

Abdelnaser Omran
Odile Schwarz-Herion *Editors*

The Impact of Climate Change on Our Life

The Questions of Sustainability

 Springer

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I dedicate this book to

***PROFESSOR DR. YUSNIDAH BT
IBRAHIM***

*Deputy Vice Chancellor (Academic and
International)*

*Universiti Utara Malaysia
Kedah State, Malaysia*

Preface

This book is written to help people to understand the impact of climate change and discuss its effect on our lives. This concerns particularly the question if humans are able to solve this problem. It is written at the most appropriate time when the impact of climate change is becoming increasingly visible all across the globe, having an impact on almost every society worldwide. The book at hand is supposed to increase awareness about the fact that the consequences of climate change do not only concern the ecological and the economic pillars of sustainable development but even directly affect its social pillar by posing a threat to the very existence of humankind. Meanwhile, it can no longer be denied that our climate has changed and will continue to change due to many factors. Factors often cited as possibly contributing to climate change are, inter alia, the increasing world population and the concomitant increase in the use of environmentally damaging energies partly due to the increasing use of electricity and modern technology in developing countries which previously had a more ecologically sustainable way of life in harmony with nature before they were manipulated to emulate the Western lifestyle at any price, partly due to Western consumption patterns becoming even more unsustainable. The controversies about suitable solutions to these problems are increasing.

The major theme of this book is on climate change. Which covers different topics related to its patterns in different countries and clarifies the issues related to it and its impact on our lives. Climate change is still, arguably, one of the most critical and controversial issues the world is facing in the twenty-first century. This book is organized into 12 chapters.

Chapter 1, starting with a UN quote about the impact of climate change on our lives, deals with the impact of the climate change discussion and the related sustainable development concept on society, science, culture and politics, describing its long way from the first Club of Rome (CoR) report “Limits to Growth” via a decade-long series of Climate Change Conferences to the recent Climate Change Conferences like COP21 in Paris with the subsequent Paris Agreement and the recent COP22 in Marrakech to current challenges. The author puts a certain emphasis on the abuse of the climate change topic by various actors. This includes opportunistic corporate lobbyists exploiting the Paris Agreement for merely economic

purposes as well as fearmongers among writers, film producers and scholars hindering a sober and objective discussion about climate change by stirring up irrational panic. This fearmongering along with increased time and action pressure and radical depopulation agendas involves the danger of a global dictatorship with fascist traits based on outdated concepts and ideologies rather than seeking positive, innovative and democratic solutions.

Chapter 2 starts with the topic of natural disasters, taking references to the Kelantan flood as recent representative example to be featured in this chapter. Thus, this chapter identifies and analyses the factors which caused the catastrophic flood in Kelantan state in 2014 while putting a particular focus on one of the districts of the state, named Kuala Krai District. It has been found that equally natural and human factors contributed to the catastrophic flood in Kelantan state. Moving into the major economic and health sectors and their possible contribution to controlling climate change, Chap. 4 provides an overview of the economics of climate change and health. This chapter discusses the economic costs incurred by the effects of climate change on health, through an increased burden both on individual expenditures and the national health systems. Energy and water are inextricably connected in agricultural systems. Thus, in Chap. 5, the author discusses the role of climate change on the water-energy nexus and how efforts to increase efficiency in both energy and water end-uses can increase Queensland's agricultural sector's resilience in Australia. The chapter also discusses how efficiency in energy and water end-uses can reduce the exposure of the sector to acute and chronic stressors, including high utility bills which, with climate change, are negatively impacting agricultural productivity. In contrast, Chap. 6 puts its emphasis entirely on the issue of water security and climate change issues in developing countries by introducing partnership procurement for sustainable water projects in Nigeria. The study on which Chap. 6 is based examined the current water security condition in some selected cities in Northern Nigeria, which had been the region most affected by climate change. The study outlined the partnership management approach and further highlights the potential of partnership procurement strategies for the management of sustainable urban water supply in Nigerian cities.

Looking at the impact of waste on our lives, Chap. 7 offers a new approach on waste and the issues connected to it, such as the question to which extent waste can complicate our daily actions and influence the decay of the environment. Moreover, this chapter states that renewable materials should be sorted and separated from other types of materials to avoid that they cross-contaminate each other, to increase the value of the materials and to ease the process of manufacturing. Chap. 8 identifies the factors that could sustain the municipal solid waste management and practices in Ajdabiya City in Libya.

Chapter 9 looks at fixing climate change: accounting disclosure remedies by exploring areas in which sustainability reporting could be expanded beyond corporate environmental reporting to other necessary disclosures that will curve recklessness in the course of pursuing an economic goal. In Chap. 10, the authors from Malaysia show – from the perspective of agriculture – how human activities can increase the negative impacts of climatic change by means of their lifestyle. This

chapter also tries to reduce the sometimes overexaggerated fear of climatic impacts on human beings by suggesting steps and alternatives and the possibility of international cooperative efforts. In the context of the situation in Pakistan, Chap. 11 evaluated various environmental factors and their impacts on the local tourism sector in Pakistan. Three major dimensions of the overall environment – economic and financial, social development and macroclimate changes – were selected with their key indicators based on the data sets from World Development Indicator (WDI).

The last chapter (Chap. 12) discusses anthropogenic climate change and countermeasures, focusing on the chances and risks of weather modification techniques and climate engineering (CE). The emphasis is put on the numerous and often incalculable risks of weather modification and CE technology including its potential abuse for covert warfare or other hostile purposes. This possible abuse had already been identified in the early 1960s by Harry Wexler who warned of this technology's potential to deliberately causing damage or even targeted geophysical warfare, e.g. by attacking the ozone layer over a rival nation, and also discussed this technology's capability to intentionally raise the global temperature by almost 2 °C or decrease it by over 1 °C. In any case, even those weather modification and geoengineering techniques originally developed for civil purposes can be turned into powerful weapons of war, possibly posing a much bigger threat to the planet and all life on earth than inadvertent human-made greenhouse gas emissions.

A variety of different climate change-related topics covered in this book help people to view this topical issue from many different angles, sensitizing readers for the ample challenges to human life due to climate change, ranging from changes in rainfall and high flood to drought and other extreme weather patterns and weather disasters, while also discussing the abuse of this topic for covert political and military agendas. Proposing alternative solutions, strategies and best practices such as project financing initiatives to public authorities has proven to be efficient in developed and developing countries especially in Nigeria, Australia, Malaysia, Libya, Romania, Pakistan and other countries across the world in dealing with problems caused by climate change. At times when most countries, especially developing economies, are suffering from an economic meltdown, making it difficult for them to sponsor projects, our book addresses strategies on how to deal with this challenge and is thus a must-read for faculties and schools at both local and international universities across the world.

Sintok, Malaysia

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First and foremost, I would like to express publicly my deep appreciation to my wife for her motivation and endless support throughout my career and writing this book. I also thank my two wonderful daughters (Yara and Yusra) and my son (Yazeed) for always making me smile and for understanding those weekend times when I was writing and completing this book instead of playing games or taking them out. I hope that 1 day they can read this book and understand why I spent so much time in front of my computer.

Dr. Odile Schwarz-Herion and I collaborated to find the great and professional authors that helped us write this book. In the end, I believe that the team of authors that was chosen provides the perfect blend of knowledge and skills that went into authoring this book. My sincere thanks to all the authors for devoting their time and effort towards this book. I thank each of the authors for their effort towards this book. Thanks for everything; I look forward to writing more books with you soon.

Finding a loyal friend is as hard as finding a teardrop in the ocean. I am extremely grateful to my best friend, Dr. Odile Schwarz-Herion (coeditor of this book), who constantly took keen interest in making this book a success one. Thanks dear Dr. Odile for sharing my happiness when starting this project and for encouraging me when it seemed too difficult to be completed. I would have probably given up without Dr. Odile's support and example on what to do when you really want something. You did indeed play a crucial role in making this book worthwhile.

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I also wish to express my gratitude to all those who have directly and indirectly contributed to the accomplishment of this book and my apologies for not mentioning them personally one by one.

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Chapter 1

The Impact of the Climate Change Discussion on Society, Science, Culture, and Politics: From *The Limits to Growth* via the Paris Agreement to a Binding Global Policy?



Odile Schwarz-Herion

Abstract The origin of the *Climate Change-by-CO₂-hypothesis* can be traced back to a study cited in the first *Club of Rome (COR)* report *The Limits to Growth* from 1972. The potential long-term impact of this report and subsequent reports to the Club of Rome (COR) in the 1970s marked the beginning of a series of Climate Change Conferences – from the *First World Climate Conference* in Geneva back in 1979 via the *UN Conference on Environment and Development (UNCED)* in *Rio de Janeiro* and the *Rio+ conferences* up to the *21st Conference of the Parties (COP21)* in Paris, followed by the *Paris Agreement* and the recent *COP22* in Marrakech. Since the Millennium, the Climate Change discussion, especially the predictions of the *Intergovernmental Panel on Climate Change (IPCC)*, has sparked controversies among scientists and scholars of various disciplines as shown, inter alia, by the so-called “ClimateGate”-scandal. Warlike Climate Change scenarios in weather disaster movies like *The Day After Tomorrow*, *Hell*, and *Snowpiercer* suggest that humans should act before it is too late, having a dramatic impact on the collective feeling that humankind is steering toward a climate catastrophe and the world is about to collapse. This fear might be exploited by those who strive for a binding global policy and the establishment of a global authority.

Keywords Climate Change discussion · UN Sustainable Development Goals · Club of Rome (COR) · Intergovernmental Panel on Climate Change (IPCC) · Conference of the Parties (COP) · Paris Agreement · Weather disaster movies · Global policy · Global authority

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1.1 Introduction

Climate change is now affecting every country on every continent. It is disrupting national economies and affecting lives, costing people, communities and countries dearly today and even more tomorrow. People are experiencing the significant impacts of climate change, which include changing weather patterns, rising sea level, and more extreme weather events. The greenhouse gas emissions from human activities are driving climate change and continue to rise. They are now at their highest levels in history. Without action, the world's average surface temperature is projected to rise over the 21st century and is likely to surpass 3 degrees Celsius this century... (UN 2017a).

In this statement, the UN stresses the dramatic impact of Climate Change on all pillars of Sustainable Development (economic, social, and ecological) before leading over to the *21st Conference of the Parties (COP21)* in Paris from December 2015 and the subsequent *Paris Agreement* which entered into force on November 4, 2016 (UN 2017a; UNFCCC 2017a).¹

The mandate to “take urgent action to combat climate change and its impacts” is listed as Goal 13 of the UN *Sustainable Development Goals* (UN 2017b). The inclusion of Climate Change as partial aspect of the ecological pillar of *Sustainable Development (SD)* into the UN *Sustainable Development Goals (SDGs)* links Climate Change directly to SD which might be defined as a development preserving existing essential items, systems, and values while adapting to new conditions in a flexible way under consideration of ecological, social, and economic aspects (Schwarz-Herion 2015a).

The SDGs are based on the *Rio + 20* outcome document *The Future We Want*. This document had set out mandates “...to establish an Open Working Group to develop a set of Sustainable Development Goals for consideration and appropriate action by the General Assembly at its 68th session...” (UN 2017b) and to ensure that the SDGs would be “...coherent with and integrated into the UN development agenda beyond 2015...” (UN 2017b).

The IPCC's reported findings include an average global temperature increase by 0.85 °C from 1880 to 2012, resulting into a decline in grain yield of maize, wheat, and other significant crops by 40 megatons per year from 1981 to 2002, an expansion of the oceans with a rise of the global average sea level by 19 cm due to warming and melting ice, and a shrink of the Arctic sea with a 1.07 million km² of ice loss per decade since 1979 (UN 2017a, with further references). According to the IPCC, “...it is likely that by the end of this century, the increase in global temperature will exceed 1.5°C...” (UN 2017a, with further references) as compared to the period from 1850 to 1900, the average sea level will rise by 24–30 cm in 2065 and 40–63 cm in 2100 due to the current concentrations and continued emissions of greenhouse gases, and “...most aspects of climate change will persist for many centuries even if the emissions are stopped” (UN 2017a, with further references).

Furthermore, the IPCC states that there were an increase of global CO₂ emissions by almost 50% since 1990 and a faster growth of emissions between 2000 and 2010

¹United Nations Framework Convention on Climate Change.

than in any of the previous decades. The IPCC claims that a range of technological measures along with a “major institutional and technological change” (UN 2017a) will significantly increase the chance that “global warming will not exceed this threshold” (UN 2017a). So, the IPCC which is currently in its Sixth Assessment cycle (IPCC 2017a) expressly encourages technological innovations along with political reforms to deal with Climate Change.

Although the IPCC report cites concrete numbers and figures, the word “likely” regarding a certain temperature increase at the end of this century shows that the extent of Climate Change could not yet be fully clarified according to the IPCC. Other aspects of Climate Change remain equally controversial among scientists and scholars (PPO 2017a; Costella 2010). This includes the question if Climate Change is mainly due to natural or to human factors; the question whether mainly CO₂ and other greenhouse gases from **inadvertent** human activities like burning fossil fuels for industry, households, and street traffic or **deliberate** human activities like covert targeted weather modification and climate engineering are the main causes of Climate Change; as well as the question in how far anthropogenic (human-made) Climate Change is responsible for weather disasters and extreme weather patterns like heat waves, droughts, and frost (PPO 2017a; Costella 2010; Spencer 2007). Repeated claims of a “97% consensus” concerning supposed findings for certain Climate Change causes (Cook et al. 2013; NASA 2017) have triggered serious criticism (Ritchie 2016; Tuttle 2015).

Science is always in motion. An alleged “consensus” about any scientific finding is problematic and often untenable – especially if there are strong indicators that industrial lobbyists, covert political transformers, and influential church leaders try to shape people’s opinion about certain topics. Climate Change can only be tackled successfully if many different opinions of unbiased scientists and scholars are thoroughly researched and logical conclusions are drawn from their findings to figure out the main causes of Climate Change.

Especially the true origin and the further development of the mono-causal *Climate Change-by-CO₂-hypothesis* in the period after the Second World War are still basically unknown to the general public. Since information and enlightenment are essential for an objective scientific discussion on Climate Change, the chapter at hand is supposed to fill this gap.

1.2 *The Limits to Growth* and Its Impact on Ecology, Economy, Politics, and Science

In 1972, a scientific report to the *Club of Rome*²(COR) entitled *The Limits to Growth* (Meadows et al. 1972) did not only discuss potential limits of further exponential economic growth, exponential population growth, industrialization, environmental

²Detailed information on the Club of Rome can be found on its website (Club of Rome 2017a).

pollution, food production, and exploitation of natural resources but also did the following startling prediction:

At present about 97 percent of mankind's industrial energy production comes from fossil fuels (coal, oil, and natural gas). When these fuels are burned, they release, among other substances, carbon dioxide (CO₂) in the atmosphere...the measured amount of CO₂ is increasing exponentially apparently at a rate of about 0.2 percent per year...If the energy source is something other than incident solar energy (e.g. fossil fuels or atomic energy) that heat will result in warming the atmosphere....(Meadows et al. 1972 with references to Machta 1971; UN Department of Economic and Social Affairs 1970; Bolin 1970; Inadvertent Climate Modification 1971)

This statement was based on observations of atmospheric concentrations of CO₂ at Mauna Loa, Hawaii, in 1958 which had reportedly increased steadily and averaged ca. 1.5 parts per million (ppm) each year. Calculations considering the well-known exchanges of CO₂ between atmosphere, biosphere, and the oceans predicted that the CO₂ concentration would reach 380 ppm by the year 2000, forming an increase of almost 30% of the supposed value in 1860. This "exponential increase in atmospheric CO₂" (Meadows et al. 1972 with reference to Machta 1971) was attributed to man's growing combustion of fossil fuels (Meadows et al. 1972 with reference to Machta 1971).

So, anthropogenic warming by industrial CO₂ emissions was already addressed in the early 1970s as a side aspect of this report which focused on the limits of economic growth and population growth due to reportedly increasingly scarce resources like food and fossil energies (Meadows et al. 1972). Written for the Club of Rome (COR) by an MIT research team under Dennis and Donella Meadows, *The Limits to Growth* was widely disseminated on a global base – with 12 million copies and translations into 37 languages (Suter 1999). Nonetheless, back then, *The Limits to Growth* was mainly embraced by environmentalists, whereas most politicians, managers, and economists showed little interest in it (Colombo 1997); some scientists and scholars even openly criticized it (Solow 1973; Shubik 1972; Kaysen 1972).

Already MIT scientist Jay Forrester's *World Dynamics* model (*World2*) as precursor model of the *World3* model on which *The Limits to Growth* was based had been criticized because of the model description of the world as a nonlinear feedback system, the application of computer modeling for social developments, and the infringement of scientific approach in the absence of empirical verifiability of the validity of such models (Shubik 1972). *The Limits to Growth* was mainly criticized by economists who considered the demand for a general state of equilibrium as unrealistic, arguing that the limitation of the raw materials was not a problem, since humans had always been able to adapt to resource constraints. *The Limits to Growth* was also criticized and ridiculed for its pessimistic view of the world (Solow 1973; Kaysen 1972).

In October 1973, however, the emerging global oil crisis seemed to support the report's message that excessive exploitation of nonrenewable resources would lead to serious problems (Colombo 1997). Nevertheless, the supposed economic necessity of the sudden explosion of the oil price due to the alleged shortage of oil supply would be called into question almost three decades later: In January 2001, *Ahmed Zaki Yamani* who had been the oil minister of Saudi Arabia from 1962 to 1986 told *The Observer* that the *Shah of Iran* had exposed *Henry Kissinger* as the driving force

behind the increased oil price (The Observer 2001). Yamani also revealed that recently emerged documents from a secret conference proved that some British and US American state employees had been behind the orchestration of the increase of the oil price by 400% in the 1970s (The Observer 2001) – facts which had been completely unknown to the general public in the 1970s. Back then, *The Limits to Growth* and the subsequent oil crisis had led to a kind of win-win situation for different stakeholders: the environmental movement felt encouraged by the message that oil was a limited and environmentally harmful resource. Paradoxically, oil giants like the Rockefeller-owned *Exxon* equally benefited from the report's message that fossil fuels were a rare resource, because it provided a credible pretext for the significant increase in oil prices in the years following the publication of *The Limits to Growth*.

Henry Kissinger as string-puller behind the oil crisis of the 1970s had also played a major role in the Conference at which the authors of the book *Conditions of World Order* met in the Villa Serbelloni in Bellagio, Italy, from June 12 to 19, 1965, "... thanks to the hospitality of the Rockefeller Foundation" (Hoffmann et al. 1968), i.e., at the place where, according to some historians, also the foundation stone for the COR would be laid three years later in 1968 (Hap 2013; Rivera 1994), whereas the COR itself cites Rome as its official founding place – without mentioning any specific location (COR 2017a).

Allegedly, *Conditions of World Order* provided the base for *The Limits to Growth* (Hap 2013; Rivera 1994), although – except from the world food problem and the development of a new world model with the demand for a global government policy – at first glance, this book seems to have little in common with *The Limits to Growth*. Its possible connection to the topics of Climate Change and SD will be discussed in the final section of this chapter.

1.3 The Long-Term Impact of *The Limits to Growth* on International Climate Policy: From the First World Climate Conference in Geneva to COP21 in Paris and Beyond

The Limits to Growth (Meadows et al. 1972) is still listed as the most important report on the COR's website (COR 2017a), although it was succeeded by many other reports from 1975 to 2015 (COR 2017b). Six of them were published in the 1970s (COR 2017b):

- Mankind at the Turning Point (1975)
- Reshaping the International Order³ (1976)
- Goals for Mankind (1977)
- Beyond the Age of Waste (1978)
- Energy: The Countdown (1979)
- No Limits to Learning (1979)

³This title indeed looks like an allusion to the book *Conditions of World Order*.

Perhaps inspired by the aforementioned COR reports, the late 1970s marked the start of a long series of international environmental conferences, especially Climate Conferences, finally leading to the COP21 Conference in Paris in 2015 and the Paris Agreement (UNFCCC 2017a), followed by the *22nd Conference of the Parties (COP22)* in Marrakech, Morocco (UNFCCC 2017b).

This series of international environmental conferences can be traced back to the *First World Climate Conference in Geneva* (February 12–23, 1979) at the invitation of the *World Meteorological Organization (WMO)*. Climate experts warned that the emission of greenhouse gases in the atmosphere could cause significant changes in the regional or even global climate, having a negative impact on the welfare of mankind. The *World Climate Research Programme (WCRP)* was established to further deepen the knowledge in this field (Staud 2015).

Nearly ten years later – on December 6, 1988 – the *Intergovernmental Panel on Climate Change (IPCC)* was established, based on *UN Resolution 43/53* (IPCC 2017a; Staud 2015) and sponsored by WMO and the *United Nations Environment Programme (UNEP)*. Every 6 years, experts from all over the globe produce their reports independently in three working groups; the short summaries are supposed to influence the governments of the 195 member states (IPCC 2017b; Staud 2015).

11 years after the launch of the *WCRP* and two years after the *IPCC First Assessment Report*, over 1000 experts and government representatives met in Geneva (October 29, 1990, to November 7, 1990) for the *Second World Climate Conference* (UNFCCC 2017c) where Margaret Thatcher stated: “The later we become active against climate change, the more expensive it becomes” (Staud 2015). Six weeks later, the UN General Assembly decided to start negotiations on a global climate deal (UNFCCC 2017c; Staud 2015).

At the *UN Conference on Environment and Development (UNCED)* in *Rio de Janeiro, Brazil*, June 3–14, 1992, the *Agenda 21*, the *Rio Declaration on Environment and Development*, and the *Statement of Principles for the Sustainable Management of Forests* were adopted by more than 178 governments (UN 2017c). On June 5, 1992, the *Convention on Biological Diversity (CBD)*, based on the controversial *Wildland Project*, which – with its core reserves (wilderness areas), corridors, and buffer zones – involves the risk of nationalization of private property in these areas, while shutting down half of the agriculture and reducing biodiversity instead of protecting it as revealed by official environmental statements (Coffman 2009), was opened for signature which would finally enter into force on December 29, 1993 (CBD 2017).

The *Agenda 21*, “...a comprehensive plan of action to be taken globally, nationally and locally by organizations of the United Nations System, Governments, and Major Groups in every area in which human impacts on the environment...” (UN 2017c), has long-term effects on environmental programs at the local level (Lexikon der Nachhaltigkeit 2015). In December 1992, the *Commission on Sustainable Development (CSD)* was created to supervise and report about the implementation of the agreements at the local, national, regional, and international levels. Additionally, a 5-year review of the Earth Summit progress scheduled for 1997 was decided in a special session of the UN General Assembly (UN 2017d).