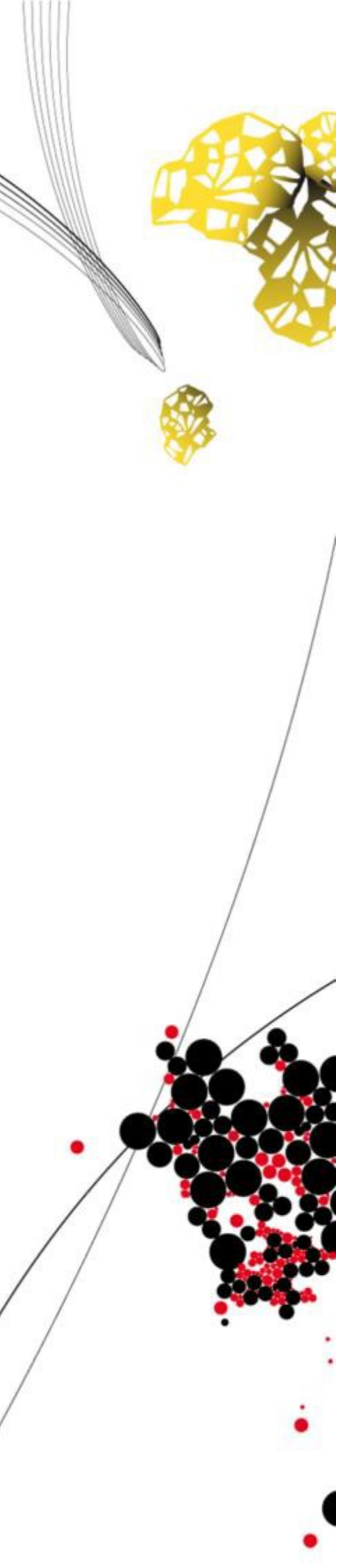

UNIVERSITY OF TWENTE.

Faculty of Behavioural, Management and Social sciences

Sustainable Transitions as drivers of Nationally Determined Contribution Performance in Developing Countries

A Case Study of Sustainable Transitions in Morocco and South Africa

B.Sc. Thesis

Paula Gnielinski

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Supervisors:

Prof. Dr. René Torenvlied

Dr. Ringo Ossewaarde

University of Twente

P.O. Box 217

7500 AE Enschede

The Netherlands

Abstract

One of the topics most present in recent years has been the rapid change of climate and its global implications. This research aims to explore countries' abilities to adapt and reduce climate change implications in the context of developing countries. With the establishment of the Nationally Determined Contributions (NDCs), a big step was made towards actively combatting climate change, thus each country's performance in achieving their set goals is of immense importance. Naturally, it is observable that there are differences in NDC performance, especially in African developing countries. Thus, the following research question of *"How can we explain differences in Nationally Determined Contribution (NDC) performance between Morocco and South Africa in the context of sustainable transitions such as green energy?"* aims to offer new insights into influences on NDC performance. After a comprehensive analysis of the country data on NDC performance and possible influential factors, it becomes apparent that there is a clear link between development aid, especially regarding climate finance, as well as national circumstances and the sustainable transition process. Furthermore, this research concludes that sustainable transitions positively affect countries' NDC performance, which ultimately also leads to a more distant link between NDC performance, climate finance and national circumstances.

Keywords: *sustainable transitions, Nationally Determined Contributions (NDCs), climate change, climate action, development aid, climate finance, green growth*

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Frequently Used Abbreviations

BAU	Business-as-usual
CAT	Climate Action Tracker
CCPAT	Climate Change Mitigation Technologies
CCPI	Climate Change Performance Index
CIFs	Climate Investment Funds
COP	Conference of the Parties
CSP	Concentrated solar power
CTF	Clean Technology Fund
GCF	Green Climate Fund
GEF	Global Environment Facility
GHG	Greenhouse Gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German Society for International Cooperation)
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
LULUCF	Land Use, Land-Use Change and Forestry
MDBs	Multilateral Development Banks
MENA	Middle East and North Africa
NDCs	Nationally Determined Contributions
NGO	Non-Governmental Organisation
NHRE Aid	Commitments for non-hydro renewable energy projects
Non-RE Aid	Commitments for non-renewable energy sector projects
OECD	Organisation for Economic Co-Operation and Development
PPP	Public-Private-Partnerships
PV	Photovoltaic
RE Aid	Commitments for renewable energy sector projects
SDGs	(United Nations) Sustainable Development Goals
TPES	Total Primary Energy Supply
UNDP	United Nations Environment Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
WCED	World Commission on Environment and Development

1. Introduction

"There's one issue that will define the contours of this century more dramatically than any other, and that is the urgent threat of a changing climate" (Obama, 2016). This quote by the former president of the United States, Barack Obama perfectly sums up the urgency of this topic. While climate change is a rather broad and contested concept, it is mostly its implications that differentiate between those most vulnerable to the effects of climate change and those that are mostly responsible for it.

In most cases, developing countries can clearly be defined as those most vulnerable to the effects of climate change, while the developed industrial countries are those mostly causing it. Despite the fact that there is no established definition of 'developing countries', the term generally refers to low- and middle-income countries with a less developed industrial economy and a low Human Development Index (HDI). These developing economies are foremost those that are most exposed to the changing climate and thus most affected by climate change. However, at the same time, many of those countries also have contributed the least to it. This situation seems especially unfair because most developing countries also do not have the resources to adequately adapt to the effects of climate change. In order to change this situation and prevent the progress of climate change, all parties to the United Nations Framework Convention on Climate Change (UNFCCC) at the world climate conference in Paris in 2015 have agreed to the landmark climate agreement, the Paris Agreement, to keep the "[…] global temperature rise this century well below 2 degrees Celsius above pre-industrial levels […] [by] put[ting] forward their best efforts through nationally determined contributions (NDCs)" (UNFCCC, n.d.f).

In this bachelor thesis, I aim to explore the impacts of sustainable transitions in developing countries, addressing the question why some developing countries are performing better, and others more poorly, in achieving the goals set in their National Determined Contributions (NDCs) of the Paris Agreement by looking at two extreme cases. An important motivation for studying this question is that little over three years after the Paris Agreement, it has become evident that the implementation of those NDCs is far more difficult than expected. This leads to the scope of this research as it is observable that some countries are simply doing better in achieving their set goals than others. Since there are many factors that could influence the performance of a country regarding the achievement of their NDCs, this research aims to explore how sustainable transitions, such as in the energy sector, affect the NDC performance of developing countries.

In order to comprehend the implications of sustainable transitions on society and the economy, one must understand that transformational efforts are not all the same. Transition theory itself is quite a complex theory as it originated from the negative implications of the Western post-war development model. Some key transition frameworks have been used to clarify and motivate socio-technical transformations in the more economically developed world (cf. Wieczorek, 2018, p. 205). Although these approaches have later been adopted for developing countries contexts, "[…] patterns are […] difficult to compare and make learning from each other not as straightforward as one might expect." (Wieczorek, 2018, p. 210). Thus, although transformational efforts can be effective in some country contexts, they can also prove quite ineffective in others. While there is not yet a comprehensive scientific understanding of why some transition theories work better in certain contexts, this research explores how the theoretical construct of 'sustainable transitions' can be conceptualized for developing countries as they work towards achieving their NDCs.

Since the introduction and implementation of NDCs are still in the early stages, evaluation of the performance of countries is still limited. While there is only scarce academic literature available, many non-governmental organisations (NGOs) have investigated and evaluated the NDCs themselves as well as countries' performances. Although the evaluation of the NDC performance is mainly of social relevance, the line between social and scientific relevance is thin concerning climate change topics. Generally speaking, a better academic understanding of the transition process in connection to NDC performance and the developing country context may result in immediate beneficial outcomes for society, including an effective roadmap to the successful implementation of countries' NDC commitments and even beyond.

For the purpose of this bachelor thesis, the scope of the research will be narrowed in order to provide an answerable research question. As the focus of this research is on the influence of sustainable transitions on NDC performance in developing countries, the units of analysis were selected to be two extreme cases of sustainability transitions in African developing countries, displaying strong differences, however, as well as certain similarities. Following this line of thought, the research question can be constructed as:

> *How can we explain differences in Nationally Determined Contribution (NDC) performance between Morocco and South Africa in the context of sustainable transitions such as green energy?*

The aim of this research question is to explore the impact of 'sustainable transitions' as the independent variable on 'differences in NDC performance' as the dependent variable, with the units of analysis sustainability transitions in Morocco and South Africa. While the setting is not explicitly mentioned, the NDCs have only be established in 2015, thus the time period of 2015 until now is investigated with regard to most recent developments.

While this research question is of explanatory nature, additional descriptive and explanatory sub-questions are needed to answer the research question fully. Past and current efforts as well as measures towards green energy transitions in Morocco and South Africa and its impacts on the trends in NDCs for Morocco and South Africa will be analysed. Furthermore, this research aims to explore the factors that drive the differences in NDC performance among those developing countries.

The causes of the differences in NDC performances among countries have not yet been extensively explored, thus this research focuses on the influence of sustainable transitions in developing countries, with one possible impacting factor identifiable as development aid. Additionally to the Paris Agreement, the developed countries have agreed to contribute 100 billion USD per year for climate finance by 2025 (cf. UNFCCC, n.d.a). Thus, the provision of resources specifically determined for climate activities such as green energy transition may be the most important influence on developing countries in the achievement of their NDCs. Other possible influencing climate-relevant factors are economic and environmental factors which form the prerequisites for the successful implementation of the NDCs. In most countries' NDCs (UNFCCC, n.d.e) their national circumstances are described in order to communicate their baseline conditions for climate action. Thus, understanding the economic and environmental circumstances of a country is essential to assess the influence of those factors on sustainable transitions. Nevertheless, all of these factors can be considered influential to the performance of a country regarding the achievement of their NDCs.

In order to provide a comprehensive answer to the main research question, a systematic research design is required. The main research question already reveals the nature of the research design as an exploratory case study of the sustainable transitions in the countries Morocco and South Africa. This research design provides a proper approach to answer the main research question because the comparison of the sustainable transitions in two countries as extreme cases will illustrate differences and similarities that cannot be identified in a single case study. Nonetheless, a case study with a greater scope of countries is not feasible, both due to a lack of data and the large scope. Following this research design, four key steps are required to reach a systematic

conclusion to the main research question: firstly the conceptualisation of the theoretical constructs, secondly the operationalisation of those, thirdly the analysis of the country data regarding 'NDC performance' and lastly the analysis of the possible influencing factors on 'NDC performance'. Overall, the main research question will be answered based on the sub-questions that provide the outline of the research structure.

2. Theoretical Framework

2.1. Conceptualisation of the central theoretical constructs

Looking at the main research question, this research is based upon on two central theoretical constructs: 'NDC performance' and 'sustainable transitions' which both have to be conceptualised. While the concept of 'NDC performance' is more a matter of defining its concrete terms, 'sustainable transitions' is a much more ambiguous theoretical construct.

NDC performance

Nationally determined contributions (NDCs) are the "[…] efforts by each country to reduce national emissions and adapt to the impacts of climate change." (UNFCCC, n.d.d). This term was set by the UNFCCC which is the UN body that oversees the Paris Agreement and its outcomes. Following this set term, the theoretical construct of 'performance' needs to be further defined as "[…] the process of defining, monitoring, and using objective indicators […]" (Poister, Aristigueta, & Hall, 2015, p. 1). Since the NDCs were only established in 2015, measuring countries' performance in achieving their set goals is still in its early stages. Just in December 2018, the parties to the UNFCCC have agreed upon the "Katowice climate package" at COP24 in Poland. The package provides guidelines for "[…] the essential procedures and mechanisms that will make the Paris Agreement operational." (UNFCCC, n.d.c).

Looking at the main data source for NDC performance, the Climate Change Performance Index (CCPI) (Germanwatch e.V., NewClimate Institute, & Climate Action Network, 2019a), it measures performance in terms of (a) GHG Emissions, (b) Renewable Energy, (c) Energy Use, and (d) Climate Policy (cf. Germanwatch e.V., NewClimate Institute, & Climate Action Network, 2017). Thus, following the theoretical constructs and the criteria of the CCPI, one can derive a contextual conceptualisation of 'NDC Performance' as it displays certain indicators (see table 1). Hence, 'NDC Performance' can be described as the achievement of these indicators that are instrumental to the achievement of the well-below-2°C climate goal.

Table 1.
Indicators for NDC performance

Criterion	High NDC performance	Low NDC performance
GHG Emissions	Close to zero GHG emissions (considering country-specific pathways, which allow for more time for developing countries)	Increased GHG emissions; and GHG emissions reduction target that is incompatible with the well-below-2°C pathway
Renewable Energy	100% energy from renewable sources	Low share of renewable energy in energy use; and Renewable energy 2030 target that is incompatible with the well-below-2°C pathway
Energy Use	Constant global energy use per capita levels at today's average and not increasing beyond	High energy use/intensity; Low/unreliable energy supply; and Total Primary Energy Supply (TPES)/capita 2030 target that is incompatible with the well-below-2°C pathway
Climate Policy	Effective National Climate Policy; Effective International Climate Policy	Weak National Climate Policy; Weak International Climate Policy

Table 1: Indicators for NDC performance (Burck, Hagen, Marten, Höhne, & Bals, 2018)

Sustainable transitions

While 'NDC performance' can be conceptualised more clearly, the concept of 'sustainable transitions' is more ambiguous. The field of 'sustainable transitions' is wide, as it offers various models for explaining how transitions unfold and how to govern them. (cf. Wieczorek, 2018, p. 204). The term 'transition' can be described as a fundamental change that is necessary to respond to interconnected, complex and global current challenges such as climate change, in order to secure the provision of societal needs for energy, water or shelter (cf. Schot & Kanger, 2018; Wieczorek, 2018). While there are several interpretations of 'sustainability', the definition by the World Commission on Environment and Development (WCED) (1987) fits best with the term of 'sustainable transitions' as they defined 'sustainable development' as

"development that meets the needs of the present without compromising the ability of future generations to meet their own needs". (Barbier, 2011, p. 234).

While this is rather a general and broad definition of the term 'sustainable transitions', this research requires a more defined and contextual conceptualisation. Okereke et al. (2019) offer a refinement of the general definition as they distinguish between (a) the concept of '*transitions'* in industrialised countries "[…] from 'unsustainable' to 'sustainable' industrial or socioeconomic regimes […]" (Okereke et al., 2019, p. 283) and (b) the concept of '*transitions'* in developing countries as "[…] the emergence of a (largely new) green industrial regime in a country where industry is currently extremely limited." (Okereke et al., 2019, p. 283). While Okereke et al. (2019) foremost focus on their specific context of Ethiopia, this conceptualisation is valid for many developing countries, especially in Africa.

This contextual conceptualisation of 'sustainable transitions' is highly relevant for this research as the overall goal of the NDCs is to combat climate change through climate action which is based upon sustainable transitions. Without the sustainable reformation of for example the energy sector, countries will not be able to fulfil their NDC commitments. Looking at the theoretical model in section 2.3. (see figure 2), there is a direct relationship between the NDC goals and NDC performance that is determined by the transition process of the country. Generally, sustainable transitions often lead to a better NDC performance than when there is no transition process at all. Thus, 'sustainable transitions' play a major role in the overall NDC performance process.

2.2. Climate-relevant influences

2.2.1. Development aid and Climate finance

The role and influence of development or foreign aid has only recently been connected to sustainable transitions in developing countries. With discussions about global climate policy and the introduction of the UN's Sustainable Development Goals (SDGs), such as SDG 7 regarding affordable and clean energy, the topic of sustainable transitions has become increasingly important (cf. Kim, 2019, p. 1). Looking at the example of clean energy, the sustainable energy transition towards renewable energy requires new technologies, for which developing countries need external financial and technical support (cf. Kim, 2019, pp. 1–2). These foreign investments that are directly targeting climate action are generally funded by climate finance, which has been established as a form of development or foreign aid with the pre-determined purpose of facilitating climate action investments.

Development aid

Critics often argue that foreign aid does not necessarily improve the situation in developing countries, such as reducing poverty, as poor institutional development, corruption, inefficiencies, and bureaucratic failures often lead to increasing unproductive public consumption (cf. Alesina & Dollar, 2000, p. 33). Nonetheless, aid commitments, especially in the energy sector supporting sustainable energy use, have increased since the Kyoto Protocol[1] came into force in 2005 (cf. Kim, 2019, p. 3).

While industrialised countries have had more time to transition from fossil fuels towards renewable energy, developing countries have been forced to expedite the transition process towards sustainable energy sources (cf. Kim, 2019, pp. 1–2). This causes the build-up of pressure on developing countries to advance their technologies which involves public and private sector investments for a technology transfer (cf. Kim, 2019, p. 2). In order to secure these much-needed investments, developing countries have to generate an effective incentive-structure. However, due to the importance and necessity of investments, donors can also influence aid allocation and recipients' policies (cf. Kim, 2019, p. 2).

The considerations of donors are influenced by various factors, as public foreign aid often responds to political incentives such as "political" openness or democratization, while private foreign direct investments are often determined by economic incentives, particularly "good policies" and protection of property rights in the receiving countries (cf. Alesina & Dollar, 2000, pp. 33–34). The opportunity to invest in the Global South's market is incentivised by the "first-mover advantage"[2] and has led to numerous investments in the technology transfer such as in climate change mitigation technologies (CCPAT) (cf. Kim, 2019, p. 4). Many donors strategically invest in renewable energy in developing countries as it supports sustainable energy transitions "[…] by decoupling carbon from their energy mix and relying less on energy imports." (cf. Kim, 2019, p. 4). Thereby donors are showing their willingness to mitigate climate change by promoting and facilitating participation in GHG emission reduction efforts

[1] The Kyoto Protocol was adopted in Kyoto, Japan, on 11 December 1997, entering into force only in 2005 and was the first international climate agreement that committed its Parties by setting internationally binding emission reduction targets (cf. UNFCCC, n.d.g).

[2] "The benefit enjoyed by a firm as the consequence of its early entry into a new market" (Lieberman, 2016, p. 1), meaning the advantage that a firm enjoys when it is the first that introduces a new product or in this case technology, and therefore does not face competition.

through foreign aid (cf. Kim, 2019, p. 5). Thus, renewable energy consumption can be used as a measurement for the degree of sustainable development (cf. Kim, 2019, p. 4).

Nonetheless, evidence by Alesina and Dollar (2000) shows that overall, private investment is strategically focussing on higher-income developing countries with good economic policies and potentially larger markets (cf. Alesina & Dollar, 2000, p. 56), dismissing low-income developing countries and thus denying them their chances for much-needed investments for advanced technologies. Overall, about 70% of total foreign aid is accounted for by four countries: the U.S., United Kingdom, Germany and France (OECD, 2019). As all donors have their own interests, these can create bias in the allocation of foreign aid, "[…] resulting in situations in which those who are most in need cannot benefit from assistance." (cf. Kim, 2019, pp. 3–4). Considerations that support the strategic interests of the donor countries, strongly influence the allocation of aid, disregarding other important factors in the selection of recipient countries, such as with poverty, democracy, and good policy. (cf. Alesina & Dollar, 2000, p. 55)

Climate Finance

However, the recent developments as in the promotion of climate action have led donors to respond to recipients needs in regard to aid for sustainable energy transitions, including energy policy (cf. Kim, 2019, p. 6). Therefore, much foreign aid has internally been diverted towards climate finance, which refers to "[…] local, national or transnational financing – drawn from public, private and alternative sources of financing – that seeks to support mitigation and adaptation actions that will address climate change." (UNFCCC, n.d.b). According to the principle of "common but differentiated responsibility and respective capabilities" set out in the Convention (cf. UNFCCC, n.d.b), the general idea is to raise funding from developed countries that are mostly responsible for climate change in order to help those developing countries that are vulnerable to the effects of climate change. The "[…] mobilization of climate finance should represent a progression beyond previous efforts" (UNFCCC, n.d.b) and facilitate sustainable transitions in developing countries to combat climate change. The targeted fields are mostly mitigation, to reduce emissions, and adaptation, to adapt to the effects of climate change and reduce their impacts, as well as Cross Cutting (cf. UNFCCC, n.d.b).

In order to promote and facilitate climate financing, the developed countries decided at the climate conference in Copenhagen (COP15) in 2009, to increase their financial assistance towards climate finance with the goal to spend 100 billion USD per year from 2020 onwards. Although the amount of climate finance has constantly risen in the last few years, it is unclear

whether the developed countries will reach their goal in time. While private donors generally prioritise income-generating economic activities (cf. Kim, 2019, p. 6), public donors focus on the recipients' energy needs for public goods (cf. Kim, 2019, pp. 10–11). Nonetheless, both private and public donors contribute to the facilitation of sustainable transitions, increasingly through the provision of climate finance that entails the promotion of renewable energy.

While there are various sources of funding for climate finance (see figure 1), there are still challenges in mobilising investment. Especially in regard to the successful implementation of the NDCs, there are several public and private actors and stakeholders that play an important role in mobilising climate finance (cf. Buchner et al., 2017, p. 1). Finance providers can be differentiated into public and private providers. Those include governments and their agencies, multilateral climate funds, and development finance institutions (e.g. Multilateral Development Banks (MDBs)) on the public side, as well as private corporations, project developers, and commercial banks (cf. Buchner et al., 2017, pp. 4–6). Another commonly used source of finance are carbon markets, that generate finance through emission reduction projects that issue carbon credits for sale (cf. Vandeweerd, Glemarec, & Billett, p. 2). Overall, the origin of such climate action investments is diverse as existing climate finance flows are very complex (see figure 1) and thus will not be further discussed in this research for simplicity and comprehension sake.

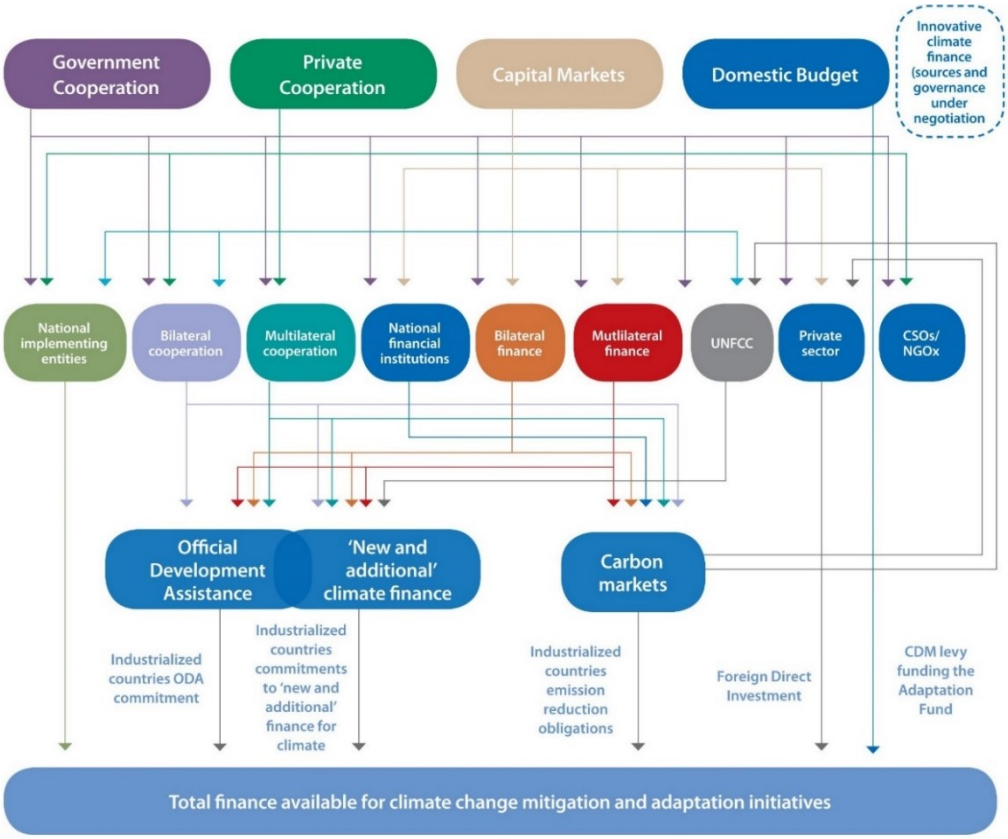

Figure 1: Existing climate change finance flows (Vandeweerd et al., p. 3)

The facilitation of climate finance is ensured by the Financial Mechanism, that provides funds to developing countries and was established by the Convention (cf. UNFCCC, n.d.a). Within the umbrella framework of the UNFCCC, there are several funds, entities, and bodies that deal with climate finance.

2.2.2. Economic and environmental factors

In recent years new challenges have presented themselves as the consideration and respect of both economic and environmental priorities has become increasingly important. The national circumstances of a country form the prerequisites for climate action, thus it can be assumed that these economic and environmental circumstances somehow influence the sustainable transition process. While the nature of economic factors for this research is quite straightforward, relating primarily to economic growth, environmental factors are more diverse. For the purpose of this study, environmental factors include geographic characteristics, ecological conditions as well as biodiversity issues, overall representing ecological sustainability.

Attempting to reconcile these sometimes-opposing factors, a new form of economic growth has been established. Green growth accommodates and reinforces the different aspects of economic, environmental and social policies by "[…] taking into account the full value of natural capital and recognising its essential role in economic growth" (OECD, 2012, p. 9) as well as promoting cost-effective and resource-efficient ways of sustainable production and consumption choices (cf. OECD, 2012, p. 9). Green growth and sustainable development are often viewed as complementary goals (cf. Barbier, 2011, p. 233), thus directly linking sustainable transitions to green growth as it facilitates, inter alia, more sustainable use of natural resources as in renewable energy and more efficient use of energy (cf. OECD, 2012, p. 5). This link between green growth and sustainable development has been recognised by international policy-makers, promoting and giving momentum to the green growth model.

> "We recognize that sustainable green growth, as it is inherently a part of sustainable development, is a strategy of quality development, enabling countries to leapfrog old technologies in many sectors, including through the use of energy efficiency and clean technology. To that end, we will take steps to create, as appropriate, the enabling environments that are conducive to the development of energy efficiency and clean energy technologies, including policies and practices in our countries and beyond, including technical transfer and capacity building."
>
> The G20 Seoul Summit Leaders' Declaration, 11-12 November 2010 (Barbier, 2011, p. 233)

While the significance of green growth for a sustainable future has been recognised by developed countries, green growth is especially interesting for developing countries as it addresses two key issues at once: "[…] the continued inclusive economic growth needed by developing countries to reduce poverty and improve wellbeing; and improved environmental management needed to tackle resource scarcities and climate change." (OECD, 2012, p. 5). Nevertheless, this transition towards green growth also involves systematic adjustments to connect economic, environmental and social issues and their solutions (cf. OECD, 2012, p. 5). Hindrances regarding this transition could be fossil fuel subsidies in developing countries and lack of effective environmental pricing policies, carbon markets and regulations in industrialised countries (cf. Barbier, 2011, p. 234).

Despite all the benefits of green growth such as clean energy and energy efficiency markets, there is still no guarantee that this would translate into sustainable economic development as green growth still does not sufficiently combat global ecosystem degradation and loss (cf. Barbier, 2011, p. 234). There are two key challenges when it comes to green growth: sustainability and funding (cf. Barbier, 2011, p. 233). The economic interpretation of sustainability refers to "[…] an increase in well-being today should not have as its consequences a reduction in well-being tomorrow" (Barbier, 2011, p. 234), meaning that "[…] economic development today must ensure that future generations are left no worse off than present generations." (Barbier, 2011, p. 234). Thus, the issue of sustainability is reconciling the benefits of economic development with the profound alterations to the global ecosystem (cf. Barbier, 2011, p. 234). The use of natural capital is irreversible and thus should be taken into account by international policymakers, however, the economic perspective shifts the focus away from the depletion of natural capital by looking at compensation options for future generations (cf. Barbier, 2011, pp. 234–235). Therefore, green growth cannot be equated with sustainable growth. Directly connected to the issue of sustainability is the funding challenge as there is a considerable gap between the economic benefits of the exploitation of ecosystems and our willingness to pay to maintain and conserve them. (cf. Barbier, 2011, p. 234). In order to stop the further exploitation and decline of global ecosystems, the funding gap must be overcome (cf. Barbier, 2011, p. 234) by active financing of climate action through climate funds or GHG compensation programmes. Addressing this issue, however, will require international cooperation and agreement (cf. Barbier, 2011, p. 234).

Nonetheless, developing countries could be the key to achieving global green growth as they are the most vulnerable to the potential economic and social impacts of climate change regarding environmental degradation while at the same time often being dependent on the exploitation of natural resources for economic growth (cf. OECD, 2012, p. 6). The environmental risks of climate change are significantly higher in developing countries than in industrialised countries, as developing countries often face severe economic, social and ecological threats from energy, food and water insecurity due to climate change and extreme weather risks (cf. OECD, 2012, p. 6).

Green growth can also support developing countries in deviating from conventional economic growth patterns by introducing them earlier to renewable energy sources, thus avoiding conventional GHG emission heavy and natural resource exploiting energy production by performing sustainable transitions early on. The green growth model as a reformation of the conventional growth model re-assesses investment decisions by managing to reconcile energy, agriculture, water needs and the resource demands of economic growth (cf. OECD, 2012, pp. 6–8). Many developing countries have recently promoting green growth efforts through the facilitation of carbon taxes, green energy funds, payment for ecosystem services schemes, renewable energy initiatives, sustainable public procurement initiatives and natural resource management initiatives (cf. OECD, 2012, p. 9), thereby actively preparing for sustainable transitions.

2.3. Key Insights and Expectations

This theoretical framework was divided into two main parts, firstly the conceptualisation of the key theoretical constructs was needed in order to ask the main research question, while theory on climate-relevant influences was necessary to be able to answer the research question.

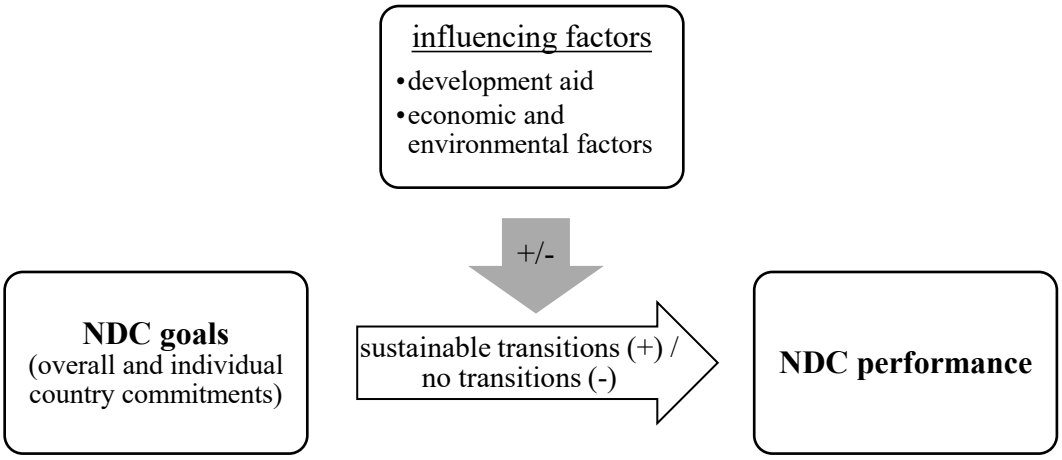

Figure 2: Illustration of the interconnectedness of sustainable transitions, influencing factors and NDC performance

This theoretical model attempts to illustrate the interconnectedness of the individual components by showing how these components can exercise influence on each other. The two theoretical constructs 'NDC performance' and 'sustainable transitions' are directly at the centre of the main research question and thus play a key role in understanding the research topic. While both concepts were difficult to conceptualise, it is mostly the context that helped to define these otherwise broad terms. In the context of climate change and the Paris agreement, 'NDC performance' refers to the achievement of the well-below-2°C climate goal through specifically targeted climate action in order to reach the country goals set in the Paris agreement. 'Sustainable transitions' are part of this process as the concept relates to the transformation of the current system towards a green and renewable economy and society. Thus, sustainable transitions are the key step for developing countries to follow through with their NDC goals in order to perform well in fulfilling their NDC commitments.

While the conceptualisation of these key terms has laid the groundwork for the analysis of the main research question, it is suspected that there are certain influences that further or hinder the process of sustainable transitions. As the theoretical model illustrates, these possible influencing factors are assumed to directly affect the sustainable transition process and thus may also influence NDC performance. Overall, development aid is expected to have significant implications on developing countries, thus suggesting it to be a key influencer in this process. It is also very much intertwined with the other possible influential factors, affecting economic and environmental development. Nonetheless, economic and environmental considerations, especially regarding green growth, are strongly expected to exercise their own influence on the sustainable transition process. Overall, it is assumed that there is no simple relation between the NDC goals and countries' NDC performance, but that the discussed factors are contributing and hindering the overall process of sustainable transitions.

3. Methodology

Unlike more traditional research in social science, this research focuses on processes and mechanisms instead of variables to come to a meaningful conclusion. Looking at the research question, there are no single variables that drive differences in NDC performance between Morocco and South Africa, but rather an interplay of processes and mechanisms.

Following the research design of an exploratory case study, four key steps are required to reach a systematic conclusion to the main research question. Since the theoretical constructs are essential to answering the research question, the first steps are, first, to conceptualise these; and secondly to find a way in which these loose terms can be operationalised and measured. The third step would be the analysis of the available data in the context of these concepts, which will be done by analysing the country data, first separately and then as a comparative analysis. The fourth and final step will be the exploration of other possible influencing factors on 'NDC performance', especially regarding development aid as well as economic and environmental factors. In the following sections the case selection, operationalisation and the limitations of this research are discussed.

3.1. Case Selection

An exploratory case study was chosen to explore the drivers of differences in NDC performance in the two sample developing economies Morocco and South Africa. The selection was based upon the close review of available data regarding developing countries as well as the differences in performance of available countries to allow for the illustration of a bigger picture and a meaningful comparison. While the selection of the cases was mostly based on the dependent variable (performance), this can be justified by the nature of the research design of an explorative study that allows for this selection method rather than a hypothesis-testing approach. The two sample countries are going to be assessed regarding their performance in (a) GHG Emissions, (b) Renewable Energy, (c) Energy Use, and (d) Climate Policy.

Due to availability of data in the "Climate Action Tracker" (Climate Analytics, NewClimate Institute, & Ecofys, 2019a) and the "Climate Change Performance Index" (Germanwatch e.V. et al., 2019a) the choice of possible countries was limited. Thus, no explicit sampling technique could be used, however, special consideration was given to the comparability of the data and the availability of data in both indexes.

Furthermore, this study aims to illustrate a bigger picture that could generate a more comprehensive comparison. Thus, countries were selected which display differences as well as similarities on several levels of comparison. The choice of the selection of African developing countries was made due to more variety in performance, as Morocco was ranked as one of the best countries in achieving their set goals, while South Africa ranks among the 'under-achievers' with an overall low ranking (Germanwatch e.V., NewClimate Institute, & Climate Action Network, 2019b). These differences in performance are illustrating exactly the phenomenon

that this study aims to explore. Nonetheless, there are other developing countries that also display differences in performance in Asia and South America. However, the available data of developing countries in South America does offer less variety in differences (Germanwatch e.V. et al., 2019b), while the available developing countries in Asia are less comparable due to various factors, such as economy and resources.

Overall, this approach provides the most optimal selection for the research design because – although data on NDC performance is scarce – the selected cases offer a good outlook with the best sampling available at the moment. When there will be more data readily available in the future, a broader case selection and sampling might offer a better outcome, however considering the limitations of the current situation, this approach will deliver the best possible answers.

3.2. Method of Data Collection

As briefly discussed in the previous sections, this research is based on two different kinds of data. While the first part of the analysis regarding the NDC performance refers to data from the "Climate Action Tracker" (Climate Analytics et al., 2019a) and the "Climate Change Performance Index" (Germanwatch e.V. et al., 2019a), the second part of the analysis uses existing literature and reports from appropriate institutions to review possible influential factors that drive differences in NDC performance in Morocco and South Africa.

While the "Climate Action Tracker" provides an existing quantitative dataset as well as its qualitative interpretation, the "Climate Change Performance Index" mainly offers quantitative data and illustrations of it. While not all presented data in the indexes was valid for this study, the data relevant for this research was directly collected from the respective websites and processed in form of tables as well as grounds for interpretation. Additionally, primary data provided by the UNFCCC registry for NDCs (UNFCCC, n.d.e) was used as a complementary data source for the second part of the analysis. The existing literature and reports from appropriate institutions were selected based on availability as the chosen topic of NDC performance and its drivers is still very new and unexplored. However, in order to be able to conduct a comprehensive analysis of both cases, the data for the second part of the analysis was carefully chosen to be comparable.

3.3. Method of Data Analysis

The analysis of the differences in NDC performance in the two sample developing economies Morocco and South Africa will be divided in two separate analysis parts of the descriptive differences in NDC performance and of possible explanatory drivers of such differences.

In the first part of the analysis, the NDC performance data from the "Climate Change Performance Index" (Germanwatch e.V. et al., 2019a) is foremost descriptively analysed by looking at four categories to provide a base for the second part of the analysis. The second part of the analysis focuses on finding explanations for the observed differences in NDC performance. Development aid as well as economic and environmental factors were identified as possible influences on the sustainable transition process and will be analysed according to relevant keywords identified in the theory.

3.3.1. Operationalisation

NDC Performance

For the first part of the analysis the country data is analysed regarding their NDC performance will be done on the basis of their performance in four categories: (a) GHG Emissions, (b) Renewable Energy, (c) Energy Use, and (d) Climate Policy (cf. Germanwatch e.V. et al., 2017).

Table 2.
Criteria of Analysis

	Definition
GHG Emissions	The category of greenhouse gas (GHG) emissions is the category out of all that is weight the most with 40%, of which each of the four components is weight 10%. It includes the current level of GHG emissions per capita and its past trend. Furthermore, it compares the current level of GHG emissions per capita as well as the country's GHG emissions Reduction 2030 target to the well-below-2°C compatible pathway.
Renewable Energy	With 20% overall weight, the category of renewable energy is composed of four components with each 5% weight. It measures the current share of renewables per TPES and the development of energy supply from renewable energy sources. Additionally, it compares the current share of renewables per TPES as well as the country's renewable energy 2030 target to the well-below-2°C compatible pathway.

Energy Use	The category of energy use is also weight with 20% overall and 5% for each component. It is composed of the current level of energy use (TPES/capita) and its past trends. Furthermore, it compares the current of energy use (TPES/capita) as well as the country's energy use 2030 target to the well-below-2°C compatible pathway
Climate Policy	The last category is Climate policy which has an overall weight of 20% with the components national and international climate policy each of 10%.

Table 2: Criteria of Analysis (Germanwatch e.V. et al., 2017)

This country data analysis will be the base for the second part of the analysis that will explore the reasons for and the drivers of the differences between the two countries.

Influencing Factors

For the second part of the analysis, a literature review will be used to identify and analyse drivers and mechanisms of differences in NDC performance in Morocco and South Africa. Three factors can be considered influential, which are development aid as well as the economic and environmental factors. While the individual factors will be analysed separately, links between some of the factors will become visible and will be recognised.

In order to provide a comprehensive analysis, keywords were selected to ensure comparability between the two cases.

Table 3.
Keywords for literature review

Influencing factor	Keywords
Development aid	• Foreign aid • Climate finance • Specifically climate action designated investments
Economic and environmental factors	• Green growth • Sustainable growth • Environmental degradation/exploitation • (Deviation from) Conventional economic growth patterns

Table 3: Keywords for literature review

3.4. Limitations of this research design

Naturally, this research can only offer a certain scope and there are various further points to make and develop. Since this research is based upon a case study analysis of only two exemplary cases, there will be limitations to this research and its drawn conclusions.

While there always are general threats to any research design, it is important to detect and properly address them. Since the case study aims to assess only two exemplary countries, the overall weak point might be the comparability of data. While this is a credible concern, the sources of the country performance data, the "Climate Action Tracker" and the "Climate Change Performance Index", specifically offer the possibility of standardized comparisons between countries (cf. Climate Analytics et al., 2019a; Germanwatch e.V. et al., 2019a), thus minimising this possible threat. Furthermore, the keywords for the literature review were selected to provide a comprehensive analysis from which comparative conclusions can be drawn. Nonetheless, the comparability of only two exemplary cases might not be representative, and thus the findings of this research can only be generalised for cases similar to this research's selected cases.

Another remark on the data by the "Climate Action Tracker" and the "Climate Change Performance Index" (Climate Analytics et al., 2019a; Germanwatch e.V. et al., 2019a) is that the data collected from these sources is only used for a descriptive analysis that should offer an overview of potential differences and similarities. As there is no official data on NDC performance to compare with yet, the data collected from the "Climate Action Tracker" and the "Climate Change Performance Index" (Climate Analytics et al., 2019a; Germanwatch e.V. et al., 2019a) is not scrutinised as such in this thesis.

Overall, these are all methodological issues that will not impact this research, however, changes in methodology could offer different directions for this topic. Therefore, further research should look at the possibility to widen the scope for a more representative analysis and should explore this topic in a quantitative analysis when the necessary data becomes available.

4. Analysis of sustainable transitions in Morocco

Looking at the main research question, this analysis is divided into two parts: firstly the country data of Morocco (Germanwatch e.V., NewClimate Institute, & Climate Action Network, 2018e) is analysed on the basis of the four indicators determined above, and then secondly the influence of development aid, as well as economic and environmental factors on the sustainable transition process in Morocco, is explored.

4.1. NDC Performance

Overall Results

Table 4.
Country Scores – Morocco

Indicators	Weighting	Score	Rank
GHG per Capita - current level (incl. LULUCF)	10%	90.7	6
GHG per Capita - current trend (excl. LULUCF)	10%	12.5	52
GHG per Capita - compared to a well-below-two-degrees benchmark	10%	87.6	6
GHG 2030 Target - compared to a well-below-two-degrees benchmark	10%	98.5	6
Share of Renewable Energy in Energy Use - current level (incl. hydro)	5%	5.5	53
Renewable Energy - current trend (excl. hydro)	5%	100.0	4
Share of Renewable Energy in Energy Use (excl. hydro) - compared to a well-below-two-degrees benchmark	5%	11.9	43
Renewable Energy 2030 Target (incl. hydro) - compared to a well-below-two-degrees benchmark	5%	25.9	39
Energy Use (TPES) per Capita - current level	5%	100.0	4
Energy Use (TPES) per Capita - current trend	5%	37.3	39
Energy Use (TPES) per Capita - compared to a well-below-two-degrees benchmark	5%	100.0	4
Energy Use (TPES) 2030 Target - compared to a well-below-two-degrees-benchmark	5%	100.0	4
National Climate Policy	10%	92.5	5
International Climate Policy	10%	82.7	11
	100%	70.48	5

Table 4: Country Scores – Morocco (Germanwatch e.V. et al., 2018e)

Currently, there are only two countries that are compatible with the 1.5°C Paris Agreement pathway (cf. Climate Analytics, NewClimate Institute, & Ecofys, 2019b), and Morocco is one of them. This does not only make Morocco the African leader in climate action but also a global player in terms of strong performance and achievement of their NDC commitments.

According to the CCPI 2019, Morocco improved its performance by comparison to the preceding year and achieves the 5th place – but performing second-best as the first three places are not awarded[3] (cf. Burck et al., 2018, p. 16). Their strong performance can be traced back to its strong efforts regarding affordable and clean energy, successful GHG emission reduction targets and ambitious climate policy. Despite the lower scores in 'Renewable Energy', Morocco is significantly increasing its share of renewables and new renewable energy capacity that is implemented through the world's largest solar plant near Ouarzazate and multiple new wind farms (cf. Burck et al., 2018, p. 16). This solar mega project will further improve Morocco's scores in 'Renewable Energy' in the years to come as these solar farms will be able to provide enough electricity that Morocco will be able to export its power supplies to the other African countries as well as possibly Europe (cf. UNEP, 2018). Overall, Morocco is showing ambivalent behaviour at times, however, the country is well on track to successfully meet its NDC commitments in all categories that are consistent with the well-below-two-degrees.

GHG Emissions

In the category of 'GHG Emissions' Morocco ranks within the top 10 countries with a total high rating (cf. Germanwatch e.V., NewClimate Institute, & Climate Action Network, 2018c). Looking at the individual indicators of GHG Emissions, it becomes apparent that Morocco is doing very well in all sub-categories except for 'GHG per Capita - current trend (excl. LULUCF)'. This can be explained by Morocco's GHG emission projections in 2030 that will reach 153 $MtCO_2e$ excluding land use, land-use change and forestry (LULUCF), which will be 200% above 2005 levels and 371% above 1990 levels (cf. Climate Analytics, NewClimate Institute, & Ecofys, 2018a). While the current level of GHG emissions per Capita (incl. LULUCF) is perfectly in line with Morocco's NDC commitments, these projections show that the emissions between 2020 might increase faster than expected and thus might not meet the

[3] "No country performed well enough to reach the ranking *very good* in this year's index, meaning that no country has yet made it to one of the top three places in the rankings." (Burck, Hagen, Marten, Höhne, & Bals, 2018).

allowed levels of their NDC commitment (cf. Climate Analytics et al., 2018a). Due to these projections, Morocco is unusually weakly scored and hence only achieves a rank of 52 in this sub-category. In all other sub-categories, Morocco is doing very well with their historic and current levels of emissions per capita as well as their 2030 target laying below the well-below-2°C pathway (cf. Germanwatch e.V. et al., 2018c), thereby honouring their NDC commitments.

Renewable Energy

To some extent surprising, Morocco scores the weakest in the category of 'Renewable Energy' ranking at 25 with a total rating of only Medium (cf. Germanwatch e.V., NewClimate Institute, & Climate Action Network, 2018d). Nevertheless, there are massive differences in score and rank between the different sub-categories which must be examined more closely.

Looking at the current level of the share of Renewable Energy in Energy Use (incl. hydro), Morocco only scores a 5.5, which is their lowest score overall. According to the International Energy Agency (IEA), coal continues to be the most important source of power generation in Morocco (cf. International Energy Agency, 2016b), despite of the reliance on imports as the production of coal remains in the southern regions while North Africa produces mainly crude oil and natural gas (cf. International Energy Agency, 2018b). Apart from coal, Morocco's electricity production is based upon approximately 28% of oil and gas, while only around 16% of electricity is gained through renewable energy sources (incl. hydro; approx. 11% excl. hydro) (cf. International Energy Agency, 2016b). Morocco's energy production through natural gas is expected to reach 23% by 2030 (cf. Climate Analytics et al., 2018a), which is not as harmful as power generation from coal, however, must be limited as well in order to comply with the goal of 8% global electricity generation share of gas of the Paris Agreement (cf. IPCC, 2018). This overall equates to a low share of Renewable Energy in Energy Use (excl. hydro), compared to the well-below-two-degrees pathway as the most important share of energy production are composed of fossil-based sources.

Contrary to its overall setting of targets below the well-below-two-degrees benchmark, Morocco's NDC commitment regarding renewable energy and its 2030 target is above the well-below-2°C pathway (cf. Germanwatch e.V. et al., 2018d) as it continues to increase its coal-fired power generation which does not further the overall pathway goal of zero GHG emissions by 2050 as well as 100% energy from renewable sources (cf. Burck et al., 2018; Climate Analytics et al., 2018a; IPCC, 2018). Nonetheless, Morocco also plans to expand their solar power capacity to 2,000 MW by 2020 which is supported by the new Moroccan Agency for

Sustainable Energy (MASEN), which has taken over from the Moroccan Electricity and Water Utility Company (ONEE) after recent administrative restructuring (cf. Climate Analytics et al., 2018a). This explains the contrast between the scores in the different sub-categories, as the current trend regarding renewable energy is scored much higher at 100.0 due to the ambitious new plans to increase the share of renewable electricity capacity, which is not part of Morocco's NDC commitment.

Overall, Morocco displays unusual favour of unsustainable energy generation, however, after their recent administrative restructuring, they are back on track to perform successfully in this category as they have significantly increased the share of renewables over the past years. Nonetheless, in order to reach not only their own NDC targets, but also the overall pathway goal of zero GHG emissions by 2050, Morocco needs to phase out in particular coal-fired power generation (cf. Climate Analytics et al., 2018a) to limit and decrease their GHG emissions levels by further expanding their share of Renewable Energy in Energy Use.

Energy Use

Looking at all the categories, Morocco scores best in 'Energy Use' ranking 6th with a total high rating (cf. Germanwatch e.V., NewClimate Institute, & Climate Action Network, 2018b). This is due to the fact that according to the IEA, "Morocco is making strong progress towards affordable, reliable, sustainable and modern energy in line with the United Nations Sustainable Development Goals […]"(International Energy Agency, 2016a) regarding affordable and clean energy (SDG 7), thus scoring 100.0 in nearly all sub-categories. However, difficulties in reducing the energy intensity of Morocco's economy (cf. International Energy Agency, 2016a) lead to a weak score in Morocco's current trend in Energy Use (TPES) per Capita that deviates from the otherwise perfect scores. Overall, Morocco's energy use stays below the well-below-2°C pathway as well as their 2030 target (cf. Germanwatch e.V. et al., 2018b), thus justifying the overall high score.

Climate Policy

Morocco scores second best in the category 'Climate Policy' ranking 8th with a total high rating (cf. Germanwatch e.V., NewClimate Institute, & Climate Action Network, 2018a). All efforts and achievements documented above of the overall strong and high NDC performance of Morocco are outcomes of the National Energy Strategy that aims to implement Morocco's NDC commitment of the national GHG emissions target of 42% below business-as-usual (BAU)

emissions by 2030, aiming to expand Morocco's share of renewable electricity capacity to 52% by 2030 and reducing energy consumption by 15 % by 2030 (cf. Climate Analytics et al., 2018a; cf. UNFCCC, 2016a). The National Energy Strategy puts the focus on energy production through the capacity extension of wind, solar and hydro-electric electricity generation (cf. Climate Analytics et al., 2018a).

One of the largest parts of the National Energy Strategy is the Morocco Solar Plan (Noor), which will expand the country's installed solar power capacity (PV and CSP) to 2,000 MW by 2020 in various projects (cf. Climate Analytics et al., 2018a). Other parts of the National Energy Strategy are the Morocco Integrated Wind Energy Program and the Morocco Hydro-Electric Plan (cf. Climate Analytics et al., 2018a). After the recent administrative restructuring, the Moroccan Agency for Sustainable Energy (MASEN) took over the development of all renewable energy technologies in Morocco from the Moroccan Electricity and Water Utility Company (ONEE), leading to the expectation that all the planned targets under the National Energy Strategy will be fully implemented in time (cf. Climate Analytics et al., 2018a). These recent developments have contributed to the high score in the sub-category of 'National Climate Policy'.

Additionally, to their successful national climate policy, Morocco is also conducting consultative processes to develop a long-term strategy for climate action targets for 2050 (cf. Burck et al., 2018, p. 16). These initiatives make Morocco a potential "[…] policy frontrunner on the international level" (Burck et al., 2018, p. 16), thus scoring highly in the sub-category of 'International Climate Policy'.

4.2. Influencing Factors

4.2.1. Development aid and Climate Finance

Looking at the countries benefitting the most from multilateral climate finance (see figure 3), Morocco ranks first among the top ten recipients over the past decade, with a total of USD 606.96 Million (cf. McCarthy, 2014). This is consistent with the financial needs communicated for mitigation targets in Morocco's NDC commitments which require an investment of estimated USD 50 billion between 2010 and 2030 in order to meet the overall target of 42% GHG emissions reduction below business-as-usual (BAU) levels, and about USD 24 billion for additional reduction of 25% of GHG emissions under the conditional target (cf. UNFCCC, 2016a, p. 6), which are "[…] conditional upon access to new sources of finance and to additional support, compared to that received over the past years. (UNFCCC, 2016a, p. 6). This shows, that

while Morocco is willing and committed to actively increase their climate action, they are clearly in need of financial assistance in order to fulfil their NDC goals. As discussed in the previous section, according to projections Morocco will be struggling to comply with their allowed levels of GHG emissions in the future, if they cannot increase their share of renewables. In order to successfully transition from the unsustainable coal-fired power generation, Morocco continues to need foreign investment for a technology transfer.

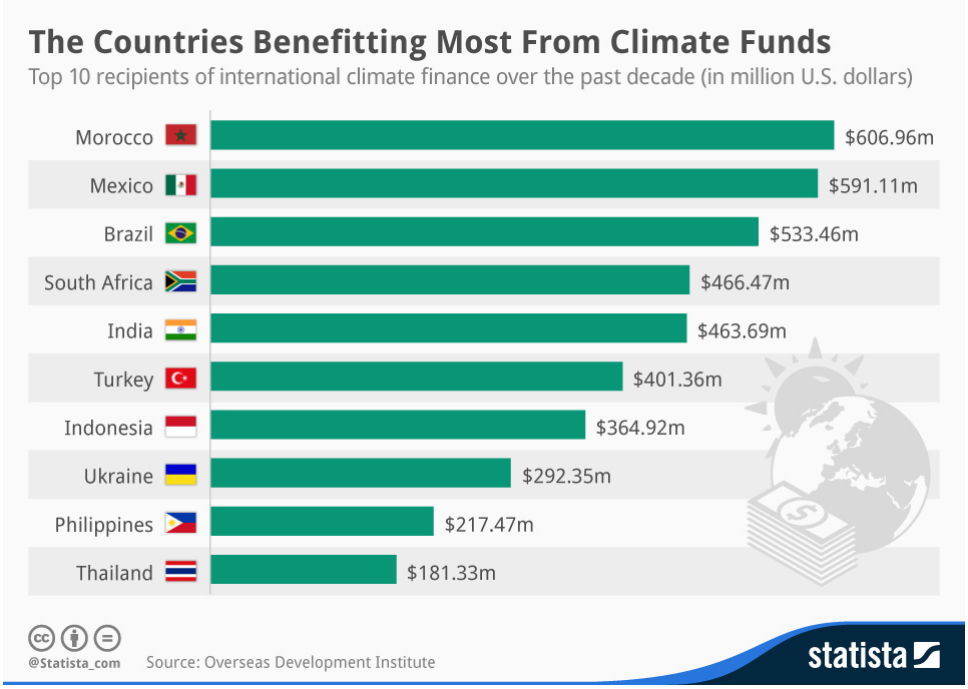

Figure 3: The Countries Benefitting Most From Climate Funds (McCarthy, 2014)

Morocco's adaptation finance needs might even have more significant budgetary implications than in mitigation as due to Morocco's high vulnerability to the implications of climate change, its priority is to "[…] first minimize the risks of these impacts and invest in adaptation compared to mitigation actions." (UNFCCC, 2016a, p. 4). Thus, so far about 64% of its total climate spending has been dedicated to adaptation efforts, with costs of minimum USD 35 billion for further adaptation projects between 2020 and 2030, especially in water, forestry and agriculture (cf. UNFCCC, 2016a, p. 4). These clear communications of need for financial support are a first indication of the role of development or foreign aid especially the influence of climate finance on the achievement of Morocco's NDC commitment.

Most of the multilateral climate finance comes from three key climate funds (see table 5): the Global Environment Facility (GEF), the Climate Investment Funds (CIFs) – including the Clean Technology Fund (CTF) – and the Green Climate Fund (GCF). While the means for climate finance have increased in recent years, projects financed by these key climate funds are attempt-

ing to find a balance between adaptation and mitigation projects. Thus, additional financial support for adaptation programmes in Morocco is or will be rather limited compared to mitigation finance. If Morocco continues to focus on adaptation programmes, many projects might become more difficult to fund or will have to be financed without multilateral foreign aid.

Table 5.
Multilateral Climate Finance – Morocco

Climate Fund	Number of projects	Total Grant Funding (in Mio. USD)	Additional Co-Financing (in Mio. USD)
GEF	89	509.44	2751.57
CIFs / CTF	3	245.95	2982.75
GCF	6	842.10	2464.20

Table 5: Multilateral Climate Finance – Morocco (CIFs, 2015a; GCF, n.d.a; GEF, 2016a)

Nevertheless, both adaptation and mitigation programmes contribute to sustainable transitions. Many mitigation projects focus on the facilitation of renewable energy in accordance with SDG 7 for affordable and clean energy, such as the projects by the Climate Investment Funds (CIFs) which are under the sponsorship of the Clean Technology Fund (CTF). Morocco's ambitious National Energy Strategy fully commits to increase its share of renewables in power generation through the Morocco Solar Plan (Noor), Morocco Integrated Wind Energy Program and the Morocco Hydro-Electric Plan, which expands the solar and wind power generation capacity by 2,000 MW each by 2020 (cf. Climate Analytics et al., 2018a). For the implementation of these demanding plans, Morocco was awarded USD 150 million from the CTF, that is contributing to 1,070 MW in new wind power capacity and infrastructure development "[…] to make wind energy commercially viable." (CIFs, 2015a). Despite the absence of adaptation projects and therefore a lack of a 50-50 balance of mitigation and adaptation (cf. UNFCCC, n.d.a), the expanse of renewables and the overall promotion of GHG emission reduction projects is very much in line with the well-below-2°C pathway and thus facilitating sustainable transitions and even contributing to the achievement of Morocco's NDC commitments.

While the CTF exclusively funds few mitigation projects, the GEF offers a wider project portfolio with nearly 90 projects for Morocco (see table 5), taking their priority of the water, forestry and agriculture sectors into account by focussing on focal areas such as Biodiversity, Land Degradation, Climate Change and International Waters (cf. GEF, n.d.a). Although these projects support Morocco's prioritised adaptation efforts, the lack of mitigation projects should be seen critical as "Mitigation […] attends to the causes of climate change, while adaptation

addresses its impacts.“ ("Mitigation and adaptation to climate change", n.d.). This means that while they are both equally as important, mitigation efforts will potentially become more significant in the future if adaptation efforts are tended to, and thus a lack of mitigation projects might seem unsustainable for the future.

The most diverse portfolio offers the GCF with one mitigation project, two adaptation projects and three cross-cutting projects (cf. GCF, n.d.a). The diversity of focal areas does not only meet the 50-50 balance of mitigation and adaptation (cf. UNFCCC, n.d.a), it is also more sustainable as Morocco’s current needs for adaptation are satisfied while mitigation is not disregarded, even finding compromising solutions in cross-cutting projects. Overall, the climate funds’ support of climate action in Morocco is quite significant with very high multilateral investments (see table 5).

Key findings

These investments clearly show the influence that foreign aid in form of climate finance has on sustainable transitions, as specifically climate action designated investments directly target and promote sustainable resources, thereby contributing to the recipient country’s successful achievement of their NDC commitments. At the CIF Talk “The Power of Solar” in 2016, the Senior Climate Finance Officer at the African Development Bank Leandro Azevedo explained that Africa has an enormous renewable energy potential of about 10 terawatts, which is ten times more than the actual installed capacity of the US (Azevedo, 2016). Unlocking this potential and realising its aspirations “[…] would represent a win-win situation for developed countries, investors and, above all, the African people.” (Azevedo, 2016). Overall, foreign aid, especially in form of climate finance, occupies a significant role in Morocco’s ability to perform a successful sustainable transition towards climate-friendly renewable energy. As Morocco has communicated itself in its NDCs, it is not able to fulfil its commitments without foreign aid or investment, thus clearly showing its dependence upon financial assistance. Therefore, a clear connection can be established not only between development aid and sustainable transitions, but there is also a link to NDC performance as specifically climate action designated investments are aimed to support recipient countries in their efforts to comply with the SDGs and their respective NDCs.

4.2.2. Economic and environmental factors

In their NDCs Morocco describes its national circumstances as a gateway between Europe and North Africa, located on the southern shore of the Mediterranean it is directly affected by the impacts of climate change (cf. UNFCCC, 2016a) and has been identified as very vulnerable country in the 4th Assessment Report of the IPCC (cf. GIZ, n.d.). This makes the country vulnerable to many different influences, however, Morocco has also experienced substantial economic and social development in the context of climate change that has affected its management of natural resources (cf. UNFCCC, 2016a). This is in part due to the involvement of multilateral climate finance that has provided the country not only with financial but also with technical assistance. Nevertheless, Morocco has become especially vulnerable to water scarcity in recent years that has particularly affected the resilience of forest ecosystems and the agriculture sector, with water availability per capita decreasing immensely from approximately 2,600 m^3 per capita per year in 1960 to approximately 700 m^3 per capita per year today (cf. UNFCCC, 2016a). This water shortage does not only represent an environmental issue but also impacts human and economic security by threatening the livelihood of the people, their access to water as well as their food and/or job security as it directly affects the agriculture sector.

Environmental factors

Looking at Morocco's geographic characteristics, it becomes apparent that despite its strategic geographic position with a large variety of ecological regions, Morocco is very vulnerable to the impacts of climate change as it lies between two main climate zones (cf. GIZ, n.d.). With coastal plains and lowland plateaus, the north is influenced by the Mediterranean and Atlantic climate and experiences variability in climate due to the different climate conditions between the Atlas Mountains and the coast (cf. GIZ, n.d.). The south, on the other hand, faces very different climate conditions as it is mainly composed of semiarid grasslands to arid regions that merge with the Sahara Desert (cf. GIZ, n.d.). These environmental conditions have caused water scarcity and insecurity as well as sea level rise that are impacting its ecosystem and agricultural sector. Rural regions have become increasingly vulnerable to the impacts of climate change as poverty affects the adaptation ability and capacity of local communities (cf. UNDP, n.d.). This is the reason for Morocco's focus on prioritising adaptation programmes in order to stop the deterioration of the already bad climate conditions in Morocco. Additional issues are the increasing pressure from population growth, the extension of agriculture and urban industrial and tourism development (cf. GIZ, n.d.).

The changing climate conditions are noticeable in several instances as even the small rise of average temperature by 1°C has caused drought, heat waves, changing rainfall patterns, extreme rainfalls, floods, sea level rise (cf. GIZ, n.d.). Observations from Morocco's National Meteorological Directorate confirm the increase in temperature and the increase in drought, leading to a widening of the gap between water supply and demand as rainfall is predicted to decline 20 to 30% (cf. UNDP, n.d.). Ultimately, these climate conditions will continue to deteriorate in the future if Morocco does not increase its climate action efforts, with the successful achievement of their NDCs only being a minor step. In the ecological diverse regions of Morocco, the temperature rise has had different environmental impacts as drought and extreme weather in the lowlands have caused threats to Morocco's agriculture sector, while the snow cover in the Atlas Mountains is further decreasing. Observations show that these extreme weather events are occurring more often (cf. GIZ, n.d.) and leading to general economic insecurities. Overall, the geographic characteristics and its climate conditions clearly show the need for sustainable transitions in Morocco as the exploitation of its environment as well as the implications of climate change have caused real economic and social threats that cannot be disregarded.

Economic factors

While Morocco's economy has continuously grown in the last decade (cf. GIZ, n.d.), the economic growth has also contributed to the exploitation of natural resources which ultimately worsened the impacts of climate change. Nevertheless, the country has successfully progressed towards a tertiarization of its economy as 53 % of GDP for the service sector against 15 % for the primary sector and 32 % for the industry sector, however, the agriculture and fishing sector still employ more than half of the employed population (cf. GIZ, n.d.). This implies great inequalities between the different sectors and often consequently between rural and urban areas. Morocco needs to foster sustainable growth that accounts for the needs of all its sectors. Despite large investments into the reformation of the energy sector, Morocco is still dependent on expensively imported fossil fuels that satisfy more than 90% of its energy demands (cf. CIFs, 2015a). While Morocco has pledged in its NDCs to work hard for the sustainable transition of its energy sector, its economy has not yet responded to that. In order to promote sustainable energy, Morocco is advocating for Public-Private-Partnerships (PPP) to facilitate new investment opportunities in renewable energy. This shows that economic incentives are essential in getting investors for sustainable transitions.

Nonetheless, Morocco's economy has evolved and become more resilient than before, being able to adapt to variation in growth due to internal and external pressures such as weather variability, the European financial crisis and socio-political unrests in the MENA region (cf. GIZ, n.d.). However, in order to reach a stable economy, Morocco will need to make efforts to reduce its dependency on European markets and energy imports (cf. GIZ, n.d.). Sustainable growth for Morocco implies the decrease of dependencies of any kind by turning away from the import of GHG emission heavy fossil energy sources to the transition towards sustainable energy sources such as wind and solar renewables that will offer independent energy production. Another problem is its high dependency on the agriculture and fishing sector that will increase Morocco's vulnerability regarding key resources such as water and forestry (cf. GIZ, n.d.), consequently also leading to a higher vulnerability to extreme weather events that threaten these key resources, leaving Morocco exposed to the effects of climate change. This again shows that there is a need for systematic change in the economy that needs to reconcile the job dependency on the agriculture and fishing sector with the sustainable transition of these sectors towards less exploitation of natural resources in order to prevent further vulnerabilities to climate conditions.

Key findings

Overall, Morocco is struggling to reconcile its needed and wanted economic growth with its ambitious NDC commitments. Looking at the economic and environmental implications of climate change on Morocco's circumstances, it becomes clear that economic and environmental factors do have an influence on sustainable transitions, however both in different ways. While the environmental circumstances strongly suggest a need for sustainable transitions, it is unclear whether Morocco would prosper as much under sustainable growth as it does now. In the theory section, the difference between green growth and sustainable growth was made clear, and it seems like Morocco is making efforts to transform its economy with similarities to the green growth model. While Morocco has not yet achieved a reconciliation of economic growth and environmental sustainability, it is moving quicker towards sustainable transitions than most industrialised countries although not completely deviating from the conventional economic growth patterns. This shows that the influence of economic and environmental factors might be different in weight, but they both promote sustainable transitions to an extent and thus are influential in the positive or negative NDC performance of Morocco.

5. Analysis of sustainable transitions in South Africa

Following the same procedure regarding the analysis as with Morocco, the country data of South Africa (Germanwatch e.V., NewClimate Institute, & Climate Action Network, 2018f) will be analysed first to lay the groundwork for the second part of the analysis where the influential factors that affect the sustainable transitions process will be explored.

5.1. NDC Performance

Overall Results

Table 6.
Country Scores – South Africa

Indicators	Weighting	Score	Rank
GHG per Capita - current level (incl. LULUCF)	10%	57.3	38
GHG per Capita - current trend (excl. LULUCF)	10%	48.7	15
GHG per Capita - compared to a well-below-two-degrees benchmark	10%	41.6	45
GHG 2030 Target - compared to a well-below-two-degrees benchmark	10%	65.2	43
Share of Renewable Energy in Energy Use - current level (incl. hydro)	5%	9.4	48
Renewable Energy - current trend (excl. hydro)	5%	18.4	48
Share of Renewable Energy in Energy Use (excl. hydro) - compared to a well-below-two-degrees benchmark	5%	9.4	51
Renewable Energy 2030 Target (incl. hydro) - compared to a well-below-two-degrees benchmark	5%	20.7	45
Energy Use (TPES) per Capita - current level	5%	66.9	27
Energy Use (TPES) per Capita - current trend	5%	53.3	15
Energy Use (TPES) per Capita - compared to a well-below-two-degrees benchmark	5%	63.3	33
Energy Use (TPES) 2030 Target - compared to a well-below-two-degrees-benchmark	5%	54.5	42
National Climate Policy	10%	47.5	37
International Climate Policy	10%	74.2	16
	100%	48.25	39

Table 6: Country Scores – South Africa (Germanwatch e.V. et al., 2018f)

Like many other countries, South Africa's efforts towards combatting climate change do not yet meet the well-below-2°C goal of the Paris Agreement. At the moment, South Africa's efforts are highly insufficient and consistent with warming between 3°C and 4°C (cf. Climate Analytics, NewClimate Institute, & Ecofys, 2018c).

Nonetheless, South Africa has improved its performance by nine ranks compared to the previous year's assessment and now ranks at 39th place in the CCPI 2019 (cf. Burck et al., 2018, p. 19). Its low scores in 'Renewable Energy' can be traced back to the large share of coal in the energy generation, also leading to a weak performance in 'GHG emissions'. While South Africa's scores in the other categories are better, their efforts only suffice for a medium rating. There are, however, a number of processes currently underway to address some of these shortcomings (cf. Burck et al., 2018, p. 19), which can lead to an improved rating in the years to come.

GHG Emissions

With a total low rating, South Africa only ranks 37th in the category of 'GHG emissions' (cf. Germanwatch e.V. et al., 2018c). Although historic emissions per capita have sunken since 1990, South Africa's historic emissions per capita in 2016 are not compatible with the well-below-2°C pathway as well as their 2030 GHG emission reduction target that is above the well-below-2°C pathway (cf. Germanwatch e.V. et al., 2018c). This explains the mediocre scores in all sub-categories, although according to expectations South Africa will get close to achieving its set NDC commitments (cf. Climate Analytics, NewClimate Institute, & Ecofys, 2018b). The overall weak GHG emission reduction is due to the fact that industrial and building energy consumption is largely based on electricity that is produced with high carbon intensity using domestic coal (cf. Climate Analytics et al., 2018b). Other GHG emitters are the steel and cement production (cf. Climate Analytics et al., 2018b).

In order to improve the weak GHG emission reduction, South Africa plans to introduce a carbon tax for fossil fuel combustion emissions, industrial processes and product use emissions, and fugitive emissions such as from coal mining (cf. Climate Analytics et al., 2018b). While the proposed Carbon Tax Bill was first introduced to parliament in 2010, the parliament has finally approved the bill on 19 February 2019 (cf. Reuters, 2019). When it will come into effect in June 2019, the new law will start at a rate of 120 rands ($8.48) per tonne of carbon dioxide equivalent (cf. Reuters, 2019). Time will tell if the Carbon Tax will help South Africa improve their GHG emission reduction efforts.

Renewable Energy

Ranking only at 53rd, South Africa scores the weakest in the category 'Renewable Energy' with a total rating of very low (cf. Germanwatch e.V. et al., 2018d). This can be traced back to the extremely high share of coal-fired power generation of nearly 90% of the overall electricity generation (cf. International Energy Agency, 2016c). Renewables only make up approx. 4% (incl. hydro, 2.5% excl. hydro) of the overall electricity generation (cf. International Energy Agency, 2016c), thus leading to the weak scores in the current level of renewable energy in energy use (incl. hydro) as well as compared to a well-below-two-degrees benchmark.

Nonetheless, South Africa is also making progress as its key emission reduction policies such as the Integrated Resource Electricity Plan (IRP) intend to expand the electricity capacity through renewable energy technologies (cf. Climate Analytics et al., 2018b). The aim of the IRP is to more than triple the installed renewable energy capacity from wind, solar and gas between 2010 and 2030 (cf. Climate Analytics et al., 2018b), thereby also reducing the GHG emission strongly. Despite these efforts to positively change its energy generation, South Africa has also announced the construction of new coal capacity power plants in 2018, although it plans to decommission 12 GW of coal generation capacity by 2030 (cf. Climate Analytics et al., 2018b). These new developments are not only incompatible with the full decarbonisation of the energy sector of the well-below-2°C goal, but they also illustrate the deviation from previous efforts under former President Jacob Zuma's government (cf. Climate Analytics et al., 2018b). These overall mixed efforts also lead to a weak score in the current trend regarding renewable energy (excl. hydro) as well as in South Africa's Renewable Energy 2030 Target (incl. hydro) due to the high gap from 2030 target to well-below-2°C pathway (cf. Germanwatch e.V. et al., 2018d).

Energy Use

In the category 'Energy Use' South Africa scores better than in the previous categories, ranking 28th (cf. Germanwatch e.V. et al., 2018b). Overall, South Africa managed to reduce its historic energy use per capita, however failing again to meet the well-below-2°C pathway (cf. Germanwatch e.V. et al., 2018b), resulting in mediocre scores in the current level of energy use per capita and its compatibility with the well-below-two-degrees benchmark. Since South Africa's 2030 target is also again above the well-below-2°C pathway, it ranks the worst in the 2030 target sub-category. Overall, South Africa shows some effort in reducing its energy use, however, its current trend is only mildly promising, thus leading to a total medium rating.

Climate Policy

Compared to all other categories, South Africa scores best in 'Climate Policy' ranking 26th with a total medium rating (cf. Germanwatch e.V. et al., 2018a). Nationally South Africa has introduced several climate policies that aim to reduce GHG emissions through the increase of renewable energy. These policies such as the Integrated Resource Electricity Plan (IRP), Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) and National Energy Efficiency Strategy (NEES), all attempt improve the situation in order to offer affordable and clean energy (SDG 7), with mixed success. Overall, South Africa's national climate policy efforts are scored mediocre as they lack a clear emissions reduction strategy, a plan to stop the subsidising of fossil fuels and a coal phase-out plan (cf. Burck et al., 2018, p. 19). South Africa scores better in their international climate policy performance, in parts due to their long-term relationship with the IEA and their undertaking of a wide range of mutually beneficial co-operation projects (cf. International Energy Agency, 2018a).

5.2. Influencing Factors

5.2.1. Development aid and Climate finance

According to McCarthy (2014), South Africa ranks fourth among the top 10 countries benefitting the most from multilateral climate finance, with USD 466.47 Million (see figure 3). While South Africa has communicated its overall finance needs of USD 0.42 – 30.8 billion in a low mitigation scenario or USD 3.4 – 29.8 billion (cf. UNFCCC, 2016b), there is no clear breakdown of financial needs for neither adaptation and mitigation as well as no indication of any request for financial assistance. This seems unrealistic as domestic investment into capacity to facilitate climate action has only increased from USD 0.29 million to USD 1.4 million from 2011 to 2015 (cf. UNFCCC, 2016b), thus it is apparent that there is a clear need for foreign investment if South Africa is to meet its NDC commitments.

The financial assistance through climate finance has increased in recent years and South Africa has been one of its beneficiaries. With no clear priorities communicated in their NDCs, funds for projects in South Africa are generally distributed equally between adaptation and mitigation projects in accordance with the 50-50 balance of mitigation and adaptation (cf. UNFCCC, n.d.a).

While most of the multilateral climate finance is provided by the big climate funds the GEF, CIFs – in this case the CTF – and the GCF (see table 7), the funds place their own priorities in terms of focal areas. While the CTF and GCF are both leaning towards mitigation projects (cf. CIFs, 2015b; GCF, n.d.b), the GEF is foremost promoting adaptation projects (cf. GEF, n.d.b).

Table 7.
Multilateral Climate Finance – South Africa

Climate Fund	Number of projects	Total Grant Funding (in Mio. USD)	Additional Co-Financing (in Mio. USD)
GEF	105	583.10	5886.65
CIFs / CTF	7	431.25	4310.89
GCF	4	687.60	1517.54

Table 7: Multilateral Climate Finance – South Africa (CIFs, 2015b; GCF, n.d.b; GEF, 2016b)

While both adaptation and mitigation programmes contribute to sustainable transitions, mitigation projects often promote GHG emission reduction through sustainable energy transitions towards renewable sources. The CTF targets this focal area by attempting to diversify South Africa's energy mix to move away from high carbon intensity energy production through domestic coal (cf. CIFs, 2015b; Climate Analytics et al., 2018b). A USD 500 million CTF investment plan has been created in order to manage high up-front capital costs, first-mover risks, and other barriers to public and private investment in wind, solar, and energy efficiency as well as bridge the cost gap of transitioning from coal power generation to sustainable renewable energy sources by providing positive incentives for investment stakeholders (cf. CIFs, 2015b). The GCF project portfolio follows a similar direction towards sustainable energy transition in South Africa while offering a slightly more diverse portfolio at the same time by not only focussing on mitigation projects but also on cross-cutting projects (cf. GCF, n.d.b). Despite the lack of adaptation projects, the project portfolios of the CTF and GCF take South Africa's current situation and immediate needs into account, thus focussing on GHG emission reduction efforts and the transformation of the national power sector that relies on coal for over 85% of its electricity generation (cf. CIFs, 2015b). Hence, both programmes support South Africa's efforts to transition towards a sustainable low-carbon economy by investing heavily in renewable energy including the development of 100 MW of wind and 100 MW of concentrated solar power (CSP) generation capacity (cf. CIFs, 2015b), thereby assisting in "[…] replac[ing] an inefficient fleet of ageing coal-fired power plants with clean and high efficiency technology going forward." (UNFCCC, 2016b).

In contrast to this strong focus on mitigation projects, the GEF's project portfolio consists of over 100 projects in South Africa (see table 7) that mainly concentrate on adapting to the impacts of climate change that South Africa is especially vulnerable to, such as water and food security (cf. UNFCCC, 2016b). Therefore, focal areas such as Biodiversity, Land Degradation, Climate Change and International Waters were chosen (cf. GEF, n.d.b). The same problem arises in this case as with the CTF and the GCF portfolio, that is that there is no sufficient balance between adaptation and mitigation projects. Despite the large number of projects by the GEF, only a small number of projects can be considered mitigation or cross-cutting projects (cf. GEF, n.d.b). Nonetheless, the wide range of focal areas significantly contributes to South Africa's transition efforts towards sustainability.

Key findings

The amount of climate finance invested alone by these three big climate funds (see table 7) illustrates the gap in financial capacity in South Africa. Despite the lack of indication in their NDC of needs for financial assistance, South Africa is one of the top beneficiaries of climate finance (see figure 3). This could indicate some sort of incomprehension of the situation or unrealistic expectations, as it is apparent that South Africa would be unable to fulfil its commitments set out in the NDCs without development aid, especially climate action designated investments. While South Africa's dependence on climate finance is out of the question, it seems also slightly unappreciative of such a key recipient of foreign aid to not mention the need or request for aid in their NDC. Other than that, it should be apparent that there is a link between foreign aid and sustainable transitions in South Africa, as the domestic investment capacity is far too small to transition towards a sustainable economy, let alone successfully fulfil all commitments set in their NDCs. Thus, climate finance strongly influences the success or failure of sustainable transitions in South Africa and thereby also their NDC performance.

5.2.2. Economic and environmental factors

Being Africa's largest economy, "[…] South Africa is also the world's eighth largest per capita emitter of greenhouse gases" (cf. CIFs, 2015a) due to its dependency on carbon-heavy coal energy production. However, South Africa has pledged to reduce these emissions as its ration of GHG emissions to economic output is one of the highest among comparable economies (cf. OECD, 2013) and therefore need to be reduced drastically. A key step towards mitigating these conditions is the reduction of explicit and implicit subsidies for coal used in electricity genera-

tion (cf. OECD, 2013) and creating economic incentives for investment in sustainable energy resources such as renewables.

In their NDCs South Africa describes itself to be especially vulnerable to the impacts of climate change, "[…] particularly in respect of water and food security, as well as impacts on health, human settlements, and infrastructure and ecosystem services." (UNFCCC, 2016b). The country is struggling with poverty and inequality which South Africa plans to combat by creating decent employment for which it requires sustainable economic development (cf. UNFCCC, 2016a). While the mentioning of sustainable economic growth in their NDCs is a good indication for their efforts towards sustainable transitions, South Africa is presently confronted with an energy challenge that is stalling their economic growth and development (cf. UNFCCC, 2016a). The transition towards sustainable renewable energy sources could improve their economic situation as it entails the independence of GHG emission heavy fossil resources as well as potential foreign investment to boost this development.

Environmental factors

Situated in the most southern part of Africa, South Africa lies within a drought belt which contributes to the significant impacts of climate change on the country as rainfall patterns fluctuate constantly (cf. UNDP, n.d.). With the increase in temperatures due to climate change, the rainfall will continue to decrease (cf. UNDP, n.d.) which will lead to a lack of water resources threatening the environment, the economy and the people of South Africa. Due to its geographic circumstances, South Africa needs to invest in sustainable transitions otherwise the decline in water resources will endanger the livelihood of its people as it directly affects the agriculture sector and thus also food security. As South Africa's economic growth is highly dependent on the agriculture and forestry sector, its vulnerability to the change of climate conditions is threatening the productivity of these sectors (cf. UNDP, n.d.) and thus its economic development. Ultimately, the economic loss due to the threat of water shortage in the agriculture sector will eventually pressure South Africa to invest in sustainable adaptation programmes. Environmentally, South Africa is in danger to lose its biological diversity, threatening the tourism industry which is another key driver of South Africa's economic development (cf. UNDP, n.d.). Furthermore, the change of climate conditions concerning the rise of temperature and the decrease of rainfall could promote the spread of diseases such as malaria (cf. UNDP, n.d.). Overall, the environmental circumstances strongly illustrate that environmental degradation

due to climate change and economic exploitation have to be stopped by promoting sustainable transitions that facilitate much-needed adaptation programmes.

Economic factors

While South Africa has made significant progress towards becoming more environmentally friendly, its economy remains highly carbon-intensive with economic growth endangering its ecosystem as many of its rivers and lakes are polluted as well as the well-being of its people due to air pollution through indoor coal and paraffin stoves (cf. OECD, 2013). In the first OECD Environmental Performance Review of South Africa, the country's efforts to promote environmental reforms are recognised, however the country is also urged to follow the green growth model in order to transition towards a low-carbon economy "[…] that will improve the well-being of all South Africans and preserve its rich natural habitat." (OECD, 2013). This shows that the economic development is strongly supported and recognised by important actors such as the OECD, however, it also shows that South Africa still has a long way to go. The progress that the country has made so far has been significant, nevertheless, South Africa seems to have neglected its environmental responsibilities in favour of economic growth. That is why the country has to focus more on green growth like the OECD has suggested, in order to protect its biodiversity and provide a sustainable economy that does not harm its citizens.

However, South Africa has also developed legal and regulatory environmental frameworks, including the Green Economy Accord which facilitates partnerships with the private sector and other stakeholders to promote green growth (cf. OECD, 2013). Nevertheless, the country is still struggling to reconcile its ambitious environmental policies with its environmentally exploitative economic growth in sectors such as agriculture, manufacturing, mining and mineral processing, urban development, forestry and fisheries (cf. OECD, 2013). Other policies like the carbon tax that was just approved in February 2019 (cf. Reuters, 2019) might put a strain on economic growth in the developing country, however, help South Africa transition further towards a green economy.

Key findings

Overall, it is apparent that South Africa has put significant efforts into protecting its environment and to transition towards a more sustainable economy. Nevertheless, the country still struggles to fulfil its green growth plans as its key economic sectors are those that foster environmental exploitation and degradation. Looking at its energy challenge, South Africa has

relied on carbon-intensive resources for too long and is now struggling to transition towards sustainable sources of energy. This development is similar to most industrialised countries that follow conventional economic growth patterns and now struggle to transition to renewable energy due to many reasons, including job loss in the energy sector. It is clear that the country is interested and invested in the transition process towards a more sustainable future, however, it is struggling with setting its priorities in a way that no one and nothing gets left behind. Ultimately, both environmental and economic factors strongly influence the sustainable transition process and thus also South Africa's NDC performance.

6. Comparative Analysis

Based on the assumptions made at the beginning of this study, the comprehensive analysis of the two cases has yielded new insights into understanding differences in NDC performance. Looking at the individual national circumstances and efforts, the differences between the countries could not have been bigger.

Despite Morocco only being a lower middle income economy (cf. UN, 2018, p. 144), its climate action efforts are unprecedented as it is one of only two countries that are compatible with the 1.5°C Paris Agreement pathway (cf. Climate Analytics et al., 2019b). This makes Morocco a key player in terms of strong performance and achievement of their NDC commitments not only on the African level but also on a global level.

South Africa, on the other hand, is struggling with keeping up their efforts towards combatting climate change, being Africa's largest economy, they are the world's eighth largest per capita emitter of greenhouse gases (cf. CIFs, 2015b). Thus, their climate action efforts do not yet meet the well-below-2°C goal of the Paris Agreement, however, the country is continuing to improve its performance by addressing its current shortcomings.

Generally, Morocco's case seemingly confirms the observation that some countries are simply doing better than others. However, South Africa has not been inactive regarding climate action, their efforts are just not sufficient yet.

6.1. NDC Performance

Looking at the country performance data of the CCPI, Morocco is ranked second-best at 5th place, while South Africa is ranked low at 39th place (cf. Germanwatch e.V. et al., 2019b). This shows the great discrepancies between the two countries regarding overall country performance.

While Morocco has improved its overall performance over the years, it has also been struggling to implement their ambitious plans especially regarding the sustainable transition towards renewable energy. Having heavily relied on carbon-intensive coal energy production before, the country is now attempting to achieve a more balanced energy mix, with 42% of the total energy gained from solar, wind, and hydroelectric sources by 2020 (cf. CIFs, 2015a). This shows that the country is actively increasing its efforts to transition towards a more sustainable economy by making use of their geographic circumstances and exploiting their extensive wind and solar resources. Thus, Morocco is well on track to successfully meet its NDC commitments as the government has stepped up its role in international action on climate change (cf. International Energy Agency, 2016a).

South Africa however, like many other countries, is not meeting the conditions of the well-below-2°C goal of the Paris Agreement yet. Compared to Morocco's efforts that are compatible with the 1.5°C Paris Agreement pathway (cf. Climate Analytics et al., 2019b), South Africa's measures towards combatting climate change are rather consistent with warming between 3°C and 4°C (cf. Climate Analytics et al., 2018c). Despite these underwhelming projections, South Africa has improved its performance by nine ranks compared to the previous year's assessment. Similar to Morocco, the reason for their weak performance is the large share of coal in the energy generation, thus South Africa is now attempting to find solutions that bridge the cost gap regarding coal power generation by providing positive incentives for stakeholders to invest in the diversification of the country's energy mix (cf. CIFs, 2015b). This illustrates South Africa's motivation and efforts to transform their country's energy sector in order to keep up with their NDC commitments. While the country might not compare to the exceptional performance of Morocco, South Africa has increased its efforts to address its shortcomings, which will hopefully lead to a continued improvement of their NDC performance.

6.2. Influencing Factors

6.2.1. Development aid and Climate finance

During the individual assessment of the two cases, the expectation that foreign aid, especially in form of climate finance, has an effect on sustainable transitions, has been confirmed. The observations made in both cases strongly suggest a dependency on development aid in order to fulfil each country's NDC commitments.

In their NDCs, Morocco had already communicated their need for financial assistance, thus showing their realistic expectations and their understanding of the responsibility that they are bearing. Accepting their dependence on international climate finance produces the link to their successful performance regarding the achievement of their NDCs as specifically climate action designated investments are supporting Morocco in their efforts towards sustainable transitions.

South Africa, on the other hand, has made no indication of their need for financial assistance in their NDCs, despite the fact that there is a clear domestic financial gap as the country is unable to fund their sustainable transition process by themselves. In order to fulfil its NDC commitments, the country has to rely on financial assistance, especially climate action designated investments. Without recognising and accepting their need for support, the country displays unrealistic expectations and incomprehension of their responsibility. Nonetheless, the link between development aid and successful sustainable transitions is visible, even though South Africa might not recognise it.

6.2.2. Economic and environmental factors

While the influence of development aid is more straightforward, economic and environmental factors also play a key role in the sustainable transition process in both cases. As discussed in the theory, national circumstances of a country form the prerequisites for climate action and influence their motivation and efforts to fulfil their NDC commitments.

Morocco is ambitiously moving towards a more sustainable future, however, struggling at times to reconcile their economic growth and environmental sustainability. Despite its extensive plans to increase its renewable energy capacity, the country's economic growth rests on the productivity of the energy sector that is still highly carbon intensive. This is a problem that many countries are currently facing in regard to fulfilling their NDC commitments. Nonetheless, Morocco's decisive climate action shows their willingness to accelerate its transition process in

order to become an environmentally friendly and sustainable economy, unlike many industrialised countries.

Opposite to that, South Africa has been recognising its responsibility to protect its environment for some time and thus, has been focussing on transitioning towards a more sustainable economy. Despite its significant efforts, the country is, however, still struggling to find feasible solutions for transitioning its key economic sectors that foster environmental exploitation and rely heavily on carbon-intensive resources. As South Africa has communicated its priority to combat poverty, it is having trouble to reconcile the short-term issue of job loss in the coal industry with the long-term solution of independence of expensive fossil resources through the investment in renewable energy. Nonetheless, the country is continuing to move forward towards more sustainability in all of its sectors which proves its commitment as well as the influence of economic and environmental factors on the sustainable transitioning process.

6.3. Key findings

Overall, both countries have chosen different paths towards the achievement of their NDC commitments. While Morocco has proven itself to be a role model in climate action and the achievement of their NDCs, South Africa has only shown limited willingness to increase their climate action efforts that currently are simply not sufficient.

With its ambitious climate policies, Morocco is well on track to strongly reduce its GHG emissions by facilitating an extensive increase in renewable energy towards 42% of the total energy coming from renewable sources by 2020 (cf. CIFs, 2015a), thus confirming the high expectations of this study. Despite its minor struggles in certain areas, the country is showing its commitment to actively combat climate change and explains its successful NDC performance.

South Africa, however, is still struggling with increasing their climate action efforts, as they are facing the issue of poverty that is clearly intertwined with the sustainable transition process. With being the largest economy on the African continent comes the responsibility to its citizens and thus, South Africa's priority to combat the struggle of reconciling a prosper economy with sustainability is understandable. Nevertheless, the sustainable transformation of its economy is essential to its future economic growth as independence of expensive fossil resources will be the most sustainable long-term solution, despite possible short-term issues.

Thus, it has become clear that differences in climate action efforts strongly depend on individual countries' circumstances. In the case of developing countries, the need for financial assistance

also plays a key role in achieving NDC commitments, however as this research suggests, each country is facing different struggles, which is what makes it so complex to compare countries' efforts.

7. Conclusion and Discussion

After the comprehensive analyses of the two exemplary cases, the answer to the main research question is much more tangible than before. During the course of the analysis, many similarities between the two countries have become visible. Both countries have relied on carbon-intensive energy sources for too long and are now in the process of transitioning towards a greener and more sustainable economy. Nonetheless, there are also many differences between the countries as it is evident that Morocco is simply performing better regarding the achievement of their NDC commitments than South Africa. This can be traced back to different causes such as climate policy and national circumstances. Overall, both countries have increased their climate action efforts over the years, however, Morocco's climate policies are more ambitious, and changes made are more significant, thus leading to better rankings in the NDC performance review. Reasons for why South Africa has not made or was not able to make more meaningful changes is, for example, the struggle of reconciling poverty due to job loss in the coal industry with the advancement of renewable energy. As Morocco is mainly importing coal, this problem does not directly affect them.

Furthermore, looking at the influential factors it has become evident that they do affect the sustainable transitioning process in both countries, however, key differences can be observed here too. Firstly, while Morocco recognises its need for financial assistance and clearly communicates this need in their NDCs, South Africa shows no indication of need for foreign support, despite there being a clear financial gap in their domestic budget. While this could be seen as just a minor issue, it does also give an indication of the countries' understanding of responsibility. Committing to the Paris Agreement and their own NDCs entails responsibilities not only in regard to their own citizens but the global community. Both countries are dependent upon foreign aid to fulfil their NDC commitments, thus disregarding this external assistance displays an incomprehension of the gravity of the situation and might also explain why Morocco, the country with more realistic expectations, is performing better in achieving their NDCs.

Secondly, the economic and environmental circumstances in both countries are very different from the begin with, thus exercising different influences on the sustainable transition process in each country. While Morocco belongs within the lower-middle-income economies, South Africa is the biggest economy on the African continent. This ultimately means that both countries have different abilities and capacities to deal with the process of sustainable transitions. While both countries are struggling to reconcile economic growth and environmental sustainability, Morocco is making efforts to transform its economy by promoting green growth. South Africa, however, is rather following more conventional economic growth patterns and thus now confronted with the transition from carbon-intensive energy sources towards renewables. This rather conventional economic development has led to worse NDC performance scores as low-carbon renewable energy will be the sustainable long-term solution. Furthermore, Morocco has made use of its geographic circumstances and has invested primarily in solar energy capacity building. South Africa has not yet realised its full potential regarding introducing renewable energy sources, as the country has rather focused on investing in adaptation to protect its biodiversity. Nevertheless, while Morocco has explicitly stated that adaptation programmes are of immense importance in their country as well, the country has also managed to find a balance between adaptation and mitigation, thereby not only protecting its environment but also making it more sustainable.

Overall, both countries have displayed meaningful climate action efforts, however, Morocco has continuously proven to find more compromising solutions to transform the country to become more resilient. Finally, the analysis of both cases has illustrated that there are various factors that contribute to the process of sustainable transitions and has established a clear link between development aid as well as economic and environmental factors and NDC performance, thus confirming initial expectations.

Limitations of this research and future research possibilities

While methodological limitations of this research have already been discussed, there are also thematic limitations due to the scope of this bachelor thesis. Future research could explore more different influential factors on sustainable transitions, as this research has focused mainly on climate-relevant factors because the overall topic is foremost related to climate change with the NDCs as means for climate action rise. Thus, there are other factors that could possibly affect the sustainable transition process that may not directly be linked to climate change such as the

political system. Exploring a wide variety of possible influential factors could provide more diverse insights into reasons for differences for NDC performance.

Furthermore, the scope of this research has been narrowed to include only two exemplary cases from the group of developing countries and thus, could be extended to include emerging economies and developed countries. One could expect different outcomes for these different country groupings, thus assessing differences in NDC performance in all three country groupings could yield more representative outcomes. Overall, however, there are numerous possibilities to expand this study which could lead to more universal conclusions.

Implications of this research for policymakers

Despite the lack of scientific discussion on this specific topic, this research can provide key insights for policymakers. While an official system to measure NDC performance is still in the works, the NDC performance indices by Climate Analytics et al. and Germanwatch e.V. et al. provide meaningful intel on the development of countries regarding the achievement of their NDCs. Having analysed this data, the conclusions that have been drawn suggest that there is still room for improvement for policymakers both nationally and globally. Especially in the case of developing countries, the collaboration of domestic and foreign forces is key to successful sustainable transitions which ultimately lead to a good NDC performance.

As foreign aid is imperative for developing countries to fulfil their NDC commitments, introducing NDC targeted investments through climate finance could support countries' efforts. While at the moment foreign aid and climate finance are supposed to contribute to the SDGs, policymakers could expand this criterium to include NDC facilitating activities. This extended focus of financial assistance could significantly improve countries' NDC performance by effectively forcing them to scale up their efforts through NDC facilitating programmes.

Furthermore, the insights of this research should encourage policymakers to raise more awareness of the responsibilities each country is bearing for the global community and that failing to fulfil the NDC commitments is not an option for a sustainable future. This does not only apply to developing countries but also to industrialised countries as each degree over the well-below 2°C goal will have significant global implications.

Overall, this research has aimed to illustrate the relevance of this topic as environmental issues are not at the margins of the international agenda anymore but have become "[…] arguably the most important [issue] faced by humankind." (Baylis, Smith, & Owens, 2017, p. 399). Despite this study's focus on developing countries, this research is providing a better understanding of the transition process towards a better NDC performance. These academic insights could contribute to policymakers' expertise for a more concrete and effective roadmap to the successful implementation of countries' NDC commitments and thus lead to beneficial outcomes for society in terms of improved and targeted climate action efforts for a sustainable future for everyone.

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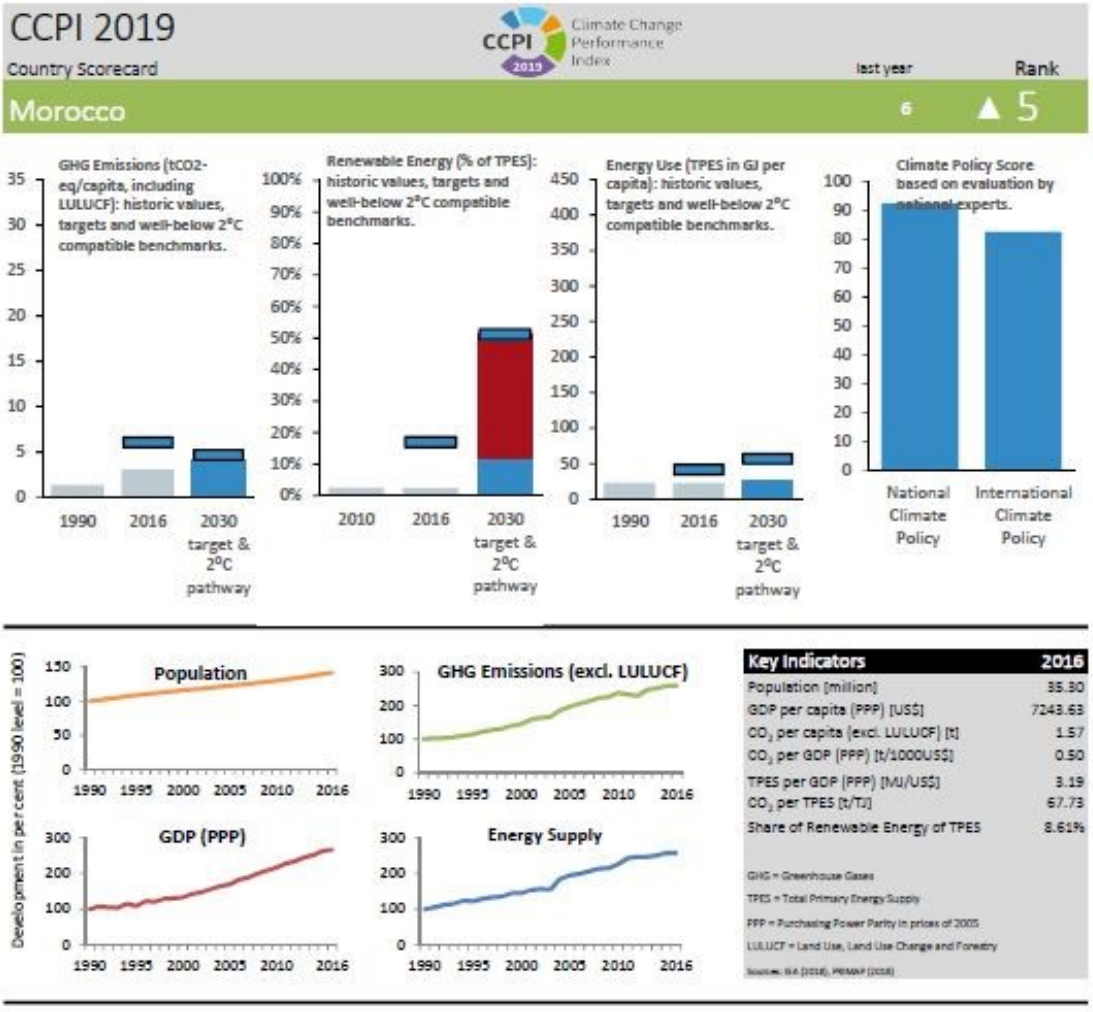
9. Appendix

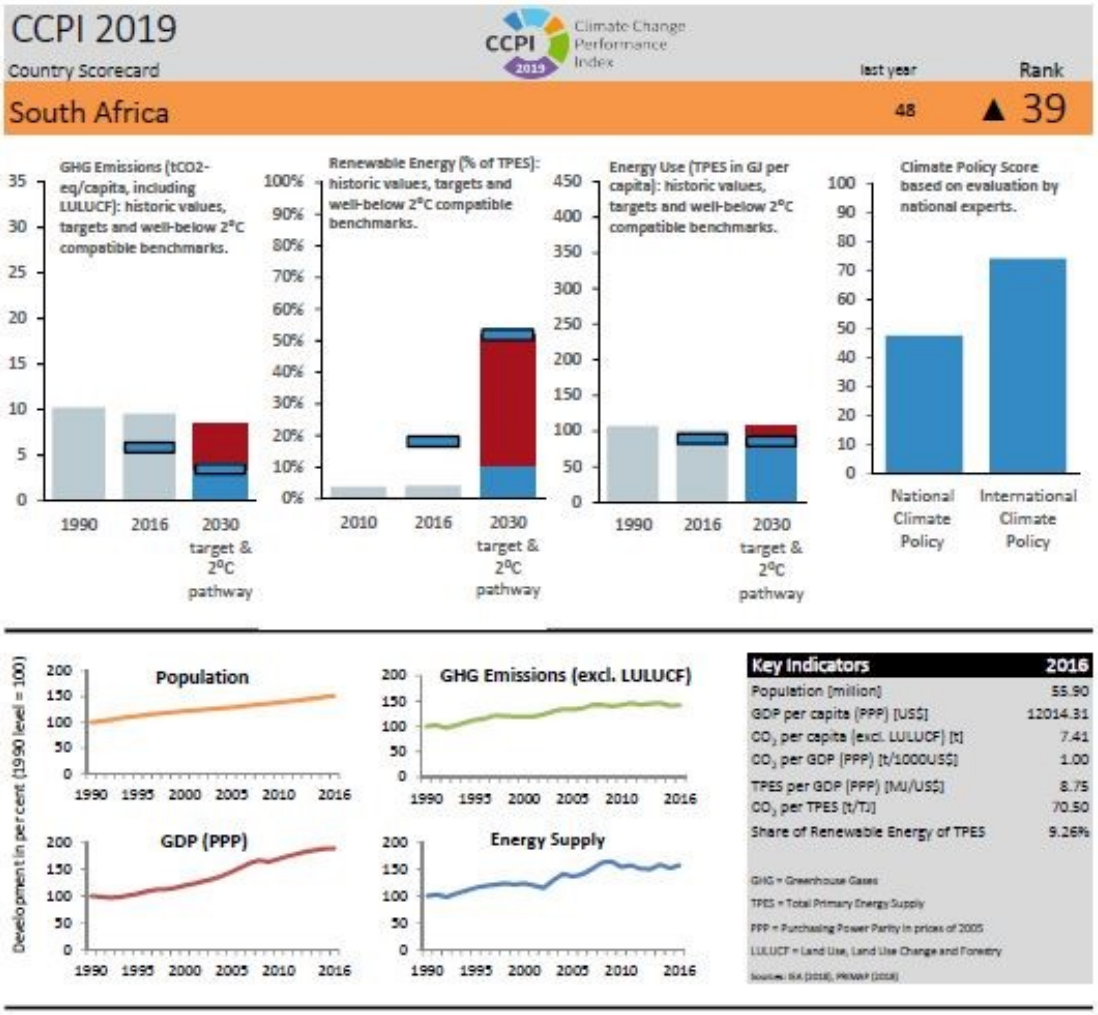
9.1. Data Appendix

Country Data Morocco (Germanwatch e.V. et al., 2018e)



Indicators	Weighting	Score	Rank
GHG per Capita - current level (incl. LULUCF)	10%	90.7	6
GHG per Capita - current trend (excl. LULUCF)	10%	12.5	52
GHG per Capita - compared to a well-below-two-degrees benchmark	10%	87.6	6
GHG 2030 Target - compared to a well-below-two-degrees benchmark	10%	98.5	6
Share of Renewable Energy in Energy Use - current level (incl. hydro)	5%	5.5	53
Renewable Energy - current trend (excl. hydro)	5%	100.0	4
Share of Renewable Energy in Energy Use (excl. hydro) - compared to a well-below-two-degrees benchmark	5%	11.9	43
Renewable Energy 2030 Target (incl. hydro) - compared to a well-below-two-degrees benchmark	5%	25.9	39
Energy Use (TPES) per Capita - current level	5%	100.0	4
Energy Use (TPES) per Capita - current trend	5%	37.3	39
Energy Use (TPES) per Capita - compared to a well-below-two-degrees benchmark	5%	100.0	4
Energy Use (TPES) 2030 Target - compared to a well-below-two-degrees-benchmark	5%	100.0	4
National Climate Policy	10%	92.5	5
International Climate Policy	10%	82.7	11

Country Data South Africa (Germanwatch e.V. et al., 2018f)



Indicators	Weighting	Score	Rank
GHG per Capita - current level (incl. LULUCF)	10%	57.3	38
GHG per Capita - current trend (excl. LULUCF)	10%	48.7	15
GHG per Capita - compared to a well-below-two-degrees benchmark	10%	41.6	45
GHG 2030 Target - compared to a well-below-two-degrees benchmark	10%	65.2	43
Share of Renewable Energy in Energy Use - current level (incl. hydro)	5%	9.4	48
Renewable Energy - current trend (excl. hydro)	5%	18.4	48
Share of Renewable Energy in Energy Use (excl. hydro) - compared to a well-below-two-degrees benchmark	5%	9.4	51
Renewable Energy 2030 Target (incl. hydro) - compared to a well-below-two-degrees benchmark	5%	20.7	45
Energy Use (TPES) per Capita - current level	5%	66.9	27
Energy Use (TPES) per Capita - current trend	5%	53.3	15
Energy Use (TPES) per Capita - compared to a well-below-two-degrees benchmark	5%	63.3	33
Energy Use (TPES) 2030 Target - compared to a well-below-two-degrees-benchmark	5%	54.5	42
National Climate Policy	10%	47.5	37
International Climate Policy	10%	74.2	16

9.2. Statutory Declaration

I hereby declare that I have authored this thesis independently, that I have not used other than the declared sources, and that I have explicitly marked all material which has been quoted either literally or by content from the used sources.

27 June 2019 [redacted]

Date Signature