Natural Resource Management and Policy 47
Series Editors: David Zilberman · Renan Goetz · Alberto Garrido

Sara Valaguzza
Mark Alan Hughes *Editors*

Interdisciplinary Approaches to Climate Change for Sustainable Growth

Springer

Natural Resource Management and Policy

Volume 47

There is a growing awareness to the role that natural resources, such as water, land, forests and environmental amenities, play in our lives. There are many competing uses for natural resources, and society is challenged to manage them for improving social well-being. Furthermore, there may be dire consequences to natural resources mismanagement. Renewable resources, such as water, land and the environment are linked, and decisions made with regard to one may affect the others. Policy and management of natural resources now require interdisciplinary approaches including natural and social sciences to correctly address our society preferences.This series provides a collection of works containing most recent findings on economics, management and policy of renewable biological resources, such as water, land, crop protection, sustainable agriculture, technology, and environmental health. It incorporates modern thinking and techniques of economics and management. Books in this series will incorporate knowledge and models of natural phenomena with economics and managerial decision frameworks to assess alternative options for managing natural resources and environment.

More information about this series at http://link.springer.com/series/6360

Sara Valaguzza • Mark Alan Hughes
Editors

Interdisciplinary Approaches to Climate Change for Sustainable Growth

Springer

Editors
Sara Valaguzza
University of Milan
Milan, Italy

Mark Alan Hughes
Kleinman Center for Energy Policy
University of Pennsylvania
PA, USA

ISSN 0929-127X ISSN 2511-8560 (electronic)
Natural Resource Management and Policy
ISBN 978-3-030-87563-3 ISBN 978-3-030-87564-0 (eBook)
https://doi.org/10.1007/978-3-030-87564-0

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Contents

Chapter 1
Introduction

Mark Alan Hughes and Sara Valaguzza

Abstract The chapter opens the discussion on the multi-faceted complexity of climate change and presents the structure of the volume, describing the interconnections between all the aspects discussed in the single chapters and guiding the readers towards the envisaged path. It underlines the elements that characterize the adopted approach, which critically observers the interactions among interdependent systems in a multi- and inter-disciplinary fashion.

Keywords Climate change · Complexity · Interdisciplinary perspectives · Adaptation · Mitigation · Book outline

Scholarship on climate change policies must confront both complexity, in which interacting parts generate emergent outcomes that are more than simply the sum of those parts, and uncertainty, in which the capacity for robust adaptation to many possible future conditions defines many policies. Together these challenges require scholarship that is multi- and inter-disciplinary in order to observe and understand the critical interactions among interdependent systems, both physical and social. This volume is an attempt to gather and integrate multiple scholarly perspectives on some of these interdependent systems that are producing policy responses to complex and uncertain climate change.

Interdisciplinary perspectives that attempt to see beyond well-defended disciplinary boundaries risk seeing only the simplest contours of the terrain. And

M. A. Hughes
Kleinman Center for Energy Policy, University of Pennsylvania, Philadelphia, PA, USA
e-mail: mahughes@upenn.edu

S. Valaguzza (✉)
University of Milan, Milan, Italy
e-mail: sara.valaguzza@unimi.it

S. Valaguzza, M. A. Hughes (eds.), *Interdisciplinary Approaches to Climate Change for Sustainable Growth*, Natural Resource Management and Policy 47,
https://doi.org/10.1007/978-3-030-87564-0_1

interdisciplinary dialogues that attempt to communicate between highly evolved disciplinary languages risk conveying only the simplest ideas of a literature. We accept those risks and indeed expect a high degree of simplification in this volume. Our gambit is that a higher-level system view from several disciplines is worth a degree of simplification. Indeed, simplification might be an antidote to the superficiality of much policy discourse on climate change.

Our intention in this volume is the reader will allow the complexity to emerge in successive chapters, which are structured and sequenced to make connections and provide a mutually reinforcing set of observations and tentative conclusions.

The volume is divided into four Parts. The first Part introduces the main concepts of the book: climate change and sustainability, wellbeing, and mitigation and adaptation. Each theme will be critically discussed and examined by the main experts of each sector who contributed to the drafting of the volume.

Part II presents the scientific understanding of climate change and explores some of the more pressing issues driving policy development, such as the melting of the glaciers and the impact on coastal areas.

Part III discusses significant experiences in the environmental policies both in the European Union and in the United States of America. The choice of the topics includes diversified but complementary aspects. They have been selected to permit a comprehension of both the general policies, such as the European Green Deal and carbon pricing, and the sectorial policies on energy, waste management, green and social procurement, transportation, energy, agriculture and construction.

The fourth Part closes the circle by explaining possible approaches about climate change, by exploring the legal and economic aspects of both adversarial and more lenient approaches towards a more sustainable world. It faces four main issues in the economic and juridical context: consumer behaviors, climate litigations, environmental litigations and the alternative forms of dispute resolution on environmental matters, with particular regard to environmental mediation.

The first Part of the book paves the way for the technical discussion, which is carried out in Parts II, III and IV. In the second chapter of Part I, entitled “The ideological trick of climate change and sustainability”, the issues of climate change and sustainability are analyzed under different angles, by underlining the links with the economic, social and political factors to trace their causes and implications. The initiatives of the governments around the world, the “go green” wave, the impacts of the renewed attention of the entrepreneurial world towards the environment on people’s behaviors are examined with particular attention to the recent events and democratic debates, from climate skepticism to the right-wing populism. The conclusions reached demonstrate that “ideological bias play a significant role in polarizing public debates on climate change policies” and point to a particularly problematic aspect, namely the misinformation on climate change issues. It is thus stated the necessity to launch a network system including experts of communication, sociologists and scientists to assess, in a preliminary phase, the truthfulness of the information related to climate change and sustainable topics.

The relevance of the mass media in the debate on climate and sustainable policies emerges in Chap. 3, entitled “Words count: the role of language in overcoming

climate inertia." This chapter continues the reasoning began in the first chapter, by deepening the issue of the approach from the media and the communication systems to the environmental issues since the Nineties—when the debate started to have a significant relevance. The chapter presents research carried out on the main Italian newspapers and illustrates how the presence of news on climate change and sustainability has grown. The study demonstrates that climate change is described by a constant reference to metaphors that evoke situations such as war, diseases or travels. The conclusions push forward the necessity of a reframe which could put the debate on climate change in a non-adversarial environment: the use of new metaphors could be a powerful communication tool to promote new values and sustainable practices, in a proactive climate change narrative.

In order to deal with this innovative narrative, it must however be reminded that the apparent simplicity of the debate on climate change conceals a deep complexity which must be constantly instructed to avoid unrealistic reconstructions and ineffective solutions. Therefore, Chap. 4, "Measuring complex socio-economic phenomena. Conceptual and methodological issues" sets forth a definition of complexity employed in the second Part of the volume. The relationship between complexity and knowledge is here depicted and the concept of "system" is introduced as "an organic, global and organized entity, made up of many different parts, aimed ad performing a certain function." The chapter points out the necessity to promote effective measurement system of the mentioned complexity and favors the understanding that the scientific data (also pertaining to the climate science) can be read in different ways: "Each observation evaluated within a theoretical framework represents a datum. Consequently, we can obtain different types of data from the same empirical observation based on different theoretical frameworks."

After setting forth the basis to understand the complexity of the discussed issues, the volume gets to the heart of the scientific debate on climate change. Part II includes two scientific contributions which deal with some of the most problematic issues deriving from the rising of the temperature worldwide. Chapter 5, on "Glaciers: vanishing elements of our mountains and precious witnesses of Climate Change", contains the testimony of a group of researchers of the University of Milan working on the Italian Alps—precious and unique chain—that realized a monitoring protocol through which it is possible to measure the reduction of the glaciers basing on satellite detection systems. This survey makes the rapidity of the phenomenon extremely evident and indicates the urgency to intervene, also to contrast the less-known effects such as the negative effects for human health and the environment of the toxic substances released with ice melting. The irreversible character of the phenomenon indirectly clarifies the meaning, still pressing, of the mitigation policies.

Chapter 6, "Rural revival and coastal areas: risks and opportunities" is dedicated to describe another serious environmental issue: the dangers for the human and natural systems deriving from extreme atmospheric events. In particular, the problems regarding the coastal areas and the marine ecosystems are here considered and analyzed. After underlining the numerous and complex vulnerabilities detected by the IPCC reports (among the others) the chapter carries out a deep analysis of the

adaptation policies aiming at minimizing the negative effects of climate change in a context of resilient actions. Therefore, Chaps. 5 and 6, read together, witness how science is an endless source of data, capable of pushing the adoption of environmental policies in regard to dangerous natural events (Chap. 6), as well as an instrument of the adaptation policies (Chap. 7).

Certainly, both in the field of mitigation and adaptation policies, the link between science and policy is crucial. In particular, it is necessary to answer three crucial questions: how the scientific evidence can make the adoption of public policies necessary, how can public policy lean against science and how science and the new technologies can be an instrument of resilience policies. Chap. 7, "Climate Change: from science to policies, backward and forward", is dedicated to the mentioned topic, which is analyzed by highlighting similarities and differences between the methods of politics and science. This chapter closes Part II but opens Part III, which intends to provide the readers with a framework of exemplifications of the main public policies adopted in terms of mitigation and adaptation.

Public policies are at the center of an aggressive debate, in which it is emphasized their capacity of protecting the planet and humanity from the negative consequences of the growing rise of the global temperature. Consequently, the analysis of some of them will allow to capture the areas needing more implementation and the success experiences that may eventually be replicated in the future. As for the rest of the volume, the interdisciplinary approach also characterizes this Part, so that the contributions expose economic, juridical, technical and political aspects, depending on the matter dealt with by the authors. Chapter 7serves as a bridge to Part III, where science and policy meet in the concrete implementation of sustainability strategies.

Chapter 8, "The EU perspective from setbacks to success: Tackling Climate Change from Copenhagen to the Green Deal and the Next Generation EU", starts with this finding: While the world will remember Twenty-Twenty as the year of the COVID-19 pandemic, it was also an exceptional year in at least one other aspect. Scientists at Copernicus and at NASA have confirmed that, globally, 2020 tied with 2016 as the hottest year on record. Then, the reflection shifts to European Green Deal policies, showing why we must look at the future with optimism.

This chapter shows the role EU is playing in relaunching a sustainable and inclusive growth and offers a deep analysis of successes and failures in shaping the global climate agenda, also stressing that, as a consequence of COVID-19, nowadays "when navigating in uncertain waters, the voice of experts is a valuable currency." This fact creates new and important laws also between science and climate policy, where "Science is of course at the basis of the European Green Deal and of the EU commitment to reach net zero by 2050. This target is not arbitrary—it is evidence-informed, based on a detailed impact assessment, and underpinned by scientific modelling."

Chapter 9, "Carbon pricing from the origin to the European Green Deal", is focused on the economic theories of climate change and examines the mechanisms of carbon trade tax and of the emission trading system in a critical and systematic way, considering the European Union context in which these policies have been firstly implemented. The meaning of the exposed theories and their ambits of

application in the European countries are discussed also with punctual argumentations aiming at letting the costs and benefits of the considered instruments emerge.

Chapter 10, "Technology innovation in the energy sector and climate change—the role of Governments and policies", develops the driving force of technological innovation where adaptation policies are essentially based on the edginess and research, such as in the energy sector. There, the role of governments is particularly crucial, setting the overall legislative and regulatory framework for markets and finance in which the prerequisites and essential conditions for developing technologies are identified. Around the world, governments can leverage on different tools, which are described and commented on in the chapter. According to the findings of the analysis, energy transition and the strictly connected development of innovative technologies will expose the global energy system to face new crucial challenges, such as data protection and privacy, potential vulnerabilities and sabotage, but also inequality and social disruption.

Chapter 11, "How emerging technologies are finally matching the policy leverage of cities with their political ambitions", elaborates the hypothesis that in light of new technologies the energy policies of local and regional governments are sources of experimentation that may produce useful results.

The chapter deals with the complex issues of climate change governance and discusses the importance of appropriately aligning powers with efficacy and innovation.

The chapter concludes that technology innovation "is the driver of energy policy that makes it possible for cities to play the impactful role that they have sought for decades." The offered perspective allows to launch interesting reflections both in the United States and in Europe, by detecting network action which allow to integrate supranational and national policies with a bottom-up government that is inspired to the European concept of vertical subsidiarity.

For instance, the cities may avail themselves of energy building codes, set energy performance standards, offer weatherization services to residents who meet income qualifications, rationalize and reduce the energy consumption through municipally-owned-vertically-integrated eclectic utilities, which have control of their supply mix helping achieve climate targets.

The chapter also introduces a reasoning on the role of public undertakings, by offering data that demonstrate how, at a local level, they sometimes can be referred to as interesting examples of energy consumption reductions.

Chapter 12, which goes under the title "Sustainable transportation", provides a framing of the mitigation and adaptation policies that accompany the re-thinking of the transportation system, both public and private, to make it adequate to face the next challenges.

The selected approach focuses on transportation law and policies and is not limited to climate policies in a strict sense; differently, it demonstrates how the adaptation policies include evaluations and choices of social and economic character, in execution of the sustainable development principle. Moreover, in presenting a zero-emission transportation future, the author proposes an approach that is based on the efficiency of the actual transportation systems, on which the lifestyles of our

communities rely. The analysis foresees a positive and continuous development: "The good news for climate advocates is that the industry is scaling and innovating rapidly, the result of careful and deliberate policy around the globe. Central to this progress has been declining prices for lithium ion batteries. Policy makers can continue this progress by focusing on transportation policies such as mandates, incentives, subsidies and permit streamlining and electricity rate reform."

The strategic role of public entities, also as market operators, is crucial and meaningful in the public procurement field, to which Chap. 13, "From green to social procurement", is dedicated.

The contribution presents a very topical subject, by pondering on the public policies through which the public entities can drive the competition towards quantitative parameters that valorize and promote the sustainability values, by operating on their tender procedures for the purchase of works, services and supplies.

The chapter illustrates good praxis and positive experiences but highlights the necessity to induce techniques that are able to make the application of social procurement criteria mandatory and systematic, especially in Europe. In this regard, adoption of command and control politics supported by an adequate monitoring system is suggested.

Chapter 14 regards "Climate, sustainability and waste—EU and USA regulatory approaches compared." The contribution explores the links between sustainability, waste regulation, and climate change, by comparing the different regulatory approaches towards waste management in the European Union and in the United States. Despite highlighting significant similarities between the two systems, including a decentralized administrative approach, a strict waste management hierarchy that favors recycling and composting, significant regulatory differences are observed. In the optic of the learning from each other, the chapter considers the European approach to be particularly interesting as it serves a wider purpose than just the protection of human health and the environment.

Chapter 15, "Construction industry and sustainability" deepens the difficult challenges that interest the construction sector. It investigates different areas, from the extraction and reuse of construction materials to energy and water consumption reduction, to circular economy.

Chapter 16, "Impact of climate change in agriculture: estimation, adaptation, and mitigation issues", deals with the relationship between climate change, agriculture and food security, with an overview of the main adaptation and mitigation strategies. It includes a summary of the emerging methods developed in the last two decades to empirically quantify the economic costs of climate change. This chapter will be focused on the agricultural sector, admittedly the most sensitive sector to climate change, although the econometric methods described could be applied to any economic activity.

The final Part, "People's behaviors to address climate change: proactive and conflicting actions", examines how our behaviors can influence environmental policies and how those policies can trigger positive or negative coping mechanisms in the administered community.

Chapter 17, on "Climate Change and consumer behavior", starts the analysis from a recent survey conducted across 28 countries worldwide, which reports that 70% of the total sample states to have made changes to their consumption behaviors out of concern about climate change. Of these, 17% refers "a lot of changes" and 52% refers "a few changes." Countries where consumers seem to be more prone to modify their behaviors to counteract climate change are India (88% of total interviewed), Mexico (86%), Chile (86%), China (85%), Malaysia (85%) and Peru (84%). Japan is the only surveyed country where almost 50% of people declared that they have not changed their behaviors in the attempt to impact less on the environment. The research work presented demonstrates that inducing behavior change is essential to the effectiveness of climate policies.

Chapter 18, "Climate change litigation: losing the political dimension of sustainable development" investigates the causes and consequences of conflicts brought before the courts to conquer the effective right to the environment. Precisely it investigates whether disputes brought by individuals and associations against States to challenge environmental mitigation's policies, the so-called climate litigation, are consistent with the fundamental structures of procedural rules and how they impact on the role of jurisdictions and on environmental protection policies. The analysis goes so far as to fear the risk that a purely subjective connotation of the environmentalist claims may diminish the awareness of the environment as a common good, which requires protection policies, and disarticulate the rules of actions in front of the courts of law. Finally, the reflection introduces a theory to reconnect the individual and collective dimensions of the environment, based on the overlapping of legal relations and rights and the complexity of contents and dimensions of sustainability, which requires an analysis of a proper political nature.

Chapter 19 explores "The judicial review of administrative decisions with environmental consequences." Starting from the analysis of the environmental protection as a juridical issue, the chapter explores the main characters of judicial review in this domain. Exploring the significance of the principle of sustainable development as a parameter of legality of administrative action, and analyzing selected case-law drawn from the US, the EU, Italy and the UK, the chapter conceptualizes judicial review as a fundamental instrument to guarantee a balanced application of a national model of growth.

Chapter 20, "Mediation in environmental disputes", describes the mediation in the subject at stake, as a problem-solving tool based on dialogue, facilitated by a third neutral, the mediator. The thesis is that encouraging public entities to settle environmental disputes through mediation will offer great opportunity to find solutions that allow communities to negotiate with public actors specific actions that successfully mitigate the impacts of invasive anthropogenic activities on the environment, thus obtaining a shared framework that results from a dialogue capable of including all the three dimensions of sustainability.

The four Parts of this volume present 20 chapters that marshal scholarly arguments and recent evidence on important aspects of climate change policy formation in the EU and US. Collectively, the sequence and accumulation of these disciplinary perspectives also demonstrates the complex interaction of policy subsystems and

the importance of their interdependencies in the face of climate change mitigation and adaptation. These interdependencies are likely to increase in importance as climate change unfolds in uncertain ways that demand a robust capacity for adaptive policies. Given the critical interdependencies discussed throughout this volume, it is clear that further inter- and multi-disciplinary approaches are necessary to develop policies better prepared for the complexity and uncertainty of climate change in the coming decades.

Part I
Interpreting, Communicating and Composing a Complex Phenomenon

Chapter 2
The Ideological Trick of Climate Change and Sustainability

Gianluca Schinaia

Abstract This chapter analyzes how ideological bias plays a significant role in polarizing public debates on climate change policies. Urgent demands for global warming and sustainable development actions have become very popular among young people, international institutions, the scientific community, and public opinion. On the other hand, the right-wing ideology has endorsed the ideas of the climate denial countermovement worldwide, claiming to protect low and middle-class workers of Western countries, weakened by a protracted economic crisis. Ideological beliefs create disagreement on the perception of, and the solutions to tackle, the climate crisis. Disagreement causes mistrust of scientific data regarding climate change. So, the ideological clash between left and right-wing parties on the significance of global warming and its impacts and remedies reduces the solutions to tackle the climate crisis.

Specifically, the chapter presents how sustainable development issues have been pushed forward by entities traditionally far away from the conservative electorate. Furthermore, how the right-wing ideology has endorsed the ideas of the climate denial countermovement worldwide, focusing on Western countries and finally, to the communication problems and solutions to raise climate crisis awareness.

2.1 Introduction

Climate change is the hardest challenge humankind has ever faced. Solutions to mitigate the environmental, social and economic effects of global warming need to be shared. Nowadays, there are multiple answers based on interdisciplinary approaches combining sciences, economics, politics, technologies and social factors. However, ideological beliefs create disagreement on the perception of, and the

G. Schinaia (✉)
FPS Lab S.R.L.—University of Milan, Milan, Italy
e-mail: gianluca.schinaia@fpslab.it

S. Valaguzza, M. A. Hughes (eds.), *Interdisciplinary Approaches to Climate Change for Sustainable Growth*, Natural Resource Management and Policy 47,
https://doi.org/10.1007/978-3-030-87564-0_2

solutions to tackle, the climate crisis. Disagreement causes mistrust of scientific data regarding climate change. Mistrust implies skepticism about most climate policies. In the end, ideological beliefs trump the value of scientific data. This condition is one of the greatest impasses to overcome for sustainable development, as described in this chapter.

Even though the climate change threat has enhanced international cooperation to slowly reach common solutions, the consequent decision-making process has been deeply divisive. Solutions adopted to face global warming imply massive changes, from corporate business models to human and social priorities. These remedies are modifying human perspectives on development and the means to achieve it. The characteristics of the climate system and the nature of the human influence on climate have profoundly challenged the governance, presenting a "truly complex and diabolical policy problem" (Steffen, 2011). Most of the efforts in terms of climate policies have proven to be disruptive, able to open several ideological disputes even on the very existence of a climate change issue. A poll presented by Yale University in 2019 showed that climate change is a more divisive issue for American electors than abortion or gun control (Milman, 2019).

Rarely scientific data on climate change are enough to overcome the social or individual belief in public debate. Even if the scientific consensus on human-caused contemporary climate change now exceeds 99% in the peer reviewed scientific literature (Lynas et al., 2021). It happens primarily because of the consequences of climate action on individuals and society, often stressed by organized corporate campaigns promoted to preserve the status quo. According to a 2016 research, more than 90% of dubious papers on climate change come from think tanks close to conservative ideologies. Relevant lobbies such as the Heartland Institute, the Cooler Heads Coalition, the Cato Institute or the Heritage Foundation. According to an analysis by sociologist Robert Brulle, 140 foundations have moved 558 million dollars to fund more than 100 denial organizations between 2003 and 2010. Where do these funds come from? Primarily from fossil fuel-related companies such as the Koch Family Foundation, British Petroleum, Shell or ExxonMobil (Levantesi, 2021). In many studies, scholars described how ideological filters strongly color public perception of climate change: facts are evaluated based on their fit to previously held beliefs (Denning, 2013). This mismatch between opinion and data has relevant implications regarding ideology in the public debate on climate change and sustainability issues. It involves media discussion and public perception of the issues investigated. In order to review the ways how ideology plays a role in the production, representation, and reception of climate change in media, five filters have been taken into account: economic factors, journalistic norms, political context, ideological cultures and citizen decoding (Maeseele & Pepermans, 2017). Alternatively, these filters can be classified into two views about climate change: is it seen as a post-ideological issue or not? If it is so considered, most people problematize the actual politicization of climate change, calling for its de-politicization. If it is not, the climate change topic is criticized for suppressing the role of democratic debate about its relevance and implications. Again, both views about climate change configure a truly complex and diabolical policy problem. The ideological

trick affects all public debate on the environmental policies for sustainable development.

Usually, science comprehension is linked to a higher level of education. When we consider the climate change issue in developed countries, education is still related to more pro-climate change beliefs among the political left and right, but its effects are weaker among the political right than the political left (Czarnek, 2020). So, climate skepticism is mainly linked to a right-wing ideology for many reasons. Among others, climate change actions mostly require coordinated collective action, recalling the shadows of socialistic threats. Furthermore, actual climate movements have deep roots with social ones protesting against neo-liberal principles and institutions back in the 1990s. In addition, climate skepticism—strengthened by the Third Industrial Revolution tools—has opened to anyone the chance to question scientific assertions. These assertions remain for the few due to the technical nature of scientific explanations. Finally, climate skepticism is empowered by actual and relevant threats to the present way of life for most people living in the (so-called) developed countries. Skepticism is one of the main cornerstones supporting the rise of a massive denial movement opposing deep transformative climate policies (Washington & Cook, 2011).

This chapter will analyze how sustainable development issues have been pushed forward by entities traditionally far away from the conservative electorate, such as youth movements. Furthermore, how the right-wing ideology has endorsed the ideas of the climate denial countermovement worldwide, focusing on Western countries and finally, to the communication problems and solutions to raise climate crisis awareness.

2.2 Green Is the New Black

"Go green": a gentle suggestion sounding all over the developed world. It feels like a need perceived in many areas of daily life. A call is coming from public entities, private companies, media, arts, and entertainment. Just like the trees whispering to humans in the epic nature novel, The Overstory by Richard Powers, awarded by the Pulitzer Prize for Fiction in 2019.

Green is the new black. In the fashion industry, the color black is regarded as a constant, one that goes with everything. Nowadays, everything that sounds environmental or sustainable—identified as "green"—is popular. At the moment, green can dress any kind of human activity. It is the message spread through marketing campaigns beyond the specific service or product promoted. Attention is justified by the growth of the market share of green products and services that seem to be relentless. A new magic world of business opportunities in the promised lands, namely, circular and sharing economy. In 2019, NYU Stern's Centre for Sustainable Business found that 50% of U.S. packaged-goods growth from 2013 to 2018 came from sustainability-market products (Kronthal-Sacco & Whelan, 2019). A report recently published (International Trade Centre, 2019) argued that: "Sustainable

product sourcing has become a top priority for retailers in key European Union markets as France, Germany, Italy, the Netherlands and Spain"—pointing out how 85% of European retailers reported increased sales of sustainable products over the past 5 years and 92% of them expect sales in sustainable products to increase in the next 5 years.

Shifting from products to services, the rising green trend seems specular. The sharing economy is changing the use of things, from ownership to rental. The energy sector is moving away from dependence on fossil fuels. In Europe, the share of renewable energy more than doubled between 2004 and 2019, representing 19.7% of the energy consumed in the EU-27 (Eurostat, 2020). In the United States, the growth of renewable energy remained significant under Trump's Administration. During the last decade, wind power tripled, and solar power increased fivefold in the United States: renewables now represent around 11% of all energy consumed. Moreover, US domestic renewable energy consumption will continue to increase until 2050 (U.S. Energy Information Administration, 2020).

Green is the new black even in the financial sector. In 2020, the world's biggest asset manager BlackRock declared it would make sustainability its "new standard" for investing.

The European Investment Bank recently took a similar decision. Environmental, social, and governance (ESG) criteria are now a popular set of standards to evaluate companies and countries on how far they have progressed on these topics. Companies are increasingly adopting sustainability reports to show their corporate social responsibility.

Despite the companies' move toward sustainability, the enthusiasm of market players has been doubted too, criticized as "green capitalism": corporate greenwashing of products, reinforcement of class oppression, and inefficient regulation of the industry to deceive consumers into being content with an illusion of progress (Engel, 2019). Still, this new green revolution is stepping into the light of the public opinion, contaminating politics. The United States and European Union have set up master plans on their respective sustainable development regional strategies: the Green New Deal and the European Green Deal. The EU aims to be climate-neutral by 2050, becoming the first continent to compensate for all its greenhouse gas emissions. The European Green Deal has also been built and approved because European green parties are becoming more popular, particularly among young electors. Young politicians are very close to sustainability topics, too. Being sustainable is a popular new vision endorsed by Millennials and very young people belonging to the so-called Z and Alpha Generations. Nowadays, it is also embraced by youth movements such as Extinction Rebellion or Fridays for Future. This new social activism has to do with the deep polarization of politics and ideology mentioned in the introduction. As authoritarianism, xenophobia, alt-right, and anti-immigrant forces have risen all over the world, at the same time, environmental action and awareness about the impacts of climate change have grown significantly and mixed inside new youth movements. It is not a brand new political phenomenon but a more comprehensive evolution of the social protest movements of the last 30 years.

2.2.1 *Brief Evolution of Main Protest Movement's Ideology*

To some extent, youth eco-movements represent an answer to the criticism that sustainability is a "green myth" built up for market interests. These groups are targeting corporate and institutional behavior, instead of focusing on individual responsibilities. The neo-liberal market system relies on the power of individuals. Instead, climate action needs collectively shared plans. Nowadays, only mass movements have the power to alter the trajectory of the climate crisis, and it is time to stop obsessing with how personally green we individually live (Lukacs, 2017). Actual new transnational eco-movements have grown in public consideration during the last decades. These have both shared ideas and relevant differences from their ancestors. One of the most known is Fridays for Future, lead by Greta Thunberg. In the light of the evolving ideological tradition, let us consider another of the most emblematic eco-movement active today: Extinction Rebellion (XR).

XR was founded in the United Kingdom in May 2018, with around a hundred academics signing a call to action the following October. It draws inspiration from movements such as Occupy, Gandhi's independence movement and Martin Luther King, and the civil rights movement. Extinction Rebellion aims to support "a common sense of urgency to tackle climate collapse" worldwide. One of the inspirational movements for XR was Occupy Wall Street. Occupy and all its extensions worldwide, born from the occupation of Zuccotti Park in New York (September 17, 2011), intended to attack the financial system, protesting against economic inequality and the influence of international financial bodies, such as the European Central Bank or the International Monetary Fund. Occupy questioned the policies these institutions were taking to reduce wealth inequalities, as XR today also does, and the anti-globalization movement—namely "new global" movement—did before. The latter was a wider network of social organizations that defined the first international protest against international institutions in the late 1990s. In Seattle, November 30, 1999 registered one of the first most significant demonstrations of the new global movement against a World Trade Organization meeting. The WTO, World Bank, and the International Monetary Fund have always been the first targets of new global movements, getting millions of people out in the street to protest against the war in Iraq in 2003. Occupy has an ideological link to the new global movement critics. XR has a very close position to Occupy about the international financial system. XR, however, has a new focus on sustainability issues, sharing relevant points of the old new global movement agenda. Activists affiliated to the new global, Occupy, XR were primarily young people, politically oriented as left-wingers, anarchists, or independents.

Climate action claims presented by XR movement fall into disrepute for right-wing or conservative electors that historically do not support this range of social activism, which reflects a deep polarization of politics and ideology about sustainable development issues.

2.2.2 *Students, the New Protest Vanguard*

Something new was born after the subprime mortgage crisis. “A whole generation in 2010 were very motivated by slogans of ‘no future’. They felt the future that they’d been promised—if they worked hard, got a good job, then they’d be able to achieve the level of economic stability and success which their parents had been promised—was no longer possible. Students were simply the first in a long line of groups who were going to have to pay for the crisis, and pay for austerity,” says Matt Myers, author of *Student Revolt: Voices of the Austerity Generation* (Myers, 2017) Even though the anti-globalization movement faded out after 2002, the subprime crisis has reignited youth movements again. First with Occupy and after that through the Arab Spring revolts, students have become, step-by-step, the brand new movement vanguard. Undergraduate students have supported or even led many of the protests that have occurred in the last 10 years for democratic issues: Algeria, Bolivia, Britain, Catalonia, Chile, Ecuador, France, Guinea, Haiti, Honduras, Hong Kong, Iraq, Kazakhstan, Lebanon, Bangladesh, Germany, India, Italy, Malaysia, Quebec, South Africa, South Korea, Uganda, and many other countries. Usually, these protests start with a specific incident but afterward rise far beyond it: education fees (as in Chile), violation of democratic principles (as in Hong Kong), anti-racism protests (as by Black Lives Matter in the United States) or austerity measures (as in many European countries). Recently, economic inequality and global warming issues are gradually characterizing many kinds of youth protests all over the world. These tend to be leaderless, peaceful initially and occasionally deteriorating into street battles against the police. These protests are enhanced and sustained by social media, embracing undergraduate and high-school students (Larsson, 2020); these mainly focus on climate change but also on LGBT, feminist and anti-racist initiatives. “What we are witnessing in 2019 may not quite be a student revolution as it was in 1968; it may better be coined a youth (r)evolution” (Altbach & Luescher, 2019).

Young activists have gained two prominent supporters in recent years. First, international institutions. If WEF meetings were in the past targeted by “new global” protesters, in 2020, Greta Thunberg (an icon of the climate change youth movement), as a WEF guest in Davos, put the blame squarely on international leaders and tycoons. Now, European and U.S. plans on the environment share many initiatives proposed by the youth climate movements. This new shared vision by international institutions and young activists is viewed with suspicion by the conservative electorate. Furthermore, climate change movements have gained another key supporter: the scientific community.

2.2.3 The Scientific Community Approval

In 2019, a letter entitled "Concerns of young protesters are justified" was published in *Science* magazine (Hagedorn et al., 2019). Signed by over 20 scholars coming from many renowned universities in Europe and the United States, the letter clearly stated: "The enormous grassroots mobilization of the youth climate movement (…) shows that young people understand the situation (…) they deserve our respect and full support." In the same year, *Nature* published the following article: "Scientists worldwide join strikes for climate change" (Schiermeier et al., 2019) describing how researchers were among those protesting to urge action on global warming in North and Central America, Europe, Asia and Australia. These are just some examples of how generally the scientific community approves the ideas pursued by the climate movements. Approximately 97% of active publishing climate scientists believe in anthropogenic climate change, and it goes further to involve non-climate scientists in this position. On the other hand, only approximately half of the American public believes in anthropogenic climate change (Funk et al., 2016). The mismatch between data and public awareness has pushed the scientific community to endorse youth activist positions on climate requests. Thus, climate action movements now protest with the support of the scientific community.

Conservatives generally have respected scientists. However, the scientific community's endorsement of these new climate actions, led by groups traditionally far away from conservative ideology, has distanced right-wing supporters from scientific evidence on global warming. Cultural values are also significantly associated with certainty that climate change is occurring (Dunlap & Brulle, 2015). "According to the cultural cognition hypothesis, hierarchical individualists are more skeptical of environmental risks, including climate change, because accepting these risks would undermine hierarchical individualists' belief in commerce and industry. Those who hold more egalitarian and communitarian values tend to perceive environmental risks more acutely because they feel that commerce and industry (the drivers of many environmental risks) promote individuals over the community" (Carlton et al., 2015). Finally, the ideological bias on climate change beliefs sees, on the one side, movements led or formed by young students generally supported by the scientific community, with the international community appeasement; and, on the other, skeptics no longer relying on all scientific data released by their counterparts about climate change topics.

2.3 Climate Skepticism and Right-Wing Populism

In 2007, U.S. Republican representatives sounded quite convinced about the relevant role of global warming and its links with human actions. Several public declarations released that year by the party's major delegates were confirming it. "Technology will help us to confront the serious challenge of climate change"

(Former U.S. President George W. Bush). "I think that we have to accept the views that scientists have: there is a global warming and human condition contributed to that" (Former NY Mayor Rudolph Giuliani). Well-known Republican representatives such as Mitt Romney or John McCain endorsed the views expressed, too. Barack Obama's election in 2008 changed everything. Climate change actions and sustainable development plans played a pivotal role in Obama's program and agenda. Seven years after his election, former U.S. presidential candidate John McCain was ironically criticizing Obama's administration's shyness for taking part in the Syria conflict: "President of USA is saying the biggest enemy we have is climate change…". In 2015, during his electoral campaign talking about global warming, former U.S. President Donald Trump declared: "I think there'll be a little change here. It'll go up, it'll get a little cooler, it'll get a little warmer, like it always has for millions of years." During Trump's presidency, the climate change issue suffered from the ideological clash between left and right-wing political forces. Since 2019, President Trump singled out Greta Thunberg and indirectly climate activism (Noor, 2019). In November of the same year, the United States started the process of withdrawing from the Paris Agreement.

Nowadays, numerous studies have linked climate change skepticism to right-wing populisms. Considering conservative and alt-right perception of climate change, green is not the new black. According to their overall consideration of sustainability issues, it can be argued that green is the new red. As Simon Montlake wrote in an article on The Christian Science Monitor: "Climate denial in the U.S. is deeply rooted in an anti-government ideology that sees virtually all regulations, including curbs on carbon emissions, as leftist attacks on free enterprise" (Montlake, 2019). So the reactions to new climate change policies "appear to be rooted in fears of socialism." It's no coincidence that "Green is the new Red — Stop Enviro-Communism!" was the title of the manifesto of Norwegian Andres Breivik, the right-wing extremist who killed 69 kids at a summer camp in 2011. Naomi Klein also reported an ideological bias over climate change by right-wing. Author of *No Logo*, Klein was one of the inspirational leaders of the new global movement back in the 1990s. She published the book "*This Changes Everything" (Klein, 2015)*, which investigates neo-liberal policies as a genetic factor of the climate crisis. The first chapter ("The Right is right: the revolutionary power of climate change") deals with the distance between conservative values and bodies with the needed transformative climate policies. As she wrote, "It is not opposition to the scientific facts of climate change that drives the deniers, so much as opposition to the concrete implications of these facts. Green economy, renewable energy, sharing mobility: saving humanity on the planet implies overcoming the extractive economy and the neo-liberal model."

Youth movements specifically (historically linked to anarchist, independent, and left-wing electorate) support all sorts of climate change actions. These actions are mostly targeting corporate activities and policies that prioritize individual needs (linked to neo-liberal ideals) over social demands. Furthermore, these movements are supported by the scientific community, academia, and some international

institutions. The new alt-right groups consider these as intellectual elites, so weak, compromised, corrupted, and guilty of socialist aspirations.

Conservative politicians take into account new right-wing positions on global warming during their public speeches. For example, in 2020, Australian Deputy Prime Minister Michael McCormack shot down the prospect of a goal on net emissions in 2050: "IPCC is not governing Australia (…) Of course you've got to listen to the scientists but what you've also got to do is listen to the workers. Listen to those workers who (…) work hard in a coal-mine every day, those people in central and northern Queensland who rely on the resources sector for a job, for a future" (Martin, 2021). Thus, climate policies in political debates started to clash with job resilience for a vast majority of the population in Western countries. The subprime mortgage crisis, job automation, Covid-19: the last two decades have dramatically decreased the number of job opportunities available for lower and middle classes. Considering this scenario, climate policies are perceived as a radical-chic diversion, dangerous for "ordinary people life" (when it comes true). One of this bias's main consequences is the rejection of scientific evidence on climate change by many conservative groups living in developed countries. This rejection is driven by motivated cognition because people typically refuse evidence that can refute their fundamental beliefs. Studies show that rejection of scientific findings by the U.S. public is more prevalent on the political right than the left (Lewandowsky & Oberauer, 2016).

2.3.1 Right-Wing Ideology Reduces the Effect of Education on Climate Change

As many studies have shown, the questioning attitude regarding climate change is higher in the United States than in other countries. In less than 5 years, the United States passed from Obama's presidency, who considered global warming as the "greatest threat," to Trump's administration, who declared climate change a "hoax." A comparison across the last 30 years has revealed that in the past climate change concern was grounded by sociodemographic factors such as education, income, sex, age, or race: however, nowadays, this concern is better explained by political orientation (Driscoll, 2019).

This kind of evolution is also the result of a historical role played by corporations and politicians in deceiving the public about the risks of climate change, as scholars and investigative journalists demonstrated in several works (Dryzek et al., 2011). Sociologists link the rise of climate change denial to corporate and right-wing agents in a "top-down" social strategy (Dunlap & McCright, 2011) to influence public opinion on the potential dangers of climate policies that can disrupt its way of life. Researchers underline that consumption of conservative media can undermine the certainty that climate change is real. However, "bottom-up" factors push the denial of global warming's effects within right-wing voters, namely, ego or

self-justification, group justification, and finally, system justification. The latter refers to the bias produced by the need to defend elements of the social, economic, and political systems on which one depends (Jacquet et al., 2014).

A study on web browsing histories from over 9000 participants in the United States, the United Kingdom and other four countries (Oxford Internet Institute, 2021) revealed that populist parties' supporters distrust the scientific consensus on climate change. The analysis highlights how supporters are mainly focused on promoting "the people needs" before climate change, choosing alternative explanations instead of scientific concerns on global warming. The same study shows that right-wing populist supporters are twice as likely to consume hyper-partisan media than left-wing supporters.

Another study demonstrates how general education and scientific literacy increase ideological bias's polarization along partisan lines and do not mitigate rejection of scientific findings (Lewandowsky & Oberauer, 2016). So, working to defeat these biases is firstly a challenge for media and communication rather than education. As seen in the introduction, education has positive effects on pro-climate change beliefs in countries that are considered to have low or mid-levels of development; in developed countries, right-wing ideology reduces the positive effects of education on these issues.

2.3.2 Out of the Palace: The Denial Countermovement

On January 6, 2021, thousands of people stormed the U.S. Congress in Washington, D.C. Most of them were Republican electors, alt-right militants, white supremacists, conservative evangelical Christians, and Qanon supporters. Nearly all of them were very politically active on social media, and a great majority supported a massive unofficial movement denying climate change. This topic is very popular in the United States, where the climate change denial industry is the widest of all developed countries. As already seen, the global warming denial position is strongly embraced by conservative voters and representatives: for instance, in the 2016 United States election cycle, every Republican presidential candidate questioned or denied climate change (Kaplan, 2015). The people that stormed the Capitol building were protesting against the last presidential election results and supporting Donald Trump, one of the most well-known politicians representing climate denial positions. Few of the rioters managed to get inside the Capitol building. Even though they used violence to enter, they appeared not to have further planned goals. The Capitol building intruders seemed lost and confused. Probably, they could have expected to feel a sense of belonging: being part of something broader, feeling part of a community of defenders and brave citizens; something similar to what animated people participating in climate movements demonstrations. Most of the Capitol building rioters of January 6 could be considered part of the climate change denial countermovement. Discrediting the scientific consensus over human-made global warming seems to have a philosophical inner link with the American

conservative culture (Kane, 2007). First, climate change denial is based on an ideological commitment of conservatives and libertarians to neo-liberal policies, avoiding federal regulations. Second, climate change deniers present the need to defend the American way of life based on ever-expanding material growth (Collomb, 2014). Washington rioters could represent the desire to keep a position inside the palace, to preserve the status quo, and save the so-called American way of life.

However, the denial countermovement is spreading globally. It is unofficially represented by climate denial supporters on social media and officially endorsed by many political parties besides the United States and Australian right. Far-right European parties, such as the Finns Party in Finland, Vox in Spain, Freedom Party in Austria, or Alternative for Deutschland in Germany, share and promote ideas of climate change denial supporters. In Brazil, Ernesto Araujo, the former minister of foreign affairs in the Jair Bolsonaro government, called global warming a plot by "cultural Marxists," (Cockburn, 2018) and he dismissed the climate change division of the ministry. Under the right-wing Bolsonaro government, Amazon deforestation has dramatically increased.

In addition to politicians, people sharing denial countermovement ideas often refer to a generic global warming conspiracy theory. The claims that science behind climate change have been invented or distorted for ideological or financial reasons. Skeptical reports on global warming often support this theory: apparently, more than 90% of questioning papers on climate change originate from right-wing think-tanks (Xifra, 2016). So, climate change has gradually become a political opinion regardless of scientific findings. It has turned into an ideological battle for the new right-wing parties. These mainly target white people, worried about migrants, homosexuals, concerned about the effects of globalization on local communities, job markets, economic and social conditions. In the new right-wing storytelling, these factors do not affect international institutions, the scientific community, and the climate movements: these intellectual elites show a lack of empathy for the "ordinary people's needs." This right-wing political narrative has pushed climate change issues to the left-wing field. Sustainability and environmental topics are matters for "the people in the palace." The denial countermovement represents lower and middle-class people who felt abandoned by the society they knew in previous decades. These people still believe in the American Dream and the idea of an ever-expanding economy. The same people who now feel left out of the palace of power and are searching for a common battleground to fight for or against it. So, climate change has become a valuable field for a political battle.

2.4 Conclusions

Ideological bias plays a significant role in polarizing public debates on climate change policies. Urgent demands for global warming and sustainable development actions have become very popular among young people, international institutions, the scientific community, and public opinion. A new generation of international

activists on climate issues have risen, pushing political demands to reform the global economy to make it fairer and more sustainable, just as independent and left-wing oriented groups (such as Occupy and new global movements) did in the past. On the other hand, a climate change denial countermovement was born to preserve the status quo, claiming to protect low and middle-class workers of Western countries, weakened by a protracted economic crisis. In addition, conservative parties around the globe are often representing the denial ideas of this countermovement. The ideological clash between left and right-wing parties on the significance of global warming and its impacts and remedies reduces the solutions to tackle the climate crisis.

A study on climate crisis denial (Häkkinen & Akrami, 2014) has identified three kinds of ideological variables: social-dominance orientation, right-wing authoritarianism, and left–right political orientation. The first variable considers the social group most motivated to reject evidence on climate change, but it is still very receptive to communication. This is a pivotal point because, as seen before, general education and scientific literacy were shown to increase the polarization of ideological bias along partisan lines and do not mitigate the rejection of scientific findings. For this reason, communication is a unique tool to contrast climate change denial. Among others, the Royal Swedish Academy of Science recently reported that the climate fight is being undermined by fake news and misinformation on climate issues (McKie, 2021). The University of Queensland in Australia issued guidelines on the five features of science denial arguments: fake experts, logical fallacies, impossible expectations, cherry-picking, and conspiracy theories. In order to overcome these arguments, scholars suggest using social media for climate news, even with a debunking role. Good use of these digital tools has led to a decrease in climate change skepticism, even if social context can moderate its effectiveness (Diehl et al., 2019). These elements require significant cooperation between professional communicators, journalists, social media managers, and scientists to improve communication on climate change and sustainability topics. Quoting Klaus Töpfer, the former executive director of the United Nations Environmental Program: "Communicating effectively about sustainable lifestyles is a challenge. One needs to consider not only what to communicate, but how to communicate it." (United Nations Environment Programme, 2005). Shifting from the means of communication to communication topics, studies suggest that specific knowledge of the mechanisms behind scientific findings can increase the acceptance of the data. It is crucial to easily deploy and present findings, describing these on a scientific basis.

Finally, the Italian environmentalist Alex Langer has drawn attention to a relevant point: "We will only attain ecological conversion when it becomes socially desirable," meaning that it is a priority to tear down ideological walls (Langer, 1994). There are many ways to pursue this, including both active policies and, again, communication strategies. For instance, it is working on one of the main pillars contributing to the growth of climate change denial: fear of change. This fear has been greatly exasperated by an extended economic crisis and the prospect of cross-sectoral job automation (National Research Council, 2008), and then further compounded by economic turmoil caused by Covid-19. Including new employment

policies, reskilling and up-skilling plans, and social welfare for the weaker parts of society within climate policies would answer to the holistic revolution of sustainable development and most of the climate negationists' concerns. After these first measures, a green economy can boost new job opportunities and develop trust about the general idea of a sustainable future. The circular and sharing economy is already making room in relevant businesses, daily human life, and large cities: it is time to plan their applications in small towns and for little companies. Considering a communication perspective, it is also vital to open green economy innovations to ordinary people to make it free from an "elite stereotype." Here is necessary to expand the ways of disseminating climate change and sustainability issues to focus on new targets. For this very reason, a significant point concerns communication strategy about the climate crisis to engage "hostile audiences" (Denning, 2012).

Scholars show that ideological division on climate change is less pronounced among people whose close friends and family care about the issue. This research also underlines that conservatives are willing to shape global warming beliefs on the perceived social consensus (Goldberg et al., 2019), which means that it is essential to share and influence people to build a broader consensus on the climate crisis. In addition, researchers (Hornsey and Fielding, 2019) highlight strategies for promoting pro-environmental behaviors: favoring optimistic messages over pessimistic ones in describing the outlook for sustainability and evaluating in-group versus outgroup messenger effects to deflate filter bubbles on social media (Chandler & Munday, 2016). To sum up, strategic communication can help to overcome ideological bias on climate change and sustainability.

References

Altbach, P. G., & Luescher, T. M. (2019). Students are the vanguard in the youth revolution of 2019. *University World News*, 7 December. Retrieved 6 April, 2021, from https://www.universityworldnews.com/post.php?story=20191204072235611.

Carlton, J., S., et al. (2015). The climate change consensus extends beyond climate scientists. *Environmental Research Letters*. https://doi.org/10.1088/1748-9326/10/9/094025

Chandler, D., & Munday, R. (2016). *A dictionary of social media*. Oxford University Press.

Cockburn, H. (2018). Brazil's foreign minister says climate change is a 'Marxist plot'. *The Independent*, 16 November. Retrieved from 8 April 2021, https://www.independent.co.uk/climate-change/news/brazil-climate-change-foreign-minister-ernesto-araujo-marxist-plot-global-warming-a8637281.html.

Collomb, J. (2014). The ideology of climate change denial in the United States. *European Journal of American Studies*. https://doi.org/10.4000/ejas.10305

Czarnek, G. (2020). Education, political ideology, and climate change beliefs around the world. In *Behavioral and social sciences*. Retrieved from 8 April, 2021, https://socialsciences.nature.com/posts/how-are-education-and-political-ideology-related-to-climate-change-beliefs-around-the-world

Denning S (2012) Effective engagement of hostile audiences on climate change. In *American Geophysical Union*. Retrieved 8 April, 2021, from https://ui.adsabs.harvard.edu/abs/2012AGUFMPA21A1957D/abstract.

Denning S (2013) I'm not a Warmist! Transcending ideological barriers in climate communication. In *American Geophysical Union*. Retrieved 2 April, 2021, from: https://ui.adsabs.harvard.edu/abs/2013AGUFMED31D..02D/abstract.

Diehl, T., Huber, B., Gil de Zúñiga, H., & Liu, J. (2019). Social media and beliefs about climate change: A cross-national analysis of news use, political ideology, and trust in science. *International Journal of Public Opinion Research*. https://doi.org/10.1093/ijpor/edz040

Driscoll, D. (2019). Assessing sociodemographic predictors of climate change concern, 1994–2016. *Social Science Quarterly, 100*(5), 1699–1708.

Dryzek, J. S., Norgard, R. B., & Schlosberg, D. (2011). *The Oxford handbook of climate change and society*. Oxford University Press.

Dunlap, R. E., & Brulle, R. J. (2015). *Climate change and society: Sociological perspectives*. Oxford University Press.

Dunlap, R. E., & McCright, A. M. (2011). Organized climate-change denial. In J. S. Dryzek, R. B. Norgard, & D. Schlosberg (Eds.), *The Oxford handbook of climate change and society* (pp. 144–160). Oxford University Press.

Engel, J. (2019). *An addiction to capitalism: A rhetorical criticism of mainstream environmentalism*. Retrieved 4 February, 2021, from https://digitalcommons.humboldt.edu.

Eurostat. (2020) *Renewable energy statistics*. Retrieved 2 April, 2021, from https://ec.europa.eu/eurostat/.

Funk, C. et al. (2016) The politics of climate. In *Pew Research Center*. Retrieved 7 April, 2021, from https://www.pewresearch.org/internet/wp-content/uploads/sites/9/2016/10/PS_2016.10.04_Politics-of-Climate_FINAL.pdf.

Goldberg, M., Van der Linden, S., Leiserowitz, A., & Maibach, E. (2019). *Reducing ideological bias on climate change*. Retrieved 8 April, 2021, from https://climatecommunication.yale.edu/publications/reducing-ideological-bias-on-climate-change.

Hagedorn, G., Kalmus, P., Mann, M., Vicca, S., Van Den Berge, J., et al. (2019). Concerns of young protesters are justified. *Science*. https://doi.org/10.1126/science.aax3807

Häkkinen, K., & Akrami, N. (2014). Personality and individual differences. *Elsevier, 70*, 62–65. https://doi.org/10.1016/j.paid.2014.06.030

Hornsey, M. J., & Fielding, K. S. (2019). Understanding (and reducing) inaction on climate change. *Social Issues and Policy Review, 14*(1), 3–35.

International Trade Centre. (2019). *The European union market for sustainable products*. Retrieved 2 February, 2021, from https://www.intracen.org.

Jacquet, J., Dietrich, M., & Jost, J. T. (2014). The ideological divide and climate change opinion: "Top-down" and "bottom-up" approaches. *Frontiers in Psychology, 5*, 1458. https://doi.org/10.3389/fpsyg.2014.01458

Kane, T. M. (2007). Hot planet, cold wars: Climate change and ideological conflict. *Energy and Environment, 18*(5), 533–547.

Kaplan, R. (2015). Where the republican candidates stand on climate change. *CBS News*, 1 September. Retrieved 3 April, 2021, from https://www.cbsnews.com/news/where-the-2016-republican-candidates-stand-on-climate-change/.

Klein, N. (2015). *This changes everything: Capitalism vs. the climate*. Penguin Books.

Kronthal-Sacco, R., & Whelan, T. (2019). *Sustainable share index: Research on IRI purchasing data (2013–2018)*. Retrieved 7 Apr 2021, from https://www.stern.nyu.edu.

Langer, A. (1994). *We will only attain ecological conversion when it becomes socially desirable*. Retrieved 5 April, 2021, from https://www.alexanderlanger.org/bs/279/1355.

Larsson, N. (2020). People thought I was too young to protest: The rise of student activism. *The Guardian*, 15 September. Retrieved 7 April, 2021, from https://www.theguardian.com/education/2020/sep/15/people-thought-i-was-too-young-to-protest-the-rise-of-student-activism .

Levantesi, S. (2021). *I bugiardi del clima*. Editori Laterza.

Lewandowsky, S., & Oberauer, K. (2016). Motivated rejection of science. *Current Directions Psychological Science, 25*(4), 217–222. https://doi.org/10.1177/0963721416654436

Lukacs, M. (2017). Neoliberalism has conned us into fighting climate change as individuals. *The Guardian*, 17 July. Retrieved 4 April 2021, from https://www.theguardian.com/