence, due to the support by the hegemons the other states *expect* each other to adhere to the regimes as well (Little, 2008:304). This is a line of logic that opposes the realist conception of hegemons (and states) acting entirely on self-interests (Little, 2008:305). Hence, hegemons play an essential role in establishing regimes because their actions show other states what to expect – they collaborate and move out of the Prisoners' Dilemma. Additionally, it is argued that states who has moved away from the sub-optimum will be reluctant to return to a competitive strategy, thus, established regimes will survive even in the absent of a hegemon (Little, 2008:305). Game theories role in explaining the formation of a regime is the fact that the Prisoners' Dilemma is played repeatedly, thus, it becomes worthwhile to take a risk to at the collaborative strategy in the pursuit of the optimal

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<sup>6</sup> Scholars of game theory focus on non-zero sum games and the interaction between rational actors who can choose between collaborative or competitive strategies.

<sup>7</sup> A paradox in game theory, where two actors acting out of self-interest reach an outcome that is not ideal. Most commonly, the dilemma is set up so the two actors have two possibilities: collaborate or competitive, thus there are four possible outcomes. Normally, it is set up so both actors choose to protect themselves on the expenses of the other participant. Hereby, they end up in a worse situation than if they had collaborated (they reach a sub-optimal instead of a Pareto optimal outcome).

outcome (Little, 2008:305). Moreover, *the shadow of the future* plays an essential role – it is recognised that if any states defects from a regime other states will follow, and thus, the situation will move from Pareto optimal to a sub-optimal outcome (Little, 2008:308). Hence, it becomes clear that from the perspective of liberal institutionalism the major mechanism in the formation of a regime is *reciprocity*. Therefore, the role of inspections and surveillance becomes increasingly important (Little, 2008:305). Additionally, scientific knowledge is considered very important – especially in the future – because states react effectively on knowledge that scientist agree on the significance of, while they are unwilling to react on speculation – this of cause makes Dimitrov's theory even more interesting (Little, 2008:305).

### **Realism, liberal institutionalism and regimes – from theories to hypothesis**

The theoretical framework will be applied in order to explain the role of power and interests in regime formation and eventually to predict whether a future regime on climate refugees is plausible. Consequently, in the end it can be evaluated whether realism or liberal institutionalism provides the best explanation for the role of power and interest in regime formation – based on the findings in the analysis and suggestion to future steps on the way to the formation of a regime on climate refugees will be developed.

As mentioned, realism and liberal institutionalism share some common assumptions on international regimes (Little, 2009:298):

- States operate in an anarchic international system
- States are rational and unitary actors
- States are the units responsible for establishing regimes
- Regimes are established on the basis of cooperation in the international system
- Regimes promote international order

The common assumptions are of course a main reason for why the theories are applied together in this research. But there are necessarily many aspects of regimes that realism and liberal institutionalism interpret very differently:

**Table 2: Main different assumptions on regimes: realism and liberal institutionalism**

Regimes:	Enables	Beneficiary	Survival	The world order
<b>Realism:</b>	States to <b>coordinate</b>	Regimes generates differential benefits for states	Power is the central feature of regime formation and survival	The nature of the world order depends on the underlying principles and norms of regimes
<b>Liberal institutionalism</b>	States to <b>collaborate</b>	Regimes promote the common good	Regimes flourish best when promoted and maintain by a benign hegemon	Regimes promote globalisation and a liberal world order

(Based on Little, 2009:299)

And these differences are precisely what make the research interesting - when applying the theories in the research they will have different interpretations of the possibility to form a regime on climate refugees. The two IR theories are combined in order to get the best from both worlds and combined with Dimitrov's theory of disaggregation of knowledge it will hopefully be possible to shed light on the research question:

*How is the state of knowledge on climate refugees, and how do knowledge and power relations influence the formation of an international regime on climate refugees?*

In order to be able to answer the research question in a satisfactory manner, there have been identified four decisive parameters namely the state of *knowledge*, *power*, *interests* and *framing*.

Despite the fact that the theoretical framework constitutes a two-stringed approach to the analysis, Dimitrov's theory on disaggregation of knowledge does not 'speak' to realism and institutionalism in the same way as they interact. Dimitrov's approach is a more practical approach, whereas realism and liberal institutionalism are meta-IR theories, which describes the mechanisms in the international system. Below are the theories predictions on the three first parameters knowledge, power and interests are outlined the fourth parameter – framing is not included in this table because theories predictions on the framing depends on the available knowledgebase.

**Table 3: The theories predictions on important parameters**

	Knowledge	Interests	Power
<b>Disaggregating knowledge</b>	Knowledge (and especially the disaggregation of knowledge) can shape interests – and reveals interdependence.	Regimes are established to facilitate cooperation on (often) transboundary issues. The role of power in shaping knowledge is vanishingly small.	Experiences show that powerful countries neither can nor try to suppress knowledge that counters their interests.
<b>Realism</b>	States interests are fixed and do not change through interaction – the three factors: statism, survival and self-help determine states interests.	Regimes are established to confront the problem of coordination through communication. Hegemons and their interests play an essential role in regime formation and survival – a regime is not established without the support of hegemonic powers.	Because of the important role of power in establishing regimes, it will always be hegemons and other powerful actors who can establish and shape regime to fit their interests. Hence said, that regimes which immediately meet the interests of non-powerful actors will never be established unless the balance of power shifts.
<b>Liberal Institutionalism</b>	Interests are shaped within the state and they are continuously constructed and changed. Therefore, good arguments and secure knowledge can play a role in changing states interests.	Regimes can be established by hegemons, who in a case of market failure are willing to cover the costs of public goods - or because states find it worthwhile to take a chance to overcome the problem of collaboration in order to reach a Pareto optimal outcome. Hegemons are important in the establishment of a regime, but not to maintain an already established regime. Reciprocity is more important than power.	Power is a less important concept within liberal insitutionalism. It is nevertheless, important for the formation of a regime. Reciprocity is a more determine factor. Power is not necessarily used to promote self-interests (or self-interests are harder to separate from common interests).

## Knowledge on climate refugees

In this paragraph the existing knowledgebase on climate refugees will be outlined. First, some general aspects will be discussed namely framing, definition and future estimates. This will be followed by a thorough description of the knowledge on climate refugees structured according to Dimitrov's three aspects of knowledge: causes, extent and consequences. Hence, this paragraph will both present the case on climate refugees and at the same time analysis the state of knowledge.

As outlined in the introduction, the definition of and term to describe *climate refugees* have been widely discussed and different scholars, international organisations, non-governmental organisations (NGO's) have applied different definitions and terms. This of course influence the findings in a research - if you have a comprehensive definition of climate refugee you will conclude differently than if you apply a very narrow definition. On interesting aspect is, that despite the different starting points for the researches approximately all of them refer to the same numbers and statistics - probably because there are so few comprehensive and widely recognised quantitative studies on this subject. Hence, more research is needed to determine an accurate number.

One of the reasons why there is so few widely recognised quantitative studies on climate refugees is the fact that it will always be future estimates – and there is so many parameters involved that the numbers will always be fraught with high uncertainty (Biermann, 2011:5). Mainly because it is difficult to foresee the meteorological evolution of climate change and the effect of our adaptations and mitigations strategies (e.g. the Kyoto Protocol) (Brown, 2007:18-19) – scientists (e.g. Norman Myers, 2005) have been criticised for neglecting to take these strategies into account when predicting the number on future climate refugees (Biermann, 2011:5). If the international society and national governments manage to resettle the most vulnerable populations the number of climate refugees will necessarily be smaller and the structure of the populations might be different in 2050. Therefore, the numbers are fraught with uncertainty but they will still be applied in this study, as well as in other studies, because it is currently the most valid knowledge. And even though the recommended measures varies, there is a common understanding that there is sufficient knowledge and reason to prepare for an increased amount of climate refugees in the future – a future scenario that highly depends on our actions today (Myers, 2005:4; Brown, 2007:18-19); Biermann and Boas, 2010:83; Biermann, 2011:5; FMGEC, 2011:19).

The framing of climate refugees is of utmost importance – are climate refugees an issue of human rights, international security or development (The Global Governance Project (Glogov), 2012). This is a rather comprehensive discussion that will not be taken at length here – but it nevertheless important to understand the role of framing in connection to the establishment of an international regime. It is important because the framing points to what institutions and legal frameworks that should be adjusted in order to protect climate refugees (Glogov, 2012). If it is an issue of international security – some argues that climate migration can lead to national, regional and even international conflicts - it is a matter for United Nations Security Council (UNSC). This would strengthen the UNSC's power over internal affairs in developing countries, a development developing countries would be expected to oppose, since UN lacks legitimacy in these countries due to the special voting system that provides the U.S., China, the United Kingdom, France and Russia with veto power (Biermann and Boas, 2008:12). Whereas, if climate refugees are framed under human rights, it is the human rights institutions that have to be adjusted (Glogov, 2012). Finally, if climate refugees are framed as a development challenge then development agencies will be the major players – and hence lead to a more local approach (Glogov, 2012). Additionally, it can be argued that the framing have implications for the states incitement to act – as it has been outlined in the theoretical framework, national security plays an important role in both IR theories but especially in realism, thus, if climate refugee would be framed under international security a more pro-active environment could be expected.

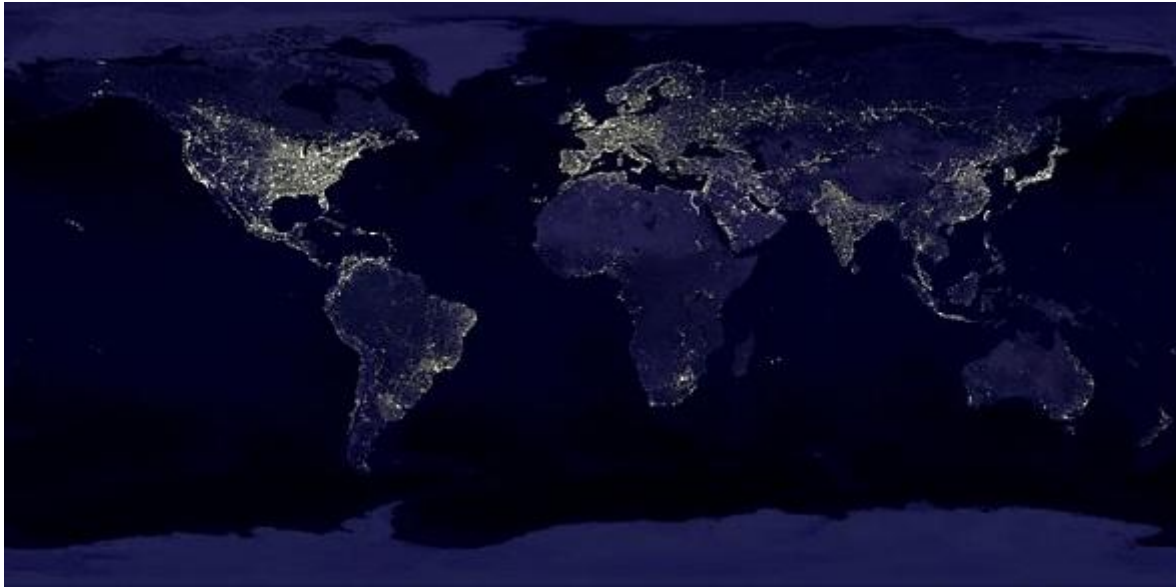
### **Knowledge on the causes of climate refugees**

Climate change is the major cause for climate refugees (High Representative of the Union for Foreign Affairs and Security Policy (HR) and the European Commission (EC), 2008:4). This causality is also emphasised in the definition of climate refugees applied in this research<sup>8</sup>. It is by now widely recognised that a major driver behind climate change is emissions of greenhouse gasses (UNFCCC, 1992:Article 2). Below is picture 1 that is applied to illustrate the global emission pattern by use of night time electricity on outdoor lightning, thus, this is merely an illustration that gives a rough overview of the global emission patterns:

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<sup>8</sup> “People who have to leave their habitats, immediately or in the near future, because of sudden or gradual alterations in their environment related to at least one of three impacts of climate change: sea-level rise, extreme weather events, and drought and water scarcity” (Biermann and Boas 2010: 67)

**Picture 1: Earth at night**



(U.S. Defence Meteorological Satellites Programme and the National Aeronautics and Space Administration (better known as NASA): 15<sup>th</sup> of August 2003).

The UNFCCC has considered this ‘emission pattern’ in the Kyoto Protocol, that builds on the principle of ‘common but differentiated responsibilities’ – we all have to take actions in the combat of climate change but the developed countries need to take the lead based on their historical responsibilities (UN, 1998:Article 10<sup>9</sup>)

The earth has heated up with 0,7 degrees since 1990 – and even in the unrealistic scenario that we stopped all emissions today the Earth would heat up with further 0,5 to 1,0 degree due to the damage that has already been done to the climate system (Stern, 2007:404). But if we continue today’s trend we can expect a 2-3 degrees mean temperature rise during the next five decades – and even higher if the emissions grow (Stern, 2007:404). This development is the main driver behind climate migration “[...] on current trends the ‘carrying’ capacity’ of large parts of the world, i.e. the ability of different ecosystems to provide food, water and shelter for human populations, will be compromised by climate change” (Brown, 2007:11). Brown (2007) divides climate changes into two – *climate processes* and *climate events*:

Climate processes are slow-onset changes as e.g. sea level rise, desertification, water scarcity and food insecurity (Srichadan, 2009:7). Sea level rise simply makes it impossible to live in certain coastal areas ( up to 40 % of China’s population is estimated to live in coastal areas) (Brown, 2007:22) – at just one meter sea level rise storm surges could make Island states such as Tuvalu, the Maldives and the Marshall Islands uninhabitable (Biermann and

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<sup>9</sup> The principle of ‘common but differentiated responsibility’ is described in details in UNFCCC Article 3.



Boas, 2008:10). Dry lands can also foster climate refugees – in the late 1980s and early 1990s desiccation of the Aral Sea forced 100,000 people to leave Karakalpakstan (that equals 1 in 16 of the population) (FMGEC, 2011:10). Additionally, experiences from Bangladesh suggest that one coping strategy for families affected by environmental events is rural-urban migration (fleeing to nearby cities) (FMGEC, 2011:10). Unfortunately, in countries that experience the most severe impacts of climate change many cities are vulnerable to climate change as well – it is estimated that six out of ten mega cities in Asia (Tokyo, Manila, Bangkok, Mumbai, Jakarta and Shanghai) will be severely affected by sea level rise (Brown, 2007:22). Hence, it is expected that the populations living in floodplains of urban areas will grow rapidly the next 50 years (FMGEC, 2011:10):

- From 18 million in 2000 to 45-67 million 2060 in East Asia
- From 4 million in 2000 to 35-59 million by 2060 in South-Central Asia
- From 7 million in 2000 to 30-49 million by 2060 in South-Eastern Asia
- From 2 million in 2000 to 26-36 million by 2060 in Africa<sup>10</sup>

This is necessarily the part of the population, who actually manage to reach actual cities – whilst other climate refugees will not have the resources to migrate to cities but will be displaced to other rural areas with high environmental risk (FMGEC, 2011:10). The Stern review predicts that melting and collapsing of ice sheets would rise the sea level to eventually threaten four million km<sup>2</sup> - areas that today are home to 5 % of the world's population (Stern, 2007:56)<sup>11</sup>, while a 4 degree temperature rise can possible lead to 30-50 % decrease in water availability in the Mediterranean and Southern Africa (Stern, 2007:57). In general these climate processes (including the examples above) are perceived as gradual natural degradation, and hence, they displace people 'in a less headline grabbing way' (Brown, 2007:13).

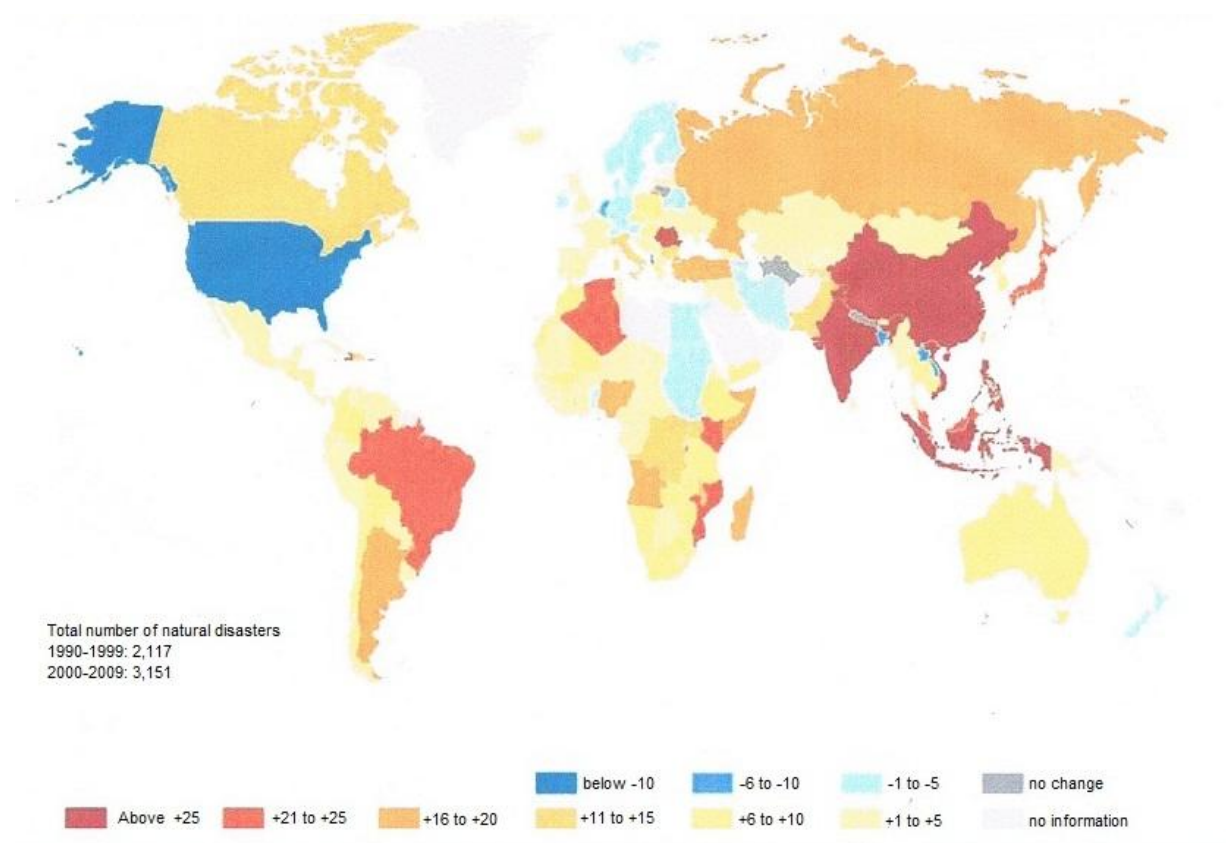
Climate events are sudden and dramatic hazards as e.g. typhoons, monsoon floods and hurricanes (Srichadan, 2009:7). Thus, climate events are characterised as dramatic events that makes people flee suddenly. Underneath, map 1 compares the number of natural disaster occurring between 1990-1999 and 2000-2009:

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<sup>10</sup> The exact numbers depend on various scenarios of the future (FMGEC, 2011:10).

<sup>11</sup> Table from the Stern review with possible climate impacts in relations to temperature rise is attached as appendix 1 – for background information.

**Map 1: Growth in the number of natural disasters<sup>12</sup>**



(IOM, 2010:257)

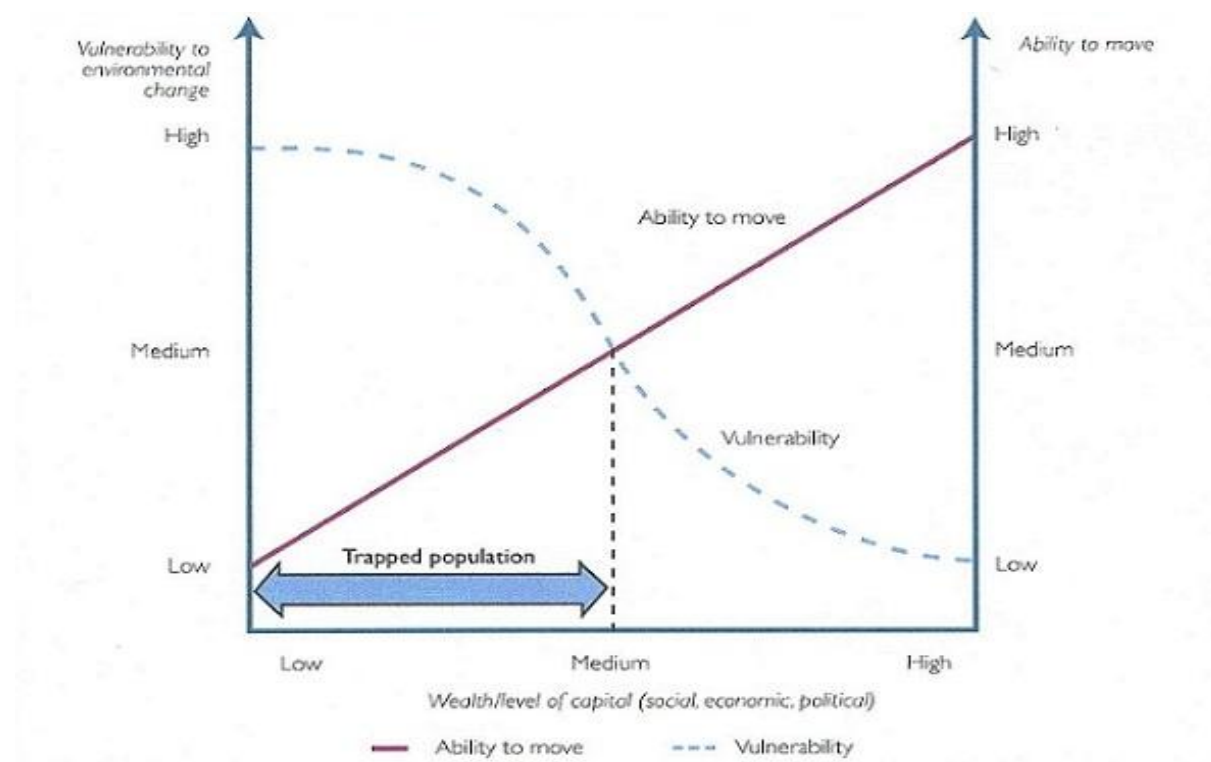
The map shows an increase in natural disasters on almost 50 % from 1990-1999 to 2000-2009. Simultaneously, the number of countries (137) experiencing an increase in natural disaster are remarkably higher than the number of countries experiencing a decrease (IOM, 2010:258). Moreover, the map also reveals a regional factor – with Asia, South America and Africa in general evidently more affected by natural disasters than e.g. Northern Europe.

Besides climate processes and climate events also *non-climate drivers* have to be taken into consideration namely economic and political drivers. The definition of climate refugees applied in this study excludes these drivers, hence, they do not affect the scope of this research directly – but they might do indirectly because climate change affects the other drivers by having impact on e.g. exposure to hazards (adaptive capacity), rural wages, and agricultural prices (FMGEC, 2011:8). An important feature of migration drivers is that they do not necessarily imply migration, whether an actual migration occur depends on a list of intervening factors and household characteristics – especially substantial economic, social and

<sup>12</sup> Note: the type of natural, disasters used for this comparison includes earthquakes, floods, storms and droughts (FMGEC, 2011:257). OBS! The text on the map has been edited for greater readability.

human capital are required in order to enable people to migrate (FMGEC, 2011:9). See Figure 1 below:

**Figure 1: Schematic representation of ‘trapped populations’**



(FMGEC, 2011:11)

Hence, economy can both be a push-factor for migration as well as a stay-factor, because some parts of the population do not have the required capital to migrate, thus, climate change can hinder migration in some areas while trigger it in others. This is also why, the definition in this paper is so decisive – it is specified that it is people who *have* to move no regardless of their social, economic and human capital.

It is nevertheless hard to separate completely, since the other drivers can influence a community's vulnerability towards natural impacts – natural phenomena only turn into disasters if the communities are not prepared to cope with then (no warning systems or poorly build houses), which is often an expression of especially low economic capital. A community's vulnerability therefore depends on the community's adaptive capacity and this adaptive capacity differs highly between communities – especially from developed to developing countries (Brown, 2009:12; Srichadan, 2009:7). Therefore, some communities are more challenged faced with climate processes and climate events because the population and society already are under economic pressure so that the adaptive capacity is low, therefore

they become overwhelmed by a natural disaster and will be forced to migrate (Brown, 2007:13). Hence, it is necessary to be aware of the above mentioned drivers, but in this paper the drivers of climate refugees are understood as mainly climate processes and climate events – but with the knowledge that they often are interconnected and influence each other.

It becomes clear that the knowledge on the causes of climate refugees is relatively well-known, widespread and recognised. Climate change is nevertheless still a development that we might only have seen the beginning of. It difficult to present the future developments as hard facts, and therefore, the knowledge often has the nature of estimates based on different scenarios. Consequently, in general the knowledge is widely recognised and cited, but it is hard to remove the uncertainty.

### **Knowledge on the extent of climate refugees**

The knowledge on the extent of climate refugees necessarily includes knowledge on both climate refugees per se but also some information on the climate development, since it the major cause of climate refugees.

It is estimated that by 2050 150-200 million people will be climate refugees; they will be displaced due to rising sea level, extreme droughts and floods – they will be forced to flee their home of residence and resettle in another areas (Stern, 2007:77: Biermann and Boas, 2008:10). A temperature rise as low as 1-2 degrees is estimated to make 700 – 1,500 million people experiencing water shortage (especially in regions where they highly depend on glacier melt), while a temperature rise with 2-3 degrees is expected to make 39-812 million in only South Asia experiencing water stress – and as mentioned, the climate refugees from only Bangladesh are estimated to outnumber all current refugees worldwide (Biermann and Boas, 2008:10). Hence, a relatively low temperature rise can have severe complications for large parts of the world's population. The 2000 World Disaster Report estimated that 256 million people were *affected* by natural disasters in 2000<sup>13</sup> this number is remarkably higher than the average of 211 million per year in the 1990's – an increase that the Red Cross largely ascribes increased 'hydro-meteorological' events (Brown, 2007:11). In 2009, 17 million people were *displaced* by natural hazards – in 2010 the number was 42 million<sup>14</sup> (FMGEC, 2011:12). These growing numbers can be ascribed to an increased amount of 'hydro-meteorological

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<sup>13</sup> Both weather related and geophysical events such as earthquakes and tsunamis.

<sup>14</sup> According to FMGEC this kind of natural hazards includes geophysical events (FMGEC, 2011:12)..

events' as done by the Red Cross, but maybe it is merely coincidental and most likely it is a combination. But these numbers of people affected and displaced yields for actions – especially with a number of climate refugees expected to reach 150-200 million by 2050.

Not all regions of the world will be equally affected by climate change:

“The distribution of impacts is likely to follow a strong South-North gradient – with regions such as Canada, Russia and Scandinavia experiencing some net benefits from moderate levels of warming, while low latitude regions will be more vulnerable. At higher temperatures, the risks become severe for all regions of the developed world” (Stern, 2007:5).

Especially Asia, Africa and Latin America are expected to experience the most severe impact of climate change (Boermann and Boas, 2007:12)<sup>15</sup>. Additionally, the human costs are higher for natural disasters in the developing countries – a research done by International Federation of Red Cross and Red Crescent Societies in 2004 (World Disasters Report 2004: Focus on Community Resilience) revealed, that in the decade from 1994 to 2003 natural disasters had an average human cost on 44 people per event in areas with high human development and an average of 300 people per event in areas with low human development – because the countries with high human development have better disaster education, responses and prevention (Brown, 2007:11). Thus, countries with low social, economic and political capital are more vulnerable to climate change. Furthermore, experiences from the 2004 Asian Tsunami showed that the 400,000 displaced people were largely *not* displaced to member countries of the Organisation for Economic Co-operation and Development (OECD) but within the local region (Brown, 2007:16). This trend was backed in Steven Vertovec presentation on the ‘Our Common Future’ conference in Hannover-Essen in 2010 – in his presentation Vertovec focuses on patterns of ‘traditional’ migration – patterns there are expected to be enhanced by climate refugees (depending on different factors as e.g. their social and economic capabilities). Vertovec argues, that migration patterns have become increasingly more complex since the 1980’s, because earlier migrants came as large groups from relative few countries of origin to relative few receiver countries, whereas now migrants come in smaller groups from an increase amount of countries to a diverse range of receiver

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<sup>15</sup> Appendix 2 gives an overview over climate change impacts per region.

countries (Vertovec, 2010). Additionally, he punctures the misconception that most migrants/refugees from developing countries comes to developed countries – as little as 37% migrates from developing to developed countries, whereas 60% stays within their regions (from developing to developing countries) (Vertovec, 2010). This trend is supported by the UNHCR estimate that only 17 % of the global amount of refugees lives outside their region (UNHCR, 2011). Hence, based on Vertovec's assessment and UNHCR estimates most climate refugees can be expected to stay within their regions and within the developing countries in these regions.

Since the human development might have an influence on the human costs of a natural disaster it can be assumed that the governance level might also have an influence. In table 4 below is listed the ten countries that in 2011 had the highest proportion of their population displaced by natural disasters (natural events) (Internal Displacement Monitoring Centre (IDMC) and the Norwegian Refugee Council (NRC), 2011). The ten countries have been compared on four parameters; the amount of natural disaster events from 1980-2010, the human costs, the human cost per event and their governance score in order to evaluate whether there is a correlation:

**Table 4: Natural disasters and governance level**

	No. Events <sup>16</sup> (1980-2010)	Human Costs (1980-2010)	Human costs per event <sup>17</sup> (1980-2010)	Governance Score <sup>18</sup> (-2,5 to 2,5) (Average 1996 + 2010)
<b>Sri Lanka</b>	62	36,982	597	-0,37
<b>Bhutan</b>	9	303	33	0,11
<b>Namibia</b>	22	422	19	0,40
<b>Phillipines</b>	363	32,956	91	-0,31
<b>Thailand</b>	105	11,922	114	-0,04
<b>Cambodia</b>	31	1,967	63	-0,83
<b>Angola</b>	49	5,354	109	-1,24
<b>Lao PD</b>	30	945	32	-0,81
<b>Japan</b>	157	8,568	55	1,11
<b>Mexico</b>	170	14,946	88	-0,24

(Based on numbers from: UN International Strategy for Disaster Strategy (UNISDR), 2012 and the World Bank Group (WBG), 2011)

In general the countries that scores relatively low on the Governance Score have a higher human cost per event than the countries with a higher Governance Score. Nevertheless, Cambodia and Lao PD stands out, because they have relatively low human costs per event compared to their Governance Score (on level with Bhutan) – this can be explained by the strength of the natural disasters (both countries have experienced relative few natural disasters in the 30 years period, hence, they might be less prone for mega-disasters) or the natural disasters have been in places with low population density. However, the trend is that in countries with better governance mechanisms the human costs of a natural disaster is in general lower than in countries with less developed governance mechanisms based on these ten countries.

<sup>16</sup> Amount of events and human costs has been found on UNISDR's PreventionWeb by following this path: Countries and Regions → x-country → Disaster statistics.

<sup>17</sup> Based on the numbers of Events and Human Costs.

<sup>18</sup> The average of all six indicators: Voice and Accountability, Political Stability/Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law and Control of Corruption in 1996 and 2010 (thus, average of all in all 12 scores per country) from the WBG's World Wide Indicators 2011 by following this path: Access Country indicators → All indicators one country → x-economy → table.

As argued before, climate refugees can be perceived as a predominately regional issue. This can make it difficult to develop an interest for the formation of an international regime. This was e.g. seen in the case on deforestation, where no comprehensive international regime has been established – here knowledge on the extent of deforestation was in general considered reliable – but the driving forces behind establishing a regime failed to frame deforestation as a global problem, as stated by Everton Vargas, principal negotiator for Brazil: “Forests are no global commons, they are national resources” (Vargas in Dimitrov, 2003:141) and a U.S. delegate: “Forests are inherently local, they are not global commons. The net effect [of deforestation] is too disaggregated” (in Dimitrov, 2003:141). Hence, to increase the possibilities for the formation of an international regime it is necessary to pay attention to framing it as a global instead of a local challenge – even though some countries might be more severely affected than others.

### **Knowledge on the consequences of climate refugees**

By now it is clarified that climate refugees can be either momentary or permanently displaced depending on the causes (e.g. climate processes or climate events). Climate refugees can be national, regional, intra-regional and even intercontinental, and thus, often depend on cultural ties as ethnic, social or colonial relations (Brown, 2007:22; Srichadan, 2009:8), while the main amount of climate refugees are expected to stay within developing countries in the region of origin.

Based on the drivers for migration, it can be argued that the people who are most at risk of becoming climate refugees are people with namely low economic and social capital. Mass displacement and climate events/processes influence the socio-economy in an area/region/country, this will make the more resourceful part of the population leave the area (brain/money-drain), this again will have a negative influence on the socio-economic situation – thus, a vicious circle is created (Brown, 2007:24).

Brain/money-drain is not the only economic consequence of climate refugees. It is estimated that with a limited temperature rise (2 degrees) the costs of coping with weather events caused by climate change will reach 0,5-1 % of the world’s Gross National Product (GNP) (Stern, 2007:18). Additionally, there is a broad assumption that climate refugees will increase unemployment among the population where they resettle – and hence, trigger a lower wage level. Besides, on a pessimist note, some argue that migrants in general are being destructive towards native cultures and communities, make the crime rate explode and exploit



the local social services (Srichadan, 2009:9). These economic challenges will of course be proportionally larger in the developing countries due to the fact that they are most exposed to climate change while most climate refugees are expected to be internally displaced instead of externally (IOM, 2010:3). But some climate refugees are likely to cross borders and thereby created a regional or international challenge.

Climate refugees will also have consequences for a country's ability to reach the Millennium Development Goals (MDGs<sup>19</sup>).

”Forced migration hinders development in at least four ways; by increasing pressure on urban infrastructure and services, undermining economic growth, increasing the risk of conflicts and leading to worse health, educational and social indicators among migrants themselves”(Brown, 2007:23).

Thus, climate refugees can have consequences for a wide range of development issues. It undermines the health and vaccine programmes, hence, infectious diseases will hit harder and be more fatal – and, on top of this, epidemic diseases are known to spread in connection to fleeing/migrating people (Brown, 2007:24). These health consequences necessarily have hardest impact on the developing countries – they will experience the highest number of climate refugees and therefore it is mainly in the developing countries that the populations' health are at risk. This can be seen in opposition to the knowledge on consequences in the case of regime formation on ozone depletion – in this case there was clear and certain knowledge on one of the transboundary consequences of ozone depletion: health risks for especially ‘fair-skinned’ people (Dimitrov, 2003:132).

Climate refugees potentially have high consequences for the security situation in the affected countries as well as on an international level but also internally in the most affected developing countries climate refugees can have a major impact on the security situation. The displacement of populations and climate changes will bring diverse population groups together fighting over the same resources, and in these countries where the governance systems are poor it is rather easy to get access to small armies, thus, the situation can easily explode (Brown, 2007:34):

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<sup>19</sup> There are eight MDGs – focusing on education, poverty etc. all by the target date of 2015. Their focus is on the needs of the worlds poorest. For more information see: <http://www.un.org/millenniumgoals/bkgd.shtml>

“Massive migrations, particularly in the arid or semi-arid areas in which more than a third of the world’s population live, will turn fragile states into failed states and increase the pressure on regional neighbours – a dynamic that is already apparent in Africa” (Brown 2005: 25).

Some of these challenges can be countered by adaptation strategies – in which local policy makers play an important role (Brown, 2007:26), but in areas where the governance systems are relatively poor this can be a prohibitive challenge. Thus, some of developed countries that are least affected by climate change might start to feel some pressure on their borders, even though Vertovec argues that it is a minority of migrants from developing countries that arrive in developed countries. Nevertheless, Srichadan (2009) describes some of the security challenges for the EU:

“[...] threatens security in form of xenophobia, racial violence, rising popularity of extremist right-wing parties, rising crime levels and crime networks dealing in drugs and arms, trafficking in human beings or, last but not least, terrorists using both legal and illegal migration challenges to penetrate the country” (Srichadan, 2009:8).

This is of course a relative euro-centric perspective, but the quote describes the issues that possible receiver countries have to consider, before they receive and accommodate climate refugees. Anna Kicingier outlined in her publication for the Central European Forum For Migration Research (CEFMR) other areas that migration affects in a receiver country: social stability, cultural identity, demographic security, the social security system and the welfare state (Kicing, 2004:2). Both Srichadan and Kicingier refer to experiences with ‘normal’ migration, hence, the tendencies are expected to grow even stronger with a larger flow climate refugee the next decades (Srichadan, 2009:14). Some of these consequences unfolded e.g. in May 2008 in South Africa – a country that one to two million Zimbabweans had migrated to since 2000 – suddenly a spate of xenophobic attacks took place on the migrants and resulted in 65 deaths and further displacement of 150,000 people (FMGEC, 2011:12). Thus, these are very palpable transboundary consequences of flows of climate refugees. Moreover, another geopolitical challenges is the status of the climate refugees representing the population of

entire islands – what implications does the disappearance of their home country have for climate refugees citizenship and sovereignty (FMGEC, 2011:12)?

Already, in an attempt to avoid some of these transboundary consequences, the EU has been criticised for becoming ‘Fortress Europe’:

“The EU, in alliance with the governments of transit countries, is attempting to imprison affected populations in ghettos of impoverishment and famine. It has erected militarised barriers on its borders and instituted police-states measures internally to bar residence to workers from impoverished countries [...]” (Srichadan, 2009:16).

Meanwhile, India has decided to build a 4,095 km. fence along the India-Bangladesh border, originally to stop smuggling, trafficking and illegal immigration – but now the 3,6 m. high, double wire fence, also serve to control the future flows of climate refugees from Bangladesh (one of the countries expected to be hardest affected by climate change) (Brown, 2007:27-28). Other countries nevertheless have a less protective attitude as e.g. Sweden and Finland, who have already given climate refugees the same legal status as ‘normal’ refugees (IOM, 2010:82). Additionally, climate refugees (human migration and displacement) has entered the UNFCCC climate negotiations and is expressed in the Cancun Adaptation Framework paragraph 14(f)<sup>20</sup>, where it is couched in solution-oriented, pragmatic terms under adaptation. Migration, planned relocation and displacement are listed as activities that might qualify for adaptation funding in the future (Warner, 2011:4,11,12). Thus, even though the knowledge with regard to the exact number of climate refugees are hard to estimate precisely, the expected and very possible transboundary consequences for international security have made some countries and regions react in a rather protectionist way.

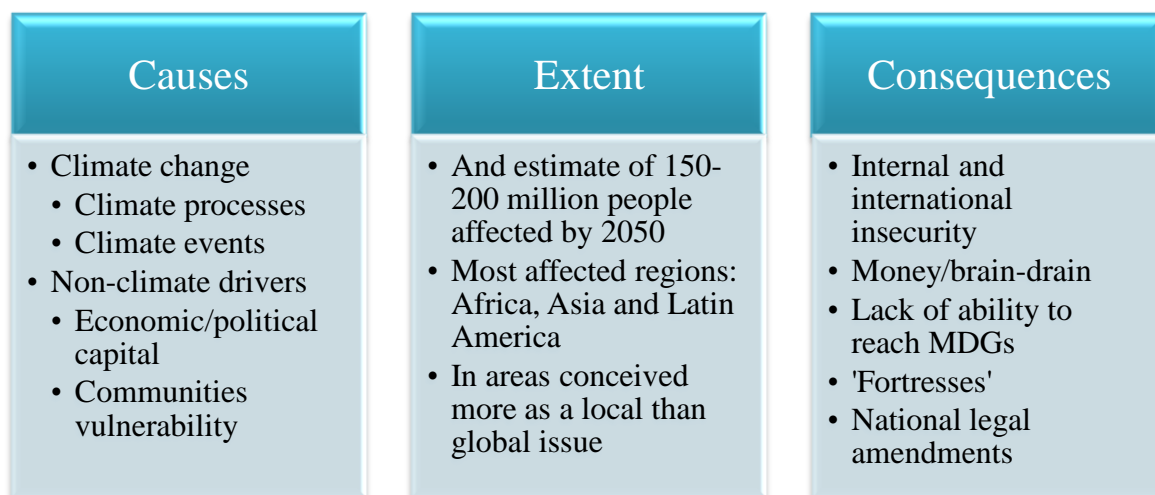
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<sup>20</sup> Cancun Adaptation Framework paragraph 14: “Invites all Parties to enhance action on adaptation under the Cancun Adaptation Framework, taking into account their common but differentiated responsibilities and respective capabilities, and specific national and regional development priorities, objectives and circumstances, by undertaking, inter alia, the following:” and paragraph 14(f): “Measures to enhance understanding, coordination and cooperation with regard to climate change induced displacement, migration and planned relocation, where appropriate, at the national, regional and international levels” (UNFCCC, 15 March 2011).

## Predictions for regime creation based on the knowledgebase

The former paragraphs have revealed the state of knowledge on the causes, extent and consequences of climate refugees. The three boxes underneath summarises the main findings:

**Figure 2: State of knowledge on climate refugees**



There seem to exist a clear understanding of climate change – climate processes and climate events – as the major cause for climate refugees. Nevertheless, especially socio-economic drivers also have to be taken into consideration, namely regions and countries adaptive capacities, which are determinative for their vulnerability towards climate change, and thus, the possible amount of climate refugees.

**Figure 3: Causes for climate refugees**



Climate change is nevertheless expected to affect some regions more than others, and it can therefore be interpreted as a regional more than a global problem, hence, it creates no significant feeling of interdependence between states. Therefore, this knowledge provides few

incentives for the formation of a global regime and instead put focus on local adaptations strategies as e.g. seen in the Cancun Adaptation Framework paragraph 14(f).

Regarding the knowledge on the extent of climate refugees the most widely recognised number is 150-200 million climate refugees by 2050. It is nevertheless, as already mentioned, very difficult to make future estimates and predictions due to the many unknown factors about the structure of the population in 2050. Furthermore, there is no clear knowledge on neither the affect of our mitigation and adaptation actions today nor the meteorological evolution of climate change. But knowledge on the extent of an issue is not always decisive for a formation of an international regime; e.g. when a regime was formatted in the area of ozone depletion there was clear uncertainty on the extent of the problem, but it did not critically affected the regime formation. Hence, the uncertainty on the exact numbers of climate refugees does not need to affect the formation of an international regime critically.

The consequences of climate refugees seem many and severe. Much of the knowledge on the consequences appears to build on already well-known mechanisms related to migrations, which are then expected to be enforced with a rapidly growing amount of climate refugees. Both national and transboundary consequences are expected from climate refugees – and especially the developing countries will be proportionally harder affected. Thus, there is some knowledge on the negative transboundary consequences that according to Dimitrov's research are a decisive force behind the establishment of an international regime - and for some areas as e.g. the EU this knowledge have been enough to react – hence, there exist a lot of knowledge on climate refugees but it is imbued with the fact that it is mainly perceived as a future problem and the numbers are future estimates – even though we know that there are climate refugees today and that the number certainly will grow rapidly in the future.

Hence, from this perspective in order to be able to form an international regime, and guarantee that climate refugees obtain a legal status, it has to be challenged whether this issue can be solved through regional adaptation strategies or protectionism alone. And probably most importantly, emphasise that all researches yield for immediate action – we need to take action now to be prepared to meet the future challenge of climate refugees.

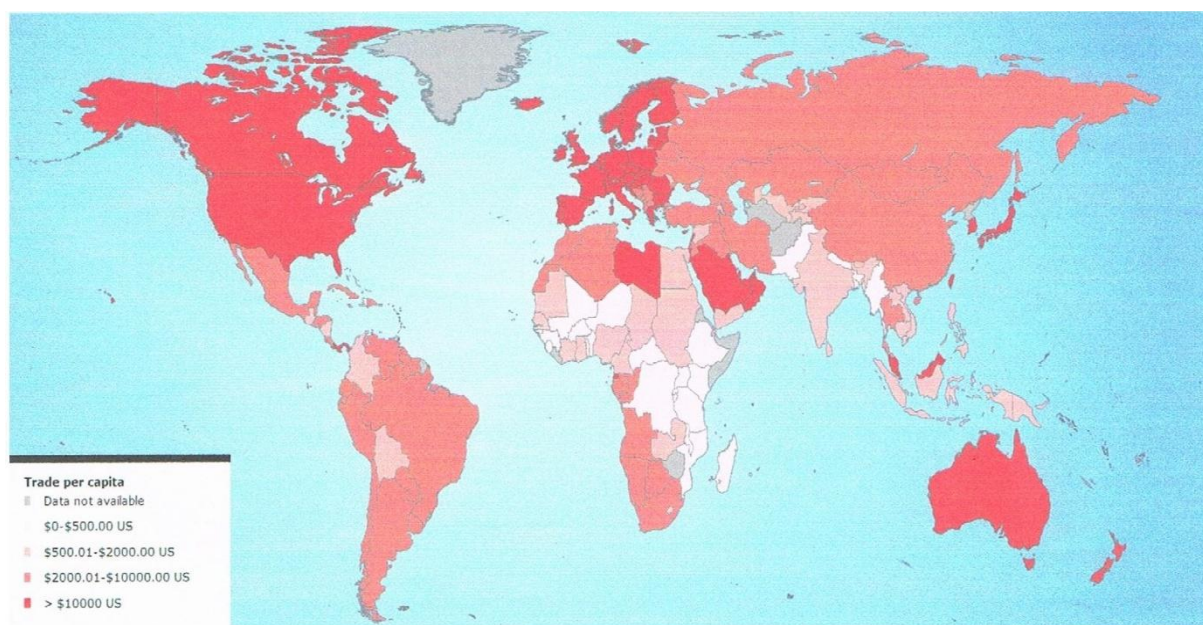
## **Powerful actors in international politics**

So, who are currently the most powerful actors on the international level? It can be rather difficult to determinate because many different parameters can be influential. In this context it is nevertheless necessary to create a picture in order to understand the role of power in the

formation of an international regime. Building on the theoretical framework applied in this research, realists have the clearest conception of power – the traditional realists’ perceived power as merely military power, whereas neo-realists’ focus on a broader definition: distribution of capabilities (including military power, economic strength, population size and political stability) (Dunne and Schmidt, 2008:101). Hence, in this paper this will be the parameters applied to estimate, which countries currently are the most powerful actors on the international level, and thus, the states that need to initiate a regime formation according to the theoretical framework.

Merely looking at countries GDP, the western countries (EU and the U.S.) are dominating together with China, India and Brazil – there is no African country listed between the first 25 and only four African countries (Algeria, Egypt, Nigeria and South Africa) within top 50 (CIA World Factbook, 2011:a). Map 2 below trade per capita per country:

**Map 2: Trade per capita<sup>21</sup>**



(WTO, 2012)

The darker red a country is the higher is the trade activity per capita. Hence, it can be argued that countries with larger trade capacities are powerful and will have a self-interested in maintaining each other’s strength in order to protect their export markets and import goods. Furthermore, from the perspective of liberalism economic collaboration creates

<sup>21</sup> Trade per capita is: “Total trade trade of goods and commercial services (exports + imports, balance of payments basis) divided by the population size. Calculated on the basis of data for the three latest years available” (WTO, 2012).

interdependence and therefore there will be a large degree of convergence in political matters – there is a ‘spill-over’ effect. In Map 2 areas like North America, Europe and Australia are recognised by a very high trade per capita, while especially Sub-Saharan Africa (with few exceptions) and parts of Asia have a very low trade per capita rate. Combined with the overview of GDP’s it can be argued that North America, Europe, Australia and China are the most powerful economic actors at the moment – based on their economic capabilities.

By looking at countries population size India and China have by far the largest capabilities – both countries have more than four times the population of the World’s third largest population in the United States (CIA World Factbook, 2012:b). Furthermore, 10 (11 including Russia) of the 20 countries with largest populations are located in Asia, while there are only seven European countries on the top 50 (CIA World Factbook, 2012:b). Hence, by merely looking at population size there is little doubt that Asia as continent has the largest capability. When taking the Human Development Index (HDI)<sup>22</sup> into account the picture nevertheless gets more blurred. Only four Asian countries (Hong Kong, Japan, Singapore and South Korea) are listed with a very high human development, while the same label has been given to 26 European countries as well as the United States – China and India are listed as respectively number 101 and 134 with medium human development (United Nations Development Programme (UNDP), 2011:127-130). Thus, regarding population capability Asia is strongest when it comes to population size; while Europe in general does well on the HDI – hence, the only country in top of both rankings is the United States that therefore in this context will be considered to have the strongest population capacity in general, while the construction of Asia and Europe’s population capabilities is very different.

It is challenging to measure the relative strength of military capacities between countries. Looking solely at lists over countries percentages of GDP spend on military does not show the actual number, and countries in e.g. the Middle East with a lower GDP might spend larger percentage than e.g. the United State because they are in an area with higher political and security tensions. Global Firepower (GFP) has developed what they describe as a ‘near-complete’ comparison of militaries strength (GFP, 2011). They take some 42 parameters into account (population, military manpower, artillery, oil production, defence spending etc.) in order to evaluate which countries have the strongest military capabilities (GFP, 2011). Top five on the GFP list is the United States, Russia, China, India and the

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<sup>22</sup> The HDI measure development by a combination of indicators: life expectancy, educational attainments and Gross National Income (GNI) per Capita. For more information please look at United Nation’s Development Programme’s website: <http://hdr.undp.org/en/statistics/hdi/> (09-06-2012).

United Kingdom – the highest listed African country is South Africa as number 31 (GFP, 2011). Furthermore, the UN's Security Council (UNSC), that is a major player within the field of international peace and security, consist of ten non-permanent members, who are elected on two-year terms as well as five permanent members (China, Russia, France, United Kingdom and the United States (UNSC, 2012). The voting system in the UNSC is based on 'Great Power unanimity', hence, all five permanent members posses veto-power on substantial decisions. Therefore, the strength of the countries, which are on the top of the GFD are maintained in the UNSC – with the exception of India that is not a permanent member of the UNSC, while France (no. eight on GDF's list) is a permanent member (GDF, 2011; UNSC, 2012). This can probably be subscribed to the fact that since the UNSC was established after World War II the structures of the world have changed.

In the effort to reveal who the most powerful actors on the international stage are currently, especially the parameters economy, population, the HDI and military capabilities have been taken into account. The U.S. scores high on all the indicators and can therefore easily be established as one of the (maybe even the sole) absolute most powerful actors. China and India scores high on the economic (especially China when taking trade into account), population and military capabilities (China has an advantage in being a permanent member of the UNSC), both countries nevertheless scores low on HDI. The European countries as one in general scores well on all indicators – the countries' population are much smaller than both China and India's, but instead they score very high on the HDI. Africa tends to disappear on all the parameters, while South America in general scores a bit better – especially Brazil. Hence, it will be evaluated that in contemporary international politics the U.S., China and the EU are the most powerful actors – with countries such as India and Brazil close behind. This is of course a rather simplified picture that covers over e.g. huge differences within the EU and ignores the influence of e.g. mega cities and non-governmental organisations; It is based solely on the parameters applied, but it will nevertheless be argued that even though it might not be a perfect picture of the power relations – it definitely reveals some trends and will therefore be applied in the rest of this research.



## **IR theories perspective on a regime on climate refugees**

### **Power structures, interests and regime formation**

As seen in the outline of the knowledge on climate refugees there are little doubt that some geographic areas will be more affected by climate change, and hence, experience more climate refugees than others – namely Africa, Asia and Latin America. Since most of the climate refugees are expected to be internally or regionally displaced these countries are necessarily in more immediate need of an international regime than the developed, least affected countries. In the outline of power relations in the current world order it was evident that the countries that are assumed to be most affected by climate change and climate refugees are the least powerful. From a realist perspective it is therefore at first glance very doubtful an international regime on climate regime can be established because namely power is the central feature of regime establishment and survival. Power is, from a realist perspective, a relational and relative concept – and states competition on power in the international anarchic system is a zero-sum game. Hence, it is doubtful that powerful states establish a regime that mainly enhances the position of the most affected developing countries – because if some countries position is enhanced in the international system others are weakened.

Additionally, realists argue that regimes are created in order to facilitate coordination so no mutually desired goals are missed – in the context of climate refugees it can be hard to establish a mutually desired goal due to differentiated consequences. There are reasons to take the expected severe transboundary consequences seriously, but most climate refugees are nevertheless expected to be displaced within their countries and those who cross a border are likely to stay within their region, as outlined by Vertovec is 60 % of migration within regions from developing to developing countries, while only 37 % make the move from developing to developed countries – and these are mainly migrants with larger drive factors and mobilisation than climate refugees (Vertovec, 2010). Hence, the mutually desired goal to prevent climate refugees globally might not exist.

Survival and self-help are also two very important factors for the very state-centred realist approach - as well as the balance of power. Hence, it can be assumed that with the current power structures and the knowledge we have on climate change refugees the formation of an international regime is from the realist perspective highly improbable, but as emphasised by the Battle of Sexes – there can be more than one Pareto optimal outcome, they will just only be considered and chosen if there is a change in the balance of power. Therefore the principles and norms of a regime reflect the existing World order – the states that benefits

from a regime are the most powerful. In this context the role of China, India and Brazil is interesting in the coming decades; these are all countries that by now are relatively powerful and at the same time can expect to be significantly affected by climate change and climate refugees, thus, it is in their self-interest to coordinate the efforts on climate refugees – so maybe in the coming decades a shift in the balance of power will create a momentum for an international regime on climate refugees.

The concept of reciprocity is more important within liberal institutionalist thinking than power. Regimes promote the common good and powerful/hegemonic states can be prepared to cover the cost or facilitate a regime formation. Hence, opposite realists liberal institutionalists do not perceive the international arena as a zero-sum game. They do nevertheless argue, that the international realm is characterised by competitive strategies – because all states *expect* other states to pursue competitive strategies. Hence, the focus here is on collaboration in order to move out of The Prisoners' Dilemma and reach a Pareto optimum outcome. In the case of climate refugees it can, at present, be hard to establish exactly what the Pareto optimal outcome is, but from this IR perspective there are no doubt that collaboration are better than the lack of it. Thus, for liberal institutionalist the establishment of a regime on climate refugees are more feasible than from a realist perspective. Furthermore, liberal institutionalists argue that regimes promote globalisation and a liberal world order; hence, a regime on climate refugees can promote the inclusion of some of the worlds least developed countries.

Additionally, within liberal institutionalism the concept of the shadow of the future is essential, thus, if the most influential countries defects from being a part of establishing a regime – other countries will follow and the situation will most likely move from a possible Pareto optimal to a sub-optimal outcome. Here the case of climate refugees is critical, because, as mentioned, it can be hard to establish what exactly the Pareto optimal outcome is but in general the notion is, that failure to collaborate forces states to apply competitive strategies in which case no Pareto Optimal outcome can be reach (if e.g. states focus on protectionist initiatives). Thus, some kind of collaboration is necessary – and maybe, depending on the timeframe, the Pareto optimal outcome is related to refugee management (a regime on climate refugees) or adaptation measures.

Hence, it can be concluded with regard to power and interests, that from a realist approach the perspective for formation of a regime on climate refugees is vanishingly small at the moment. The powerful actors have diminutive interest in establishing a regime on climate refugees because the consequences are highly differentiated and mostly affects the less

powerful developing countries. The role of e.g. China, India and Brazil can nevertheless be interesting in the future – these three relative powerful countries are all in regions that are estimated to be severely affected by climate change and hence climate refugees. So maybe in the coming decades the balance of power will change – and thereby a momentum for a regime on climate refugees might appear. From a liberal institutionalist viewpoint the perspective for a regime on climate refugees are slightly more feasible. Collaboration is necessary to avoid states applying competitive strategies and thereby forcing the international society into sub-optimum outcomes. Within this approach there is an understanding of powerful actors acting less on self-interest and more to enhance/provide the common good. The knowledgebase nevertheless needs to be strengthened. Furthermore, the mutually desired benefits are doubtful in this case due to the differentiated affects and this might problematise a regime formation.

### **The role of framing and interests**

Already in the introduction to this research different definitions and labels to climate refugees was presented. Since, as mentioned, a refugee has a different connotation than a migrant it can be argued that labels imply more than just a name. Maybe some definitions and labels cover over certain interests? Framing is initiated by human agency – it represents the way we perceive a certain issue area. In this research the definition and label ‘climate refugee’ that has been applied was developed by scientists – people who have no political obligations and are interested in making a valid and reliable research, nevertheless, publicity might be of interest to them in order to promote their research and maintain a certain (in some cases powerful) position within their field of research. Politicians and international organisations might have other reasons for their label, since they have political obligations, re-elections, and the possibility for negotiations to keep in mind.

That framing matters can hardly be doubted. A recent example is when Bjørn Lomborg shocked the climate-debate in 2001 with his book “The Sceptical Environmentalist: Measuring the Real State of the World”<sup>23</sup>, in which he went against the contemporaneous researchers by claiming that:

“Global warming, though its size and future projections are rather unrealistically pessimistic, is almost certainly taking place, but the

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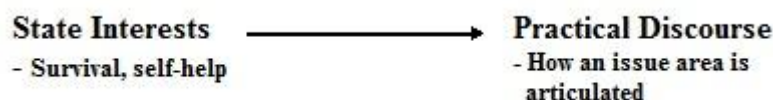
<sup>23</sup> The English edition was published in 2001, while the Danish edition ‘Verdens Sande Tilstand’ was published in 1998.

typical cure of early and radical fossil fuel cutbacks is way worse than the original affliction, and moreover its total impact will not pose a devastating problem for our future. Nor will we lose 20-25 % of all species in our lifetime – in fact we are losing probably 0.7 percent. Acid rain does not kill the forests, and the air and water around us are becoming less and less polluted” (Lomborg, 2001:4).

Many people critically opposed Lomborg’s position; whether his numbers and approach are right or wrong is not essential in this context. But the fact that he managed through a different framing of climate change - as not the World’s most immediate problem but just one out of many - to change large parts of debate is interesting. Time Magazine named him as one of the World’s 100 most influential in 2004, the UK Guardian named him as ‘one of the 50 people who could save the planet’ in 2008 and Esquire named him as ‘one of the World’s 75 most influential of the 21<sup>st</sup> Century’ (Lomborg.com, 2012), while the then Danish Prime Minister, Anders Fogh Rasmussen, found his work very valuable (Lehamnn and Klingsey, 18<sup>th</sup> of November 2008). Hence, the way a concept is framed is extremely important for how it is perceived. Therefore, it is not surprising that there has been very little unanimity when it comes to defining and labelling climate refugees.

According to a realist perspective, developing countries can, in this context, have an interest in framing climate refugees as a matter of international security, in order to make the powerful actors react to protect their self-interests. Whereas the powerful actors, who are expected to be least affected by climate refugees, have an interest in framing the affected people as migrants, because it leaves them with more freedom *not* to act (see discussion of connotation in introduction chapter). Opposite, the notion of migrants can likely make international negotiations more feasible – a discussion of migrants are noncommittal opposed to a discussion on refugees - a group that traditionally have more extensive legal rights. Hence, it can to some extent also be in the most affected countries self-interest to keep the framing as climate migrants, because that might increase the feasibility for international negotiations – and according to the realist perspective this communication is essential in order to coordinate to prevent that mutually desired goals are being missed. Hence, realists will argue that communication on this subject is essential but nevertheless not necessarily coordination - that depends on the aim of the most powerful actors. Thus, framing can be considered a strategic tool from a realist perspective and can be applied in accordance with interests:

**Figure 4: Relationship discourse and interests (Realism):**



From the perspective of liberal institutionalism framing is also important. Within liberalism in general there is a belief in interests being constantly constructed by social actors within the states (the inside-out approach to IR). In a majority of countries most affected by climate refugees this might not have a great impact, because the HDI is low and the governance structures might not foster civil mobilisation. Whereas, in some of the most powerful ‘countries’ namely the EU and the U.S it might have an influence due to the different connotations of migrants and refugees – the notion of climate refugees might activate social actors within the states, who might construct the states interests differently than if the notion of migrants is applied. Additionally, from a liberal institutionalist point of view it is interesting if the management of climate refugees is framed as a public good, and thus, an area in which powerful actors can take the lead in establishing a regime – but the fact that the consequences are differentiated points in a different direction; a regime on climate refugees is more likely a way to manage the consequences of market failure (pollution and other ill-fated behaviour that caused climate change). Additionally, mutual benefits and reciprocity are essential for the establishment of a regime from this perspective and thus, consequences of internal and regional nature points in the direction of a regime on that level instead of a global. In liberal institutionalism framing therefore can be applied strategically, but the main function of framing is to influence the construction of states interests – in this context it should be mentioned that certain, broadly accepted knowledge has a positive influence on regime formation – in this case, the knowledge on climate refugees are comprehensive but suffer from the fact that it is future perspectives.

**Figure 5: Relationship between interests and discourse (liberal institutionalism)**



Both within realism and liberal institutionalism framing can be essential. They nevertheless apply it in very different manners. From a realist approach framing is mainly a strategic tool that can be applied to strengthen a certain state's interest. Additionally, framing can have influence on the possibility for international negotiations; hence, different states will apply and promote a framing that is adapted to its own self-interests. Within the liberal insitutionalist approach framing are important for the formation of a states interests – opposite realism - preferences are not fixed within liberal institutionalism, and therefore, framing is more than just a strategic tool; different framings can be applied to start at interest-shaping process within the states. Hence, framing can be used strategic on a national level in order to shape the interest and the framing a state will apply on the international level. Table 5 below summarises the main findings on the theories explanatory value when it comes to the formation of a regime on climate refugees:

**Table 5: The IR theories explanatory value in relation to the parameters**

	Knowledge	Power	Framing	Interests
<b>(Neo-) Realism</b>	A State act rationally to protect its self-interest and knowledge is applied to support this self-interest. Countries that are expected to be most affected will react, but contemporary the knowledge on transboundary consequences is too weak and too future oriented to establish a global regime.	In this context the most powerful actors are the countries least affected by climate change, and therefore, the perspectives for the formation of a regime are vanishingly small – unless there during the next decades will be a change in the balance of power a new momentum arises.	Realists mainly use framing as a strategic tool. Framing is applied to support a state's self-interests. Non-affected states can be expected to frame climate refugees as migrants. Additionally, framing can have importance for the possibility for international negotiations – and communication is essential.	Interests are from a realist perspective based on three factors: statism, survival and self-help. Hence, states acts self-interestedly and pre-socially. Thus, since powerful states are limited affected by climate refugees they have no interest in establishing a regime.
<b>Liberal Institutionalism</b>	States are rational actors. Knowledge is applied in the constructing interests and makes states react effectively. In this context the knowledge might be too future oriented to establish what the mutual benefits provided by a regime will be.	Reciprocity is more important than power. In this context the mutual benefits can be hard to establish – but collaboration is always better than competitive strategies. A definition question – is management of climate refugees a common good?	Framing is of outmost importance within liberal institutionalism. State interests are created within the states and therefore, it is essential how an issue area is articulated. Hence, framing can be a strategic tool but it can also start an interest-shaping process.	Interests are constantly shaped within the states (and closely linked to framing). Interests can change and thus, the interests in a regime on climate refugees can arise if better and more certain knowledge is established – and mutually desired goals identified.
<b>Explanatory Value</b>	Because realism and liberal institutionalism share the assumption that states are rational actors, they have a quite similar relationship to knowledge – and therefore the same explanatory value. Nevertheless, realism is faster to reject the possibility for a global regime. Both theories however struggle with the future oriented nature of the knowledge.	Realism provides more explanatory value when it comes to power. It is the most central concepts within realism. Liberal institutionalism is challenged. How do you estimate whether a regime promotes a common good? Liberal institutionalists focuses more on reciprocity – if a regime is not initiated it is because mutually desired goals have not been defined.	Framing is important for both theoretical approaches. Within the realist approach it is mainly applied as a <i>strategic tool</i> to promote a state's self-interest, while within a liberal institutionalist perspective it can be influential in a process that shapes states interest. Hence, both theories have explanatory value but on different levels.	Interests are substantially more static within a realist approach, while they are constantly constructed within the liberal institutionalist approach. Therefore, in this context liberal institutionalist are more positive towards the formation of a regime – because states interests can easily be changes if new knowledge is discovered or the framing changed.

Hence, both theories have relatively much explanatory value in this context, which is natural because they both are IR theories. They nevertheless have different qualities - realists have a strong focus on power while liberal institutionalists focuses more on reciprocity and in general are more flexible when it comes to development in states interests. Hence, realism has it strength in explaining why there exists no global regime currently, whereas liberal institutionalism is better at providing possibilities for future cooperation and regime formation.

## **Possible steps towards a regime on climate refugees**

From the perspective of realism the chances for establishing a regime on climate refugees are currently vanishingly small, because the most powerful states are estimated to be relatively little affected by climate refugees compared to other regions namely Africa, Asia and South America. Liberal insitutionalist are more open towards the formation of a global regime, the main challenge is to formulate a mutually desired goal – what would the aim of the regime bee – should we work towards: avoiding climate refugees? Managing the flows of climate refugees? Redistribute climate refugees (to stay in the economic terms applied by liberal institutionalists)? This is a challenge, but a mutually desired goal might be found by merely bringing climate refugees into international discussions and the attention of the media.

Hence, in contemporary international politics there might not be a momentum for the formation of global regime on climate refugees – but maybe a starting point can be discovered if the issue on climate refugees is approached step by step instead of starting out with a full-blown regime build on the five principles outlined by Biermann and Boas. A less comprehensive global deal that focuses more on the common good and makes states capable to collaborate in order to strengthen the adaptation strategies for the most affected countries could be an alternative, especially from the perspective of liberal institutionalism. A first step can have been taken in the Cancun Adaptation Framework paragraph 14(f) (see p. 41) with the aim to ‘enhance understanding, coordination and cooperation with regard to climate change induced displacement, migration and planned relocation’ (UNFCCC, 15 March 2011). This is a relatively vague step – but alone by being included in the Adaptation Framework places climate refugees on the agendas of politicians.

As emphasised in the Cancun Adaptation Framework paragraph 14 and in the UNFCCC Article 3(1) (UNFCCC, 1992) one of the main principles is the ‘common but differentiated responsibilities’, meaning that the developed countries need to take the lead on



combating climate change. If climate refugees can be included under this umbrella the signatory developed countries are obliged to take a larger responsibility than the developing countries, something that goes well in hand with liberal institutionalisms - this could e.g. be financial models for the adaptation strategies. From a realist perspective it can be argued that this is not a feasible solution because the most powerful actors will try to keep this issue from getting further attention, because it is not in their self-interest – or they will withdraw (as the U.S. withdrew from the Kyoto Protocol in 2001 and therefore never ratified it (UNFCCC, 2012:b)). Additionally, the world is in a state of financial and economic crisis right now, which is not beneficial to create an environment in which financial transfer to adaptation strategies in developing countries are on top of the list for developed states governments.

Alternatively, in the pursued of a global regime on climate refugees, a compromise could be the solution. As mentioned in the introduction, only the Annex 1 countries<sup>24</sup> are committed by the reductions targets set out in the Kyoto Protocol<sup>25</sup>. But with China increasing its emissions of CO<sub>2</sub> from 2460744 metric tonnes in 1990 to 7031916 metric tonnes in 2008 (285,8 % increase) and India increasing its emissions of CO<sub>2</sub> from 690577 metric tonnes in 1990 to 1742698 metric tonnes in 1998 (255,4 % increase) it could be argued that it is in all states interest (maybe except in this case China and India) to expand the amount of countries committed to emission reductions (UN, 2012). Hence, it could be interesting to research the possibility for a compromise, in which developing countries commit to reduce greenhouse gas emissions, while developed countries commit to establish a more or less comprehensive regime on climate refugees. From the perspective of realism it would be in the self-interest of all parties – the developed countries are interested in cutting the emissions, while the developed countries will get help to manage climate refugee; there are nevertheless always the dilemma within realism that international relations build on zero-sum games, hence, some states will always get their power position strengthen through international cooperation, so there are no such thing as win-win solutions. From the perspective of liberal institutionalism it will go well in hand with the notion of reciprocity. Negotiations of this nature will however be extremely complex so a possible time span is difficult to predict.

A regional approach is at this stage probably the most feasible. Instead of a global regime the focus could be on regional collaboration/coordination (depending on the theoretical stance). Since the existing knowledgebase on climate refugees clearly predicts that

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<sup>24</sup> To the UNFCCC.

<sup>25</sup> List over Annex 1 countries to the UNFCCC can be seen at:  
[http://unfccc.int/parties\\_and\\_observers/parties/annex\\_i/items/2774.php](http://unfccc.int/parties_and_observers/parties/annex_i/items/2774.php) (22-06-2012)

some regions will be more affected than others an obvious approach could be to establish regional regimes. This necessarily makes it unfeasible to create a global recognised legal framework to the protection of climate refugees' rights – but it will enable the states within a region to establish a common goal on climate refugees to work towards or at least coordinate strategies to protect both the states interests and the affected populations. The fact is that the world is complicated and therefore regions can provide better solutions than macro-global politics manage to. This approach can be supported from both IR theoretical stances, namely because mutual benefits can be established and self-interests will converge. However, a realist would emphasise that a regional regime will not stop the most powerful to shape a regime according to their interests.

The research has revealed the trend that human development and strong governance possibly have a rather influential affect on countries vulnerability towards climate change. Thus, if these areas will receive more attention the chances are that less people will be in risk of becoming climate refugees. Already now (good) governance can be considered to be a buzzword in contemporary politics – if the notion of governance can be closer linked to climate change and not at least climate refugees a relative comprehensive prevention/adaptation effort can be achieved. This is of course a different starting point for a regime on climate refugees and it has an alternative focus – but if further research on this link reveals a clear correlation it might be very effective. Realism is theory that focus mainly on the relations between states while especially classical realism has treated the state as a 'black box' (Donnelly, 2009:44), hence, realisms explanatory value when it comes to governance structures within states are limited. Liberal institutionalism has as mentioned a more inside-out approach to international relations, thus, the process within the states are important for states actions in international politics. Additionally, liberal insitutionalist are preoccupied with regimes capabilities to promote a liberal world order.

A last path that could be explored is that of public-private partnerships as well as the inclusion of NGO's. In general non-governmental organisations seem to increase their influence in the political environment. Cooperation between government bodies, regional regimes etc. and private business could provide new approaches to adaptation strategies and techniques – especially in a time where many companies are preoccupied by branding and in general do not hesitate to apply Corporate Social Responsibility (CSR) in that context. Additionally, many NGO's are have specialised knowledge in their field of work and experience in working within the most affected regions. Both realism and liberal institutionalism have a relative state-oriented approach to international relations, this implies

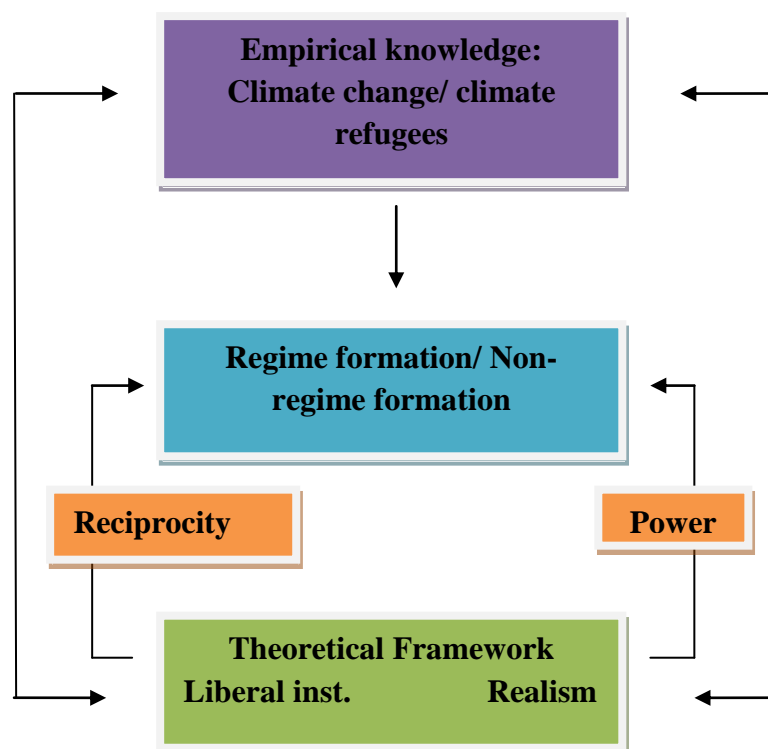
that states are the main actors and therefore they have a hard time to relate to public-private partnerships and the role of NGO's. Therefore, it will not be ideal to investigate this possibility within the theoretical framework applied in this context, while e.g. neoliberal institutionalism a theory mainly developed by Robert Keohane and Joseph Myers that have non-state actors as one of the core elements would have significant explanatory value (Milner, 2009:3,5).

## Conclusion

In order to answer the research question: *How is the state of knowledge on climate refugees, and how do knowledge and power relations influence the formation of an international regime on climate refugees?* The state of knowledge on climate refugees has been outlined and assessed by the theoretical framework. The cause, extent and consequences for climate refugees have been elucidated and it at first glance the knowledge appears to be extensive and comprehensive. The knowledge is nevertheless imbued with the fact that it is mainly future projections. And finally, the knowledge we have and the projections for future development on climate refugees shows, that some regions will be more affected than others. In this research the knowledgebase has been analysed through the lenses of Dimitrov's disaggregating knowledge theory, and based on experiences extracted from earlier analyses of (non-)regime formation, it is very doubtful that a global international regime can be created based on the existing knowledgebase. Therefore, purely based on the knowledge level more information is needed: additional quantitative data but also qualitative data from and among current climate refugees.

This research has been deductive in nature and therefore the theoretical framework has been playing a dominant role, the findings suggest that the theoretical framework influence how we interpretate the empirical level, while the quality of the empirical level affects who the theoretical levels perspective on the formation of a regime is. Finally, enough certain and substantial knowledge (especially on global transboundary consequences) will almost always influence the formation of a regime independently of theories:

**Figure 6: Relationship between empirical level, theoretical level and the formation of a regime.**



Hence, other theories might have had different predictions for the possibility for the formation of a regime on climate refugees – especially less state-centred theories that subscribe a larger role to the NGO's, private business and other non-governmental actors. But the fact is, that based on the findings in this research the prospects for a comprehensive full-blown global regime on climate refugees currently are relatively negative. Hence, to return to the research question - the state of knowledge is as outlined above, while power and knowledge, as illustrated in figure 6, have a substantial influence on the possibility for the formation of a regime. The findings in this research have led to suggestion for future steps for a regime on climate refugees. The world is complicated and especially the fact that some regions will be more affected by climate refugees than other points in the direction that a regional regime will be a better solution than a macro-global regime. Nevertheless, this confronts us with a dilemma – will we aim for the perfect but maybe unattainable global regime or will we go the accessible way (e.g. regional regimes) that might be less comprehensive and might not provide climate refugees with a legal status, but instead will represent a faster and more plausible solution? Maybe we cannot afford to be idealistic when people are affected? This research has suggested possible steps to go towards a regime on climate refugees – and some are more comprehensive than others. Now the challenge for the global community is to decide

what way to go. One thing is certain, the amount of climate refugees will grow rapidly the coming decades and in order to be able to facilitate acceptable conditions for the affected people, countries as well as the receiver countries we need to choose a path soon.

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## Appendix 1

**Table 3.1 Highlights of possible climate impacts discussed in this chapter**

Temp rise (°C)	Water	Food	Health	Land	Environment	Abrupt and Large-Scale Impacts
1°C	Small glaciers in the Andes disappear completely, threatening water supplies for 50 million people	Modest increases in cereal yields in temperate regions	At least 300,000 people each year die from climate-related diseases (predominantly diarrhoea, malaria, and malnutrition)  Reduction in winter mortality in higher latitudes (Northern Europe, USA)	Permafrost thawing damages buildings and roads in parts of Canada and Russia	At least 10% of land species facing extinction (according to one estimate)  80% bleaching of coral reefs, including Great Barrier Reef	Atlantic Thermohaline Circulation starts to weaken
2°C	Potentially 20 - 30% decrease in water availability in some vulnerable regions, e.g. Southern Africa and Mediterranean	Sharp declines in crop yield in tropical regions (5 - 10% in Africa)	40 - 60 million more people exposed to malaria in Africa	Up to 10 million more people affected by coastal flooding each year	15 - 40% of species facing extinction (according to one estimate)  High risk of extinction of Arctic species, including polar bear and caribou	Potential for Greenland ice sheet to begin melting irreversibly, accelerating sea level rise and committing world to an eventual 7 m sea level rise
3°C	In Southern Europe, serious droughts occur once every 10 years  1 - 4 billion more people suffer water shortages, while 1 - 5 billion gain water, which may increase flood risk	150 - 550 additional millions at risk of hunger (if carbon fertilisation weak)  Agricultural yields in higher latitudes likely to peak	1 - 3 million more people die from malnutrition (if carbon fertilisation weak)	1 - 170 million more people affected by coastal flooding each year	20 - 50% of species facing extinction (according to one estimate), including 25 - 60% mammals, 30 - 40% birds and 15 - 70% butterflies in South Africa  Collapse of Amazon rainforest (according to some models)	Rising risk of abrupt changes to atmospheric circulations, e.g. the monsoon  Rising risk of collapse of West Antarctic Ice Sheet  Rising risk of collapse of Atlantic Thermohaline Circulation
4°C	Potentially 30 - 50% decrease in water availability in Southern Africa and Mediterranean	Agricultural yields decline by 15 - 35% in Africa, and entire regions out of production (e.g. parts of Australia)	Up to 60 million more people exposed to malaria in Africa	7 - 300 million more people affected by coastal flooding each year	Loss of around half Arctic tundra  Around half of all the world's nature reserves cannot fulfill objectives	
5°C	Possible disappearance of large glaciers in Himalayas, affecting one-quarter of China's population and hundreds of millions in India	Continued increase in ocean acidity seriously disrupting marine ecosystems and possibly fish stocks		Sea level rise threatens small islands, low-lying coastal areas (Florida) and major world cities such as New York, London, and Tokyo		
More than 5°C	The latest science suggests that the Earth's average temperature will rise by even more than 5 or 6°C if emissions continue to grow and positive feedbacks amplify the warming effect of greenhouse gases (e.g. release of carbon dioxide from soils or methane from permafrost). This level of global temperature rise would be equivalent to the amount of warming that occurred between the last age and today - and is likely to lead to major disruption and large-scale movement of population. Such "socially contingent" effects could be catastrophic, but are currently very hard to capture with current models as temperatures would be so far outside human experience.					

*Note: This table shows illustrative impacts at different degrees of warming. Some of the uncertainty is captured in the ranges shown, but there will be additional uncertainties about the exact size of impacts (more detail in Box 3.2). Temperatures represent increases relative to pre-industrial levels. At each temperature, the impacts are expressed for a 1°C band around the central temperature, e.g. 1°C represents the range 0.5 - 1.5°C etc. Numbers of people affected at different temperatures assume population and GDP scenarios for the 2080s from the Intergovernmental Panel on Climate Change (IPCC). Figures generally assume adaptation at the level of an individual or firm, but not economy-wide adaptations due to policy intervention (covered in Part V).*

(Stern, 2007:57)

## Appendix 2

**Table 1**  
Climate Change Impacts by Region

	<i>People affected each year by 2080s by storm surges with sea-level rise of about 38cm assuming constant protection mechanisms (evolving protection mechanisms)<sup>a</sup></i>	<i>Estimated climate refugees due to sea-level rise (slr)<sup>b</sup></i>	<i>Vulnerability to tropical cyclones<sup>c</sup></i>	<i>People at risk of water stress by 2085 due to a temperature increase of 2–3 (depending on population level)<sup>d</sup></i>	<i>Estimates related to drought and water stress<sup>e</sup></i>	<i>Additional number of people at risk of hunger by the 2080s<sup>f</sup></i>
Africa	Southern Mediterranean: 13 million (6 million) West Africa: 36 million (3 Million) East Africa: 33 million (5 million)	Egypt: 12 million by 2050 Nigeria: 6–11 million by 2050	Southeast Africa: low to moderate risk	North Africa: 155–599 million South and East Africa: 15–529 million West Africa: 27–517 million	14 African countries currently experience water scarcity. Expected to rise to 24 countries by 2030	Total: 23–200
Asia	South Asia: 98 million (55 million) Southeast Asia: 43 million (21 million)	Bangladesh: 26 million by 2050 China: 73 million India: 20 million by 2050	Major urban centers: moderate to high risk South Asia: moderate risk East Asia: moderate to high risk South East Asia: moderate to high risk	South Asia: 39–812 million West Asia: 95–492 million Central Asia: 14–228 million East Asia: 41–1577 in worst case scenario	Millions at risk due to the glacier melt in the Himalayas. 50–60 percent of world population live in the larger Himalaya-Hindu Kush region and could be affected by water stress	West Asia: 5–134 million Southeast Asia: 2–44 million
Latin America	N/A	Venezuela: 56,000 assuming 1m slr and no adaptation measures Uruguay: 13,000 assuming 1m slr and no adaptation measures	Central America: low to high risk Northern Latin America: low risk	Central America: 5–246 million South America: 72–272 million in the worst-case scenario	Glacier melt in the South American Andes could cause water stress under 37 million people by 2010 and 40 million by 2050	Total: 5–85 million
Small island states	Caribbean: 1,350,000 (560,000) Indian Ocean: 920 thousand (460,000) Pacific: 290,000 (160,000)	1 million	Caribbean: low to moderate risk Indian Ocean: low to moderate risk Pacific: low to high risk	Caribbean: 0–73 million	Water availability could become too low during low rainfall seasons	N/A

Sources:

a. Nicholls, Hoozemans, and Marchand 1999, 80–81; for more estimates see Arnell et al. 2002, 429–432.

b. Africa: first estimate, Myers 2002, 611; second estimate, Myers and Kent 1995, 148; source Asia: Myers 2002, 611; source Latin America: Bijlsma et al. 1996, cited in Nicholls 2003, 16; source small island states: Myers and Kent 1995, 149.

c. Africa, Latin America and small island states: UNEP/GRID-Arendal 2005; source Asia: first estimate, Munich Re 2004, 76; other estimates, UNEP/GRID-Arendal 2005.

d. Warren et al. 2006, 18–20.

e. Africa: Tearfund 2006, 12; Asia: Barnett, Adam, and Lettenmaier 2005, 306; Latin America: Nagy et al. 2006, 10; Small island states: Intergovernmental panel on Climate Change 2007, 695–697; and World Bank 2000, 24.

f. Warren et al. 2006, 41–42.

(Biermann and Boas, 2010:70-71). The table has been edited to be on one page.