

Uncovering the Real Challenges in the Fight against Climate Change

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Abstract

The Sustainable Development Goals (SDGs) are a global call to action to end poverty, protect the planet, and ensure that all people enjoy peace and prosperity. There are 17 SDGs in all, these on the one hand, are based on the idea that economic development, social inclusion, and environmental sustainability are all essential for a healthy and sustainable world, and on the other hand, they provide a framework for governments, businesses, and civil society to work together to achieve common goals. And they are a reminder that we all have a responsibility to protect our planet and its people. One of the most pressing and urgent goals is SDG 13 - Climate Action. Climate change is a global challenge that affects the entire world, urgent action is needed to combat climate change and its impacts. The rapid rise of the *fight against climate change* reflects an increased interest among specialists. This research deals rigorously with a wide range of dilemmas, which have arisen over time. The research aims to reveal new actions, in order to combat current and future climate change obstacles. The main goal is to bring out the quality of policies and programs in the field of climate change. The results of this research should provide new directions in the development of new policies and programs, in order to help governments, businesses and civil society work together to achieve common goals. The results obtained by specialists, should be a reminder that we all have a responsibility to protect our planet and its people.

Keywords

Public Policy, Climate Change, International Development, Sustainable Development Goals, Development Cooperation

1. Introduction

The thirteenth sustainable development goal¹ is to take urgent action to combat

¹<https://www.undp.org/sustainable-development-goals/climate-action>

climate change and its impacts. This goal highlights the need to reduce greenhouse gas emissions, promote clean energy sources, and adapt to the impacts of climate change.

This research *Uncovering the Real Challenges in the Fight against Climate Change*, aims to bring to the surface the directions and trends of dilemmas and rigors from this field. Through a literature-based approach, using the basis of data from the platform Web of Sciences², I will extract the most relevant specialized research (with the topic above), in order to be able to identify and analyze the rigors and dilemmas in the field. Specialized research helps to investigate and address a research problem [1].

Starting from the premise that new challenges arise daily, which urge us to new research topics, I believe that the debates of specialists in the context of climate change at global level, offer us a critical analysis on strategies on combating climate change. Identifying a significant number of specialized researches confirms the development of the topic lately, these subjects become an area of trends and uncertainties both in terms of effectiveness and efficiency of strategies, as well as in terms of how policies and programs work and implement.

Unfortunately, these common approaches, from academia, are nothing more than findings, paradigms lost over time [2]. The emerging challenges experienced today are increasingly accentuated, this research aims to contribute to the development of the above topic. The main objective of the study, following certain differences or trends, is to discover the current challenges, and to know what awaits us in the near future.

Once the research is completed, my expectation is that the results achieved can be particularly useful, both to experts and stakeholders. The new perspectives of approach can be easily recognized and used in making the following decisions on the implementation of policies and programs.

2. Meta-Analysis of the Most Cited Specialized Works on the Topic of Climate Change

So, in order to follow the above objective, *I will perform a Meta-analysis with the most cited specialized papers, on the topic of* fight against climate change. Meta-analysis is a detailed report that combines the results of several scientific studies. This technique allows us to monitor, record and replicate results in a specific field [3]. The main purpose of the meta-analysis is to reach the best result describing the intensity of the phenomenon studied in the general population [4].

2.1. Formulating of the Research Questions

The benefit of the literature's review is that it can provide us with contextual relationships between researches, as well as, has the ability to generate new ideas and directions for a particular field. Starting from the assumption that the Sustainable Development Goals (SDGs), also known as the Global Goals, adopted ²<https://clarivate.com/products/scientific-and-academic-research/research-discovery-and-workflow-solutions/webofscience-platfo>

by the United Nations/Paris in 2015³, comes with a rigorous guide, incorporate seventeen main objectives and 169 targets (sub-objectives), as well as 231 unique indicators⁴ that measures the quality of the policies from this domain, we should easily determine the quality of policies and programs in the field. The SDG 13- *Climate change*, alone, has five Targets and eight Indicators⁵. In the approach of this study, I will interrogate the quality of policies and programs in the field of Climate change.

In other words, during this study I will try to answer the question:

- What is the quality of policies and programs in the fight against climate change?

2.2. Bibliographic Search and Identification of the Target Group

To follow up the above question, I will query the Web of Science (WoS)⁶ re- search platform from the perspective of *Results for Climate action (All Fields)*. Following the WoS query we obtained 534,007 publications from the basic col- lection (see **Figure 1**).

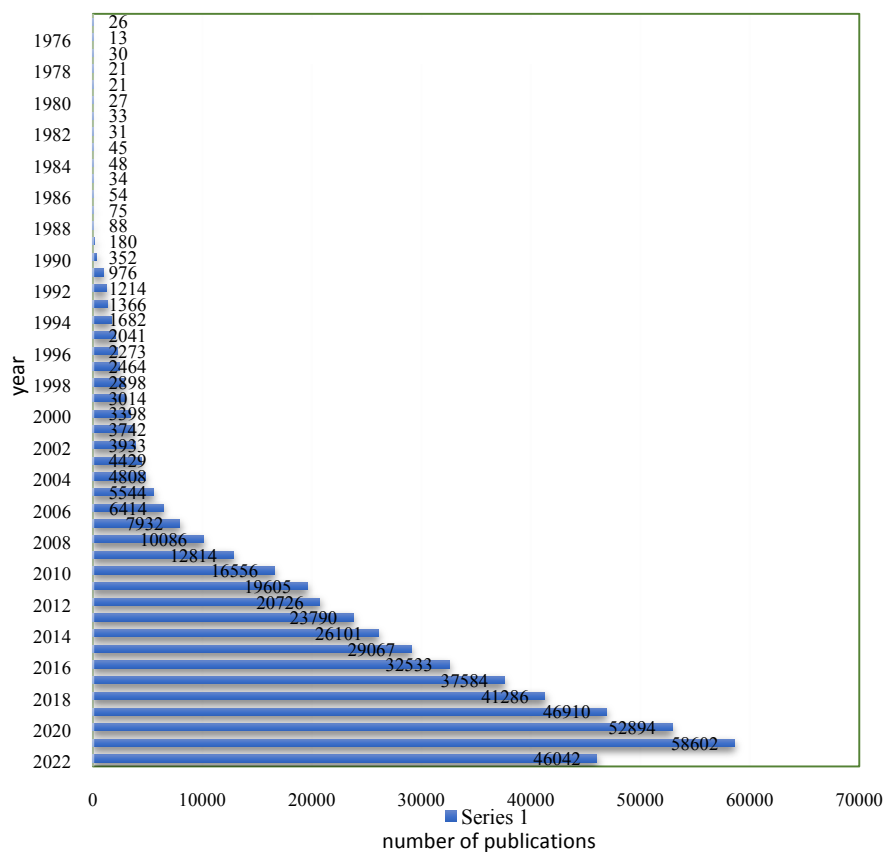


Figure 1. Graphic representation of publications between 1975 and 2022. **Source:** Own conceptualization, following the takeover of data from the Web of Sciences.

³<https://sustainabledevelopment.un.org/content/documents/6754Technical%20report%20of%20the%20UNSC%20Bureau%20%28final%29.pdf>

⁴<https://unstats.un.org/sdgs/indicators/indicators-list/>

⁵https://unstats.un.org/sdgs/metadata/?Text=&Goal=13&Target=_

⁶<https://www-webofscience-com.am.e-nformation.ro/wos/woscc/basic-search>

So, according to **Figure 1**, we can find that we have more than 200 areas of research. The most important areas, according to the number of publications are: Environmental Sciences; Meteorology Atmospheric Sciences; Multidisciplinary Geosciences; Ecology; Environmental Studies ...

And regarding the type of documents, the most important types of documents, according to the number of publications are Article, Proceeding Paper, Review Article, Book Chapters, Editorial Material, Early Access, Book Review... (**Table 1**).

In the diagram below we can see a considerable increase such as: in 1975 we had 75 researches, and in 2022 we had 58,602 of researches, so we can see an increase of 225,299.20% (Equation (1)).

$$[(58,602 - 26)/26] \times 100\% = 2252.92 \times 100\% = 225,290.92\% \quad (1)$$

Table 1. Representation of results for climate action (All Fields).

Web of Science Categories	Record Count
Environmental Sciences	131,794
Meteorology Atmospheric Sciences	75,913
Geosciences Muttidisciplinary	72,402
Ecology	57,725
Environmental Studies	45,061
Water resources	37,205
Geography Physical	29,436
Multidisciplinary Sciences	25,795
Green Sustainable Sciences Technology	21,573
Energy Fuels	19,601
Plant Sciences	19,572
Biodiversity Conservation	18,516
Marine Freshwater Biology	18,246
Forestry	17,261
Oceanography	17,023
Engineering Environmental	15,053
Agronomy	12,774
Economics	12,714
Remote Sensing	12,168
Soil Sciences	9113
Public Environmental Occupation	8866
Geography	8240
...	...
Evolution biology	7879

Source: Own conceptualization, following the takeover of data from the Web of Sciences database.

Therefore, according to the results obtained, we can say that this field reflects interdisciplinary studies, these categories being classified on different types of documents (**Table 2**), with a progressive evolution regarding the involvement of experts as well as stakeholders. Therefore, to move from the general to particular, so that in order to achieve the proposed goal, I will restart the search on the platform of WoS, but this time I am looking for the topic pursued to be included both in the title and in the topic of scientific publications, the chosen period is 2017-2022.

Following the adjustments made, I have obtained 37,225 research papers, in order to achieve my goal, due to the large flow of researches I will narrow the search field by adding the following filters, namely: the most cited researches as well as the studies that have free access. Finally, I obtained 338 research papers (**Table 3**), below I present you the top 10 most cited researches, as well as the fields to which they belong. Therefore, **Table 3** shows the number of publications period 2017/2022, and **Table 4**, represents publication by research area.

Table 2. Representation of publications by document type.

Document Types	Record Count
Article	449,397
Proceeding Paper	44,082
Review Article	29,603
Book Chapters	18,167
Editorial Material	13,239
Early Access	6041
Book Review	2273
News Item	1642
...	...
Record Review	1

Source: Own conceptualization, following the takeover of data from the Web of Sciences database.

Table 3. Graphical representation of publications from 2017 to 2022.

Web of Science Categories	Record Count	% of 338
2019	72	21,302
2020	70	20,710
2021	69	20,414
2017	52	15,385
2018	51	15,089
2022	24	7101

Source: Own conceptualization, following the takeover of data from the Web of Sciences database.

Table 4. Representation of publications by research area.

Web of Science Categories	Record Count
Environmental Sciences	99
Environmental Studies	62
Meteorology Atmospheric Sciences	52
Plant Sciences	29
Geosciences Multidisciplinary	26
Ecology	19
Marine Freshwater Biology	16
Biodiversity Conservation	13
Geography	12
...	...
Multidisciplinary Sciences	1

Source: Own conceptualization, following the takeover of data from the Web of Sciences database.

3. Results and Discussion

According to the new sample I will try to capture the most heated dilemmas and rigors in the field (see the table below, Showing 10 out of 70 entries) (Table 5).

The article *Biodiversity redistribution under climate change: Impacts on ecosystems and human well-being (2017)*⁷, brings solid evidence on the impact of climate-driven redistributions of earth's species. In order to face these challenges (with or without an effective reduction in emissions), according to this research, we need a capable (educated) government that can anticipate/adapt to climate changes/conditions, as well as specific set of policies/programs.

The results indicate that the current SDGs (policies & programs) as well as international agreements, fail to account for true impact of climate change effect. Therefore, the authors recommend are increasing awareness among society, as well as the urgent implementation of new policies and programs to mitigate the negative consequences.

The research *Forest disturbances under climate change (2017)*⁸, provides us, a global synthesis of climate change effects on important abiotic and biotic disturbance agents. With the advent of climate change (global warming), the main threats are: high temperatures will contribute to fires, drought and insect disruption; while warmer and wetter conditions increase disturbances from wind and pathogens.

As an indirect solution, the authors suggest that efficient forest management

⁷<https://ro.uow.edu.au/cgi/viewcontent.cgi?referer=&httpsredir=1&article=5654&context=smdpapers>

⁸<https://europepmc.org/backend/ptpmcrender.fcgi?accid=PMC5572641&blobtype=pdf>

Table 5. Representation of top 10 most cited research (2017-2022).

<i>Publications</i>	<i>Citations</i>						Average per year	Total
	Year	2018	2019	2020	2021	2022		
Total		279	650	1323	2371	1471	1219.60	6098
1. Biodiversity redistribution under climate change: Impacts on ecosystems and human well-being. <i>Science</i> , 355(6332), eaai9214, Pecl, G. T., Araújo, M. B., Bell, J. D., Blanchard, J., Bonebrake, T. C., Chen, I. C., ... & Williams, S. E. (2017) [5].	147	264	281	360	250	260.4%	1,302	
2. Forest disturbances under climate change. <i>Nature climate change</i> , 7(6), 395-402, Seidl, R., Thom, D., Kautz, M., Martin-Benito, D., Peltoniemi, M., Vacchiano, G., ... & Reyser, C. P. (2017) [6].	68	143	238	309	215	194.6%	973	
3. The 2020 report of the Lancet Countdown on health and climate change: responding to converging crises. <i>The Lancet</i> , 397(10269), 129-170, Watts, N., Amann, M., Arnell, N., Ayeb-Karlsson, S., Beagley, J., Belesova, K., ... & Costello, A. (2021) [7].	0	0	2	395	176	114.6%	573	
4. The 2019 report of The Lancet Countdown on health and climate change: ensuring that the health of a child born today is not defined by a changing climate. <i>The Lancet</i> , 394(10211), 1836-1878, Watts, N., Amann, M., Arnell, N., Ayeb-Karlsson, S., Belesova, K., Boykoff, M., ... & Montgomery, H. (2019) [8].	0	3	191	218	122	106.8%	534	
5. Scientists' warning to humanity: microorganisms and climate change. <i>Nature Reviews Microbiology</i> , 17(9), 569-586. Cavicchioli, R., Ripple, W. J., Timmis, K. N., Azam, F., Bakken, L. R., Baylis, M., ... & Webster, N. S. (2019) [9].	0	13	112	216	188	105,8%	529	
6. The Lancet Countdown on health and climate change: from 25 years of inaction to a global transformation for public health, <i>The Lancet</i> , 391(10120), 581-630. Watts, N., Amann, M., Ayeb-Karlsson, S., Belesova, K., Bouley, T., Boykoff, M., ... & Costello, A. (2018) [10].	64	137	140	112	64	103.4%	517	
7. Climate change and inter-connected risks to sustainable development in the Mediterranean. <i>Nature Climate Change</i> , 8(11), 972-980. Cramer, W., Guiot, J., Fader, M., Garrabou, J., Gattuso, J. P., Iglesias, A., ... & Xoplaki, E. (2018) [11].	0	40	112	178	122	90.4%	452	
8. Plant phenology and global climate change: Current progresses and challenges. <i>Global change biology</i> , 25(6), 1922-1940. Piao, S., Liu, Q., Chen, A., Janssens, I. A., Fu, Y., Dai, J., ... & Zhu, X. (2019) [12].	0	10	87	170	177	88.8%	444	
9. The imperative for climate action to protect health, Haines, A., & Ebi, K. (2019). <i>New England Journal of Medicine</i> , 380(3), 263-273 [13].	0	33	61	260	49	80.6%	403	
10. Changing climate both increases and decreases European river floods. Blöschl, G., Hall, J., Viglione, A., Perdigão, R. A., Parajka, J., Merz, B., ... & Živković, N. (2019). <i>Nature</i> , 573(7772), 108-111 [14].	0	7	99	153	112	74.2%	371	

Source: Own conceptualization, following the takeover of data from the Web of Sciences database.

may be a promising approach. Research results conclude that, *both the ecosystem and society should prepare for an increasingly disturbed future of forest,*

therefore we must *prepare both ecosystems and society for an increasingly disturbed future of forests*. Despite the fact that an efficient management can meet multidimensional concepts in order to establish an appropriate direction, however, according to the policies in the field, everything remains at the level of illusion.

*The 2020 Report of The Lancet Countdown on Health and Climate Change*⁹, *The 2019 Report of The Lancet Countdown on Health and Climate Change*¹⁰ and *The 2017 Report of The Lancet Countdown on Health and Climate Change*¹¹, according to the above sample chosen, represents standalone reports created to provide an independent, global monitoring system, dedicated to tracking the developing health profile of climate change. This research represents the findings of 35 leading academic institutions, the findings are based on the expertise of climate scientists. The results indicate a modest progress in making health central to public and political engagement in climate change. Despite increasing interest over the years, *the world is yet to see a response from governments which matches the scale of the challenge*. Engagement by all sectors of society (media, governments, corporate sectors...) is needed/essential if action on climate change is to be mobilized and sustained.

The window of opportunity is narrow! Therefore, though action needs to increase. The reports provide the clearest signal that the world is *slowly but surely* beginning to move to a low-carbon world. Overall, the reports highlight, on the one hand, the weak actions of the last two decades, regarding climate change, and, on the other, they give us cause for deep concern, highlighting the immediate threats to the well-being of humankind and the health of the planet arising from climate change.

*Scientists' warning to humanity: microorganisms and climate change (2019)*¹², represents a *Consensus Statement* regarding the effects of microorganisms on climate change. The results obtain *puts humanity on notice that the impact of climate change will depend heavily on responses of microorganisms, which are essential for achieving an environmentally sustainable future*. Research recommendations are: *to improve our quantitative understanding of the global marine and soil microbiome, and an immediate, sustained and concerted effort is required to explicitly include microorganisms in research, technology development, and policy and management decisions*. That is why, there is a need to call for action for microbiologists to become increasingly involved in this area, and the results of microbial research must be integrated into the frameworks for tackling climate change in the achievement of the United Nations Sustainable Development Goals (**Figure 2**).

⁹https://gala.gre.ac.uk/id/eprint/33779/1/33779_DOMINGUEZ%20SALAS_2020_report_of_the_Lancet_countdown.pdf

¹⁰http://sro.sussex.ac.uk/id/eprint/88053/4/_smbhome.uscs.susx.ac.uk_tjk30_Documents_The%202019%20Report%20of%20the%20Lancet%20Countdown%20-%20revised.pdf

¹¹https://gala.gre.ac.uk/id/eprint/29117/1/29117%20DOMINGUEZSALAS_The_Lancet_Countdown_on_Health_and_Climate_Change_%28AAM%29_2017.pdf

¹²https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7136171/pdf/41579_2019_Article_222.pdf

A call to action:

The microbiologists' warning calls for:

- *Greater recognition that all multicellular organisms, including humans, rely on microorganisms for their health and functioning; microbial life is the support system of the biosphere;*
- *The inclusion of microorganisms in mainstream climate change research, particularly research addressing carbon and nitrogen fluxes;*
- *Experimental design that accounts for environmental variables and stresses (biotic and abiotic) that are relevant to the microbial ecosystem and climate change responses;*
- *Investigation of the physiological, community and evolutionary microbial responses and feedbacks to climate change;*
- *A focus on microbial feedback mechanisms in the monitoring of greenhouse gas fluxes from marine and terrestrial biomes and agricultural, industrial, waste and health sectors and investment in long- term monitoring;*
- *Incorporation of microbial processes into ecosystem and Earth system models to improve predictions under climate change scenarios;*
- *The development of innovative microbial technologies to minimize and mitigate climate change impacts, reduce pollution and eliminate reliance on fossil fuels;*
- *The introduction of teaching of personally, societally, environmentally and sustainability relevant aspects of microbiology in school curricula, with subsequent upscaling of microbiology education at tertiary levels, to achieve a more educated public and appropriately trained scientists and workforce;*
- *Explicit consideration of microorganisms for the development of policy and management decisions;*
- *A recognition that all key biosphere processes rely on microorganisms and are greatly affected by human behavior, necessitating integration of microbiology in the management and advancement of the United Nations Sustainable Development Goals.*

Figure 2. A call for action - Representation of Results for Climate action (All Fields).
Source: Report of The Lancet Countdown on Health and Climate Change.

The research *Climate change and interconnected risks to sustainable development in the Mediterranean (2018)*¹³, is a scientific research of risk assessment of five major interconnected domains, such as: water resources, ecosystems, food safety and security, health, and human security. Due the existing environmental problems caused by the combination of changes in land use, increasing pollution and declining biodiversity, the risk assessment was made around Mediterranean Basin. In order to provide accurate information, an international network of more than 400 experts in the field has been set up, namely: the Mediterranean Experts on Environmental and Climate Change¹⁴. The main purpose of the international network was to go beyond the cultural, political and linguistic threshold.

Research results indicate that: **Water resources** are unevenly distributed with critical limitations in the southern and eastern part of the basin, as well as, at the same time there is certain regions in Mediterranean basin, which are regularly affected by heavy rain and flash floods. The floods that occur as a result of climate change, often have too high a cost, regarding the well-being of mankind as

¹³https://ddd.uab.cat/pub/artpub/2018/187525/natclicha_a2018m11v8n11p972.pdf

¹⁴<http://www.medecc.org>

well as the local economy; ***Natural and managed ecosystems*** - Forests, wetlands, coastal and marine ecosystems in the Mediterranean Basin will be affected due to climate change, these ecological changes on land/ocean lead to an overall biodiversity loss. Overall, it will be compromising benefits and services that Mediterranean ecosystems provide, such as, renewable natural resources, environmental services, and social services; ***Food production and security*** - Food production from agriculture and fisheries across the Mediterranean region is changing, due to social, economic, and environmental changes. Therefore, is expected that climate and socio-economic changes to pose threats for food safety and security, in the Mediterranean region; ***Human health*** - Climate change is one of many drivers affecting health, acting directly (through heat, cold, drought, storms and other forcings) or indirectly (through changes in food provision and quality, air pollution or other aspects of the social and cultural environments); ***Human security*** - climate change trigger extreme events and societal conflicts. Large areas of the Mediterranean coastline have been reported to be severely affected by saltwater intrusion, and away from the coast, risks are associated with increasing wildfires caused by warming, drought, and land abandonment... *The combined climate and non-climate related forcings have the potential to induce large-scale human migration towards safer areas. Rapid onset events, such as floods or other natural disasters, are clearly linked to immediate environmentally induced displacement and relocation.*

Therefore, the combination of changes in land use, increasing pollution and declining biodiversity indicates that the recent accelerated climate change has exacerbated the environmental problems in the Mediterranean basin. Policies for the sustainable development goals, for Mediterranean countries is needed to mitigate these risks and consider adaptation options.

The article ***Plant phenology and global climate change: Current progresses and challenges (2019)***¹⁵, is research that follow the progress in plant phenology and its interactions with climate change. Plant phenology has important implications for ecosystem carbon cycles and ecosystem feedbacks to climate. Significant phenology changes under climate change can have strong impacts on community structures and ecosystem functions. Due to drastic climate change, there are still some critical challenges that need to be tackled in future research, such as: *First*, new phenology models that satisfies current requirements; *Second*, it remains a grand challenge to scale up plant phenology from species to the landscape level; *Third*, more research about phenology of tropical forests; *Fourth*, systemic studies linking the above and below ground phenology are needed.

The results of the research indicate that, *more investigations of root phenology are required to improve our understanding of root phenology processes and their main determinants, and the synchrony or de-synchronization between leaf and root phenology under climate change.* Therefore, in this area, there is a great

¹⁵<https://typeset.io/pdf/plant-phenology-and-global-climate-change-current-progresses-1kbpcvsmxmy.pdf>

need for a complex system, represented by policies and programs through which we can monitor the sensitivity of plant species, with the advent of climate change.

*The Imperative for Climate Action to Protect Health (2022)*¹⁶, it is research that highlights the potential risks of climate change in terms of the health of the population, as well as public health systems. This study highlights the need for additional measures in the coming decades. Therefore, as direct result from climate change, is expected a substantial increase in morbidity and mortality. These increases are associated with: *a range of health outcomes, including heat-related illnesses, illnesses caused by poor air quality, undernutrition from reduced food quality and security, and selected vector borne diseases in some locations, at the same time, worker productivity is expected to decrease, particularly at low latitudes.*

The results of the research indicate that, if adaptation and mitigation responses are undermined, climate change can cause dangerous widespread disruption in nature, affecting the lives of millions of people around the world, such as: severe injuries, illnesses, and deaths. Threats caused by climate change require decisive action from specialists in this field, as well as from governments. Urgent investment in climate change policies is needed, such as, policies with low environmental impact that support intersectoral action to reduce the environmental footprint of society in general and the health care system specifically, and also promoting education programs on climate change and public health.

*Changing climate both increases and decreases European river floods*¹⁷, it is an analysis that reveals empirical data on flooding in Europe, as a result of climate change. Research results indicate that 1) *increasing autumn and winter rainfall has led to increasing floods in north-western Europe*, 2) *decreasing precipitation and increasing evaporation have led to decreasing floods in medium and large catchments in southern Europe* and 3) *decreasing snow cover and snowmelt as a result of warmer temperatures have led to decreasing floods in eastern Europe.*

Climate change plays an important role in increases and decreases European river floods. The existing policies and programs in what concern *increases and decreases European river floods*, were not developed considering climate-change considerations, *which means that they need modification to be effective over coming decades.* Thus, it is required from professionals in the field, as well as governments, to initiate policies and programs in order to protect the health of current and future generations.

According to the articles selected above, we can say that we have made a rigorous analysis and capture the most heated dilemmas and rigors in the field. Due to the large number of research areas (more than 200 areas of research, **Table 1**), we can say that it is a great need to develop a *Modus operandi system*¹⁸

¹⁶<https://studysustainabilityatimperial.com/wp-content/uploads/2020/03/nclimate3231.pdf>

¹⁷<https://www.nejm.org/doi/pdf/10.1056/NEJMra1807873?articleTools=true>

¹⁸[https://scirp.org/\(S\(351jmbntv-nsjt1aadkposzje\)\)/journal/paperinformation.aspx?paperid=122267](https://scirp.org/(S(351jmbntv-nsjt1aadkposzje))/journal/paperinformation.aspx?paperid=122267)

(Constantin C. Hrițcan 2022), for each area of research, in order to achieve the best policies and programs.

4. Conclusions

One of the most pressing and urgent goals is SDG 13 - Climate Action. Climate action is a global challenge that can benefit the whole world, main objective being, to take urgent action to combat climate change and its effects. Climate change is caused by human activities that contribute to the production of excessive greenhouse gases. These activities include burning fossil fuels, deforestation, and farming practices. The effects of climate change have become increasingly obvious, temperatures are rising, glaciers are melting, sea levels are constantly rising, as well as extreme weather events, being just some of the many effects. These impacts are already having devastating consequences on ecosystems, biodiversity, and human populations.

Another major conclusion derives from the lack of the political class involvement, I refer to regulating human activities that contribute to the production of greenhouse gases. Immediate action is needed, to reduce global greenhouse gas emissions and limit global warming to well below 2 degrees Celsius above pre-industrial levels. Achieving this goal is vital to safeguard vulnerable communities, ecosystems, and economies. To ensure that these goals are achieved, there should be communication, awareness and education, transparency and standardization, as well as there must be a collective effort from all stakeholders, governments, businesses, civil society, and individuals. On the global stage, effective sustainable development and partnerships are required, to promote sustainable programs of growth and development on climate change action. Climate Change Action is a vital goal that requires urgent attention and action.

The specialized literatures, as well as the discoveries made by specialists in the field, are especially important, because they provide a roadmap for sustainable development. The conceptual framework is necessary, both, to establish common directions in the development of new policies and programs, and to help governments, businesses and civil society work together to achieve common goals. Therefore, the results obtained by specialists, should reminder as that we all have a responsibility to protect our planet and its people.

According to the obtained results, we can notice a considerable influence represented by the commitments of specialists, regarding the number of researches in this field, as well as new ways to interconnect the results obtained.

This research focuses on the evolution in recent years (2017-2022) of the climate change dimension, rigorously analyzing a wide range of dilemmas. The main goal, it was to bring out the ***quality of policies and programs in the field of climate change***. It seems that we have a very well-developed model of objectives and sub-objectives (SDGs - Paris Agreement 2015), but when it comes to applicative part, this model is not sufficiently well developed. As we can see that this study captures the need for a new approach, in this area, this approach

should be closely related to the findings of specialists in the field.

According to the articles selected above, we can say that we have made a rigorous analysis and capture the most heated dilemmas and rigors in the field. Due to the large number of research areas (more than 200 areas of research, **Table 1**), we can say that there is a great need to develop a unique *Modus operandi system* [2], for each area of research, in order to achieve the best policies and programs. This system should act as a bridge between specialists who create policies and programs and experts who deal with data collection.

In conclusion, the policies of the SDG 13 are regularly updated, and represent an important part of climate change strategy. The programs stand at the core of the action in the fight against climate change and help improve society's understanding of climate change and its impacts on human health/security, and the environment. But there is a big concern among specialists, that these policies and programs do not reach out all areas, that is why the results of the research carried out by specialists must be considered.

I consider that the study answers the research question, new perspectives were opened to larger studies aimed at developing the field of Climate Action. Only through collective effort and partnership can we achieve a sustainable future for all.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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