

Article

Promoting Renewable Energy to Cope with Climate Change—Policy Discourse in Israel

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Abstract: Evidence shows that global climate change is increasing over time, and requires the adoption of a variety of coping methods. As an alternative for conventional electricity systems, renewable energies are considered to be an important policy tool for reducing greenhouse gas emissions, and therefore, they play an important role in climate change mitigation strategies. Renewable energies, however, may also play a crucial role in climate change adaptation strategies because they can reduce the vulnerability of energy systems to extreme events. The paper examines whether policy-makers in Israel tend to focus on mitigation strategies or on adaptation strategies in renewable energy policy discourse. The results indicate that despite Israel's minor impact on global greenhouse gas emissions, policy-makers focus more on promoting renewable energies as a climate change mitigation strategy rather than an adaptation strategy. These findings shed light on the important role of international influence—which tends to emphasize mitigation over adaptation—in motivating the domestic policy discourse on renewable energy as a coping method with climate change.

Keywords: climate change; renewable energy; mitigation; adaptation; climate change policy; energy policy

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1. Introduction

The world has experienced significant climate change in recent years, which scientists predict will only accelerate over time [1–3]. The effects of climate change are diverse, and include extreme temperature and precipitation variations, floods, droughts, and fires [4–6]. Greenhouse gases (GHG), such as carbon dioxide, methane, and ozone, are believed to accelerate climate change and exacerbate its effects [7–9]. A significant portion of GHG emissions are produced by conventional electricity systems, which are mostly based on coal, oil and natural gas [10–12].

Many states promote renewable energies as a significant policy mechanism for coping with climate change, mainly through the framework of climate change mitigation, which refers to practices that mitigate the effects of climate change, but also through adaptation, which refers to practices of adapting to climate change's effects [13–15]. Because they produce little to no GHGs, renewable energy systems based on wind, solar, and hydroelectric power have emerged as popular energy alternatives in global efforts for climate change mitigation [13,16,17]. Several states also incorporate renewable energies into climate change adaptation strategies because relying on them can reduce the vulnerability of electricity systems to extreme climate change-related events [18–20]. Thus, while climate change mitigation tends to focus on global considerations (i.e., reducing global GHG emissions), adaptation tends to be more local in its essence (i.e., each state needs to adapt differently to climate change) [21–24].

Previous studies have questioned whether global efforts to mitigate climate change, through means such as renewable energies, can influence local perspectives in this matter (e.g., [25–27]). This paper addresses the issue by examining whether, and to what extent,

politicians and policy-makers in Israel prioritize globally-oriented climate change mitigation versus locally-oriented climate change adaptation in renewable energy policies; as reflected in official deliberations in the Israeli parliamentary committees that formulate energy policy. In order to do so, this study examines statements addressing climate change through the prism of renewable energy policy. To date, Israeli policy-makers' approaches to climate change coping strategies, in the context of the broader Israeli policy discourse around renewable energies, has not been comprehensively studied. The novelty of this study therefore lies in systematically exploring the manner in which policy-makers perceive renewable energies as a coping method with climate change, while focusing on Israel as a notable case study.

Thus, in addition to illuminating how policy-makers address climate change through renewable energies in Israel, the paper also speaks to broader questions about how domestic and global climate change perceptions shape local policy-makers perspectives. Although politicians sometimes lack the technical knowledge about the ways renewable energy can impact climate change, they are usually the ones who make policy decisions about these essential issues [28–30]. This study, thus, contributes to a better understanding of how the notions of climate change mitigation and climate change adaptation shape local policy discourse about renewable energies, which may eventually evolve into practical actions [24,31,32].

The next section reviews scientific literature on the role of renewable energy in coping with climate change. This is followed by a section on the study's methodology, which combines quantitative and qualitative examinations of official deliberations in the committees of the Israeli parliament, most notably, the Economics Committee, Finance Committee, Science and Technology Committee, and Interior and Environmental Protection Committee. The next section presents the results of the examination, followed by the final section, which highlights the study's conclusions.

2. Renewable Energy as a Tool for Coping with Climate Change

2.1. Climate Change: Definition and Characteristics

The Intergovernmental Panel on Climate Change (IPCC) defines climate change as “a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer” [15]. Climate change is largely caused by the presence of GHGs in Earth's atmosphere, which traps the sun's warmth in Earth's lower atmosphere [7,8]. The over-accumulation of GHGs in the atmosphere thus leads to an accelerated climate change process [9,33].

Many climate change effects are physical, including changes in the average and variance of precipitation, temperatures, and other measures [33,34]. Usually, different regions are impacted differently, as these effects do not distribute uniformly across the globe [35–37]. Climate change has also been proven to increase extreme climatic events such as floods, droughts, and fires [4–6]. Nevertheless, climate change also causes effects other than purely biophysical ones. For example, alterations in the world's water reserves, as a result of climate change, can influence the prevalence of diseases and the sustainability of food crops [33,38], as well as affect other dimensions of human life [39–41].

For many years, global efforts to cope with climate change and its accompanying effects were primarily driven by mitigation-oriented solutions. Mitigation strategies attempt to reduce the physical effects of climate change through various methods, the most popular being the reduction in GHG emissions. This has been done through the use of cleaner means of transportation, reducing factories' pollution, advancing sustainable agriculture systems and other mechanisms. Accordingly, mitigation efforts are fundamentally global, since they are about reducing the global greenhouse gas emissions [15,42,43].

However, another policy tool for coping with climate change has gradually emerged—adaptation [4,36,44,45]. This policy tool gained prominence as different states

and global organizations increasingly realized that mitigation strategies cannot realistically eliminate the climate change process and its physical effects in their entirety [46,47]. They found that a more effective solution would need to focus not only on the physical effects of climate change, but also its social effects. This has been done through various mechanisms such as the adaptation of local economies, industries, and agriculture systems to new environmental conditions. Accordingly, adaptation efforts tend to address local issues, as each region has to adapt in a different way to climate change [45,46,48]. Hence, climate change adaptation focuses on enabling systems, institutions, humans, and organisms to adapt to potential harm, take advantage of opportunities, and respond to climate change outcomes [49–51].

2.2. Renewable Energy: Definition and Characteristics

Renewable energies, such as solar, wind, hydroelectric, biomass and other technologies, are scientifically defined as energy sources that originate in non-perishable natural resources, or more simply as any source of energy that is not based on fossil fuels (This simple definition excludes common fossil fuels such as coal, oil, and natural gas, as well as shale gas, which is currently under significant debates concerning its environmental values) [14,15,52–54]. The use of renewable energies increased significantly in recent years [55,56] and they currently account for more than quarter of the world's total electricity production [57].

While renewable energy technologies vary, many of them have common advantages [52,58,59]. Renewable energies tend to be characterized by their reliance on non-perishable resources and, therefore, contrary to conventional electricity production means, future production is usually less constrained by resource limitations [14,52,60]. Another significant advantage of renewable energies is their very low-to-zero GHG emission rate [13,16,17]. The use of renewable energies, as an alternative to conventional electricity systems, also reduces emissions of other pollutants that harm the environment [57,61,62]. Renewable energies have also played a significant role in the global decentralization of energy infrastructure because of the relative freedom of their installed capacities, resource diversification, and operation of facilities connected to grids as well as off-grid facilities [63–65].

Several renewable energies technologies also have some drawbacks compared to conventional electricity systems. The timing of some renewable energy facilities' production cannot always be controlled without costly storage facilities, because it depends on external factors like wind speed and solar radiation [59,66,67] (It should be noted, however, that the timing of some renewable energies can be controlled, since they do not heavily dependent on external factors, such as technologies based on anaerobic digestion processes [68,69]). Furthermore, several renewable energy technologies often suffer from a low utilization rate, which makes them more costly than conventional electricity systems based on coal or oil, for instance [70–72]. Finally, large scale renewable energy projects (i.e., mega-projects) may have specific negative implications related to environmental, economic and social aspects, inter alia due to possible displacement of local populations, significant land use or inefficiency [73–77].

2.3. Linking Renewable Energy to Climate Change

The two main issues discussed so far, climate change and renewable energy, are deeply connected, as renewable energy constitutes a significant tool for coping with climate change [13,19,78], mostly as a mitigation strategy but also as an adaptation strategy [32,79,80]. A significant share of GHG emission originates in conventional electricity systems, such as power plants based on fossil fuels [10–12]. Replacing these systems with alternative energies (i.e., renewable energies) is well known for helping mitigate climate change effects [15,22] by reducing GHG emissions into the atmosphere [13,16,81]. At the same time, renewable energies may also be employed in climate change adaptation efforts

[18–20]. Unlike conventional electricity systems, renewable energies tend to be more decentralized and operate with diversified capacities, which prevents overall failure in cases of damage to a single facility [21,24,82]. Renewable energies also enable countries to diversify their energy portfolio, allowing them to not only rely on fossil fuels, thus reducing their vulnerability to extreme events caused by climate change, such as temperature fluctuations, fires, and floods [83–85].

Many countries around the world see renewable energies as a significant tool for coping with climate change through mitigation and adaptation, and therefore supervise their implementation through various regulatory means [58,86–88] aimed to achieve different targets for electricity production using these energy sources [52,89,90]. Regulations aimed at climate change adaptation usually focus on the domestic considerations for renewable energies, such as diversifying energy portfolios, decentralizing energy systems, and enhancing energy security [21,24]. Regulations related to mitigation mainly emphasize global goals, like decreasing worldwide environmental risks [22,23], which are supported by international agreements that encourage participating countries to reduce their GHG emissions by meeting renewable energy targets. It should be noted that some international agreements also address adaptation issues, but they do so less significantly than with regard to mitigation issues. These international agreements, thus, mainly seek to encourage the involved states to implement climate change mitigation mechanisms, specifically through the promotion of renewable energies [25–27,91,92].

Like many other countries, the State of Israel has been promoting the use of renewable energies for the purpose of both climate change mitigation and adaptation over the last several years [93,94]. Renewable energies in Israel are promoted based on the setting of government targets for electricity production using these energy sources. Consequently, the country has been undergoing a significant energy transition process in recent years, as these targets have been continuously raised, reaching to a peak-target of 30% electricity production from renewable energies by 2030 [95]. These targets serve the Electricity Authority, which is responsible for dictating relevant regulations concerning renewable energies that are being tangibly promoted by private developers [96]. Due to suitable desert climatic conditions, Israel has mainly focused on promoting solar energy, which contributes to mitigation efforts, through reducing Israel's GHG emissions. In this context, Israel also signed the Paris Agreement, which commits the country to reduce GHG emissions by promoting renewable energy [97]. Despite the centralized regulatory process, solar energy in Israel tends to be spatially decentralized, and thus it diversifies the country's energy portfolio (which is mainly based on natural gas), while reducing the vulnerability of the local energy market to extreme events caused by climate change, such as potential floods. The adoption of renewable energy, specifically in Israel, may also improve its energy security in aspects unrelated to climate change (e.g., war risks) as well as strengthen its energy independence, but those issues are not in the focus of this study [93].

One of the main forums in Israel where renewable energies are discussed as a policy tool for coping with climate change is in the committees of the Knesset, Israel's parliament, most notably, the Economics Committee, Finance Committee, Science and Technology Committee, and Interior and Environmental Protection Committee. The members of these committees, comprised of some of the 120 Members of the Knesset (MKs), discuss the role of renewable energies in coping with climate change and devise legislation on the issue. The main role of the committees is to initiate and formulate legislation that will be put up for a vote in the Knesset plenum, by the Members of the Knesset themselves, and to discuss regulations and government decisions that require approval. Legislative work in the committees requires consultation with jurists and economists, as well as other external experts who are invited to present their positions on the issues under discussion at the committees' meetings. Therefore, some of the most important discussions on renewable energy take place at these committee meetings, since they directly shape Israel's renewable energy legislation and policy [98].

This paper studies the deliberations of these Knesset committees in order to understand the main considerations facing Israeli policy-makers and politicians regarding renewable energy policies which address climate change, and how these considerations ultimately influence national-level policymaking on renewable energies. The main politicians and policy-makers, who the study focuses on, are Knesset members and government ministers (i.e., elected officials) who take part in these committees or which are influenced by their work [99].

3. Methodology

This study examines whether Israeli policy discourse on renewable energy promotion focuses on climate change mitigation or climate change adaptation. The Knesset's Economics Committee, Finance Committee, Science and Technology Committee, and Interior and Environmental Protection Committee are some of the main forums where Israeli policy-makers discuss these topics. The study reviewed all deliberations that took place in these Knesset committees as well as in other committees that discussed the topic between the years 2007–2017, the period in which the discourse on renewable energy in Israel began to develop [93]. The study identified the deliberations that dealt with renewable energy, climate change, and the relationship between them. This included a total of 1864 protocol pages of 40 deliberations in these Knesset committees (see Appendix A), and the study analyzed them with both quantitative and qualitative methods [100]. The mixed analysis of protocols (i.e., both quantitative and qualitative methods), detailed below, is a common methodology used in literature, aiming to provide a compressive outlook on various deliberations (e.g., [101–103]).

3.1. Quantitative Examination

All statements referring to renewable energy as a tool for coping with climate change were identified in Knesset committee deliberations. They were examined, counted, and categorized as relating either to mitigation or adaptation strategies. Similar quantitative methods have been widely used in literature to examine various policy deliberations (e.g., [104,105]). The main advantage of this method is its ability to reflect in a relatively broad statistical manner the amount and variety of discourse on the role of renewable energies in coping with climate change. This was mostly demonstrated when the politicians and the policy-makers themselves expressed statements about either adaptation or mitigation, but also when they learned about these strategies from outside speakers who contributed testimonies at the deliberations. The more mitigation or adaptation strategies have occupied a significant amount of the Knesset committee deliberations, the more likely they are to have influenced politicians and policy-makers (i.e., Knesset members and government ministers) regarding renewable energy policy.

The quantitative analyses took into account two other factors, while categorizing the statements regarding mitigation and adaptation:

- The participants' affiliation: elected officials (i.e., a Knesset member or a government minister), civil servants, representatives of a non-profit entity (i.e., a non-profit organization or an academic institution), or representatives of a private entity. This categorization takes into account the fact that some participants might be given more weight than other participants in the policymaking process.
- The Knesset committee in which the statements were made. This categorization takes into account the fact that different committees might be given more weight than other committees in the process of policy shaping. For example, the Science and Technology Committee has relatively little policy influence on elected officials, in comparison to the Finance Committee, which can affect the state budget more directly.

In order to accurately categorize and count the claims made by participants as relating either to adaptation or mitigation, the study only counted each person's statement once per deliberation, no matter how many times the person repeated the statement. For

example, if a single person repeated the need to promote renewable energies in order to adapt to climate change several times in a single deliberation, this statement was only counted once.

3.2. Qualitative Examination

In order to conduct a comprehensive examination, a qualitative analysis was carried out on all statements referring to renewable energy as a tool for coping with climate change. In this framework, all participants' statements in the Knesset Committee deliberations were analyzed. For each coping strategy (i.e., mitigation or adaptation), the relevant statements were qualitatively examined and thoroughly compared in order to illuminate all arguments supporting adaptation versus mitigation. The essence of these arguments has been summarized and it is presented in the next section through several representative examples. Similar qualitative methods have been widely used in literature to examine various policy deliberations (e.g., [106,107]).

The main advantage of this qualitative method is its ability to capture and evaluate the context of the various statements. Like the quantitative analysis, this approach accounts for the fact that some participants might be given more weight than other participants in the process of policy shaping.

Thus, the role of both the quantitative and the qualitative methods in this study is to provide a comprehensive examination of the volume and the context of statements expressed in Committees regarding renewable energy as a tool for coping with climate change.

4. Results

The study examines whether Israeli Knesset members' policy discussions about renewable energies focused more on climate change mitigation or climate change adaptation strategies. Figure 1 presents the results of the quantitative analysis, and designates the number and type of statements (adaptation or mitigation) in relation to participants' affiliation.

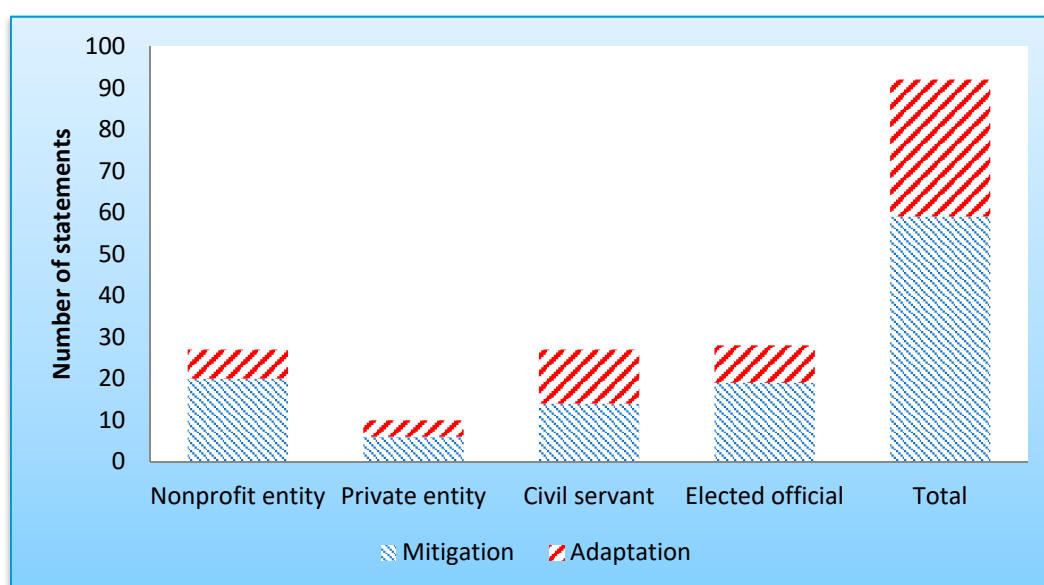


Figure 1. Statements about renewable energy as a tool for coping with climate change, by participants' affiliation.

The findings show that 92 statements clearly referred to the promotion of renewable energies as a tool for coping with climate change; 59 statements (64%) referred to renewable energy as a mitigation tool, while only 33 statements (36%) referred to adaptation.

The total number of statements made by representatives from private entities was much lower than other affiliations, with only 10 statements (11% of the total statements).

Furthermore, examination of the statements according to the participants' affiliations shows that elected officials more often referred to renewable energy as a tool for climate change mitigation, with 19 claims (68%), compared to only 9 claims (32%) referring to adaptation. The analysis revealed similar results for representatives of nonprofit entities, with 20 claims (74%) about mitigation and only 7 statements (26%) about adaptation. Civil servants spoke about both mitigation and adaptation more or less equally, with 14 statements (52%) referring to mitigation compared to 13 statements (48%) referring to adaptation. Similarly, representatives of private entities made 6 statements (60%) about mitigation compared to 4 statements (40%) about adaptation.

The results also categorized statements in relation to the Knesset committees at which they were made, as can be seen in Figure 2.

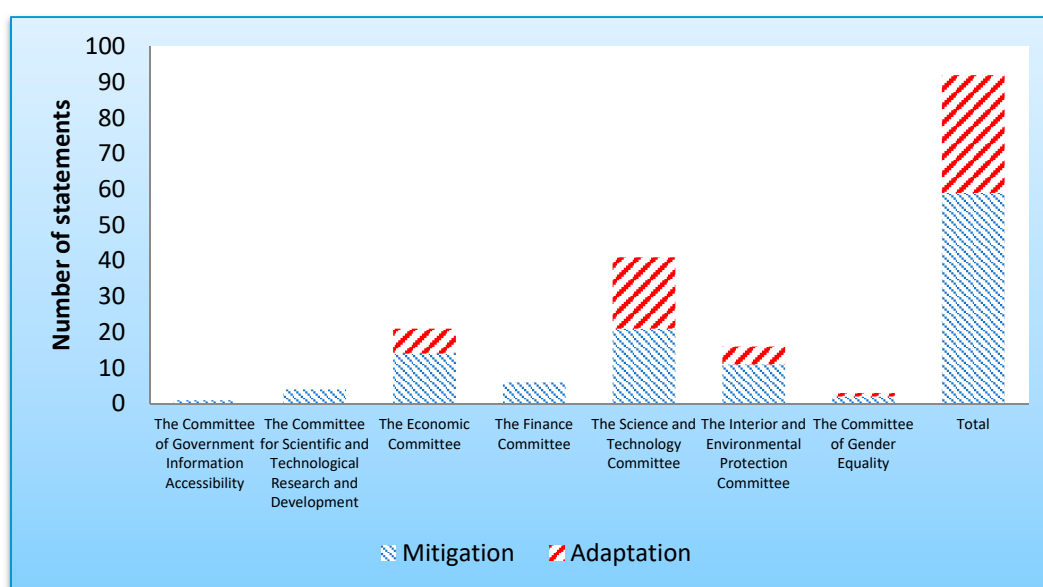


Figure 2. Statements about renewable energy as a tool for coping with climate change, by Knesset committee.

The committee with the most statements regarding renewable energy as a tool for coping with climate change was the Science and Technology Committee (41 statements constituting 45% of all statements), which, by its definition, is supposed to deal with such issues. Participants in this committee's discussion gave balanced attention to both mitigation and adaptation. Other committees in which the number of statements was relatively high are the Economics Committee (21 statements constituting 23% of all statements) and the Interior and Environmental Protection Committee (16 statements constituting 17% of all statements). However, the statements in these committees were significantly biased in favor of mitigation considerations. Most of the other committees exhibited similar results, though the total number of all statements on renewable energy was relatively low.

The results were also categorized according to the total number of relevant statements to renewable energy over time, as can be seen in Figure 3. The total number of statements, regarding both adaptation and mitigation, increased between 2007 and 2017. This indicates that renewable energy garnered more interest among policy-makers as a tool for coping with climate change. While statements regarding both adaptation and mitigation strategies increased over time, mitigation statements continued to be mentioned more often than adaptation statements over time, without any noticeable trend-differences over the years.

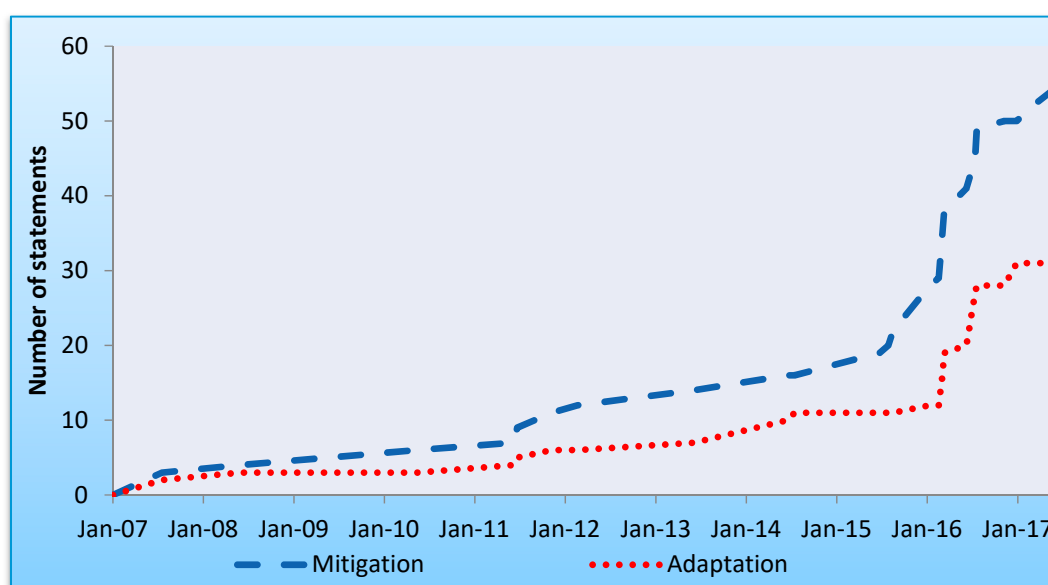


Figure 3. Statements about renewable energy as a tool for coping with climate change, over time (aggregate).

The qualitative analysis showed that there is a relatively high level of consensus among politicians and policy-makers about the importance of renewable energy as a tool for coping with climate change, whether through mitigation or adaptation. This was clearly expressed by MK Mickey Levy (Yesh Atid), in his speech during a Finance Committee meeting about financial incentives for installing renewable energies to cope with climate change (7 June 2016): “It is really so important. Nothing is more important than this. On this issue, there is no coalition and opposition.”

In this context, statements referring to renewable energies as a tool for climate change mitigation fall into two main categories, both with clear global orientation: environmental statements and statements related to Israel’s international agreements. For example, MK Dov Khenin’s (Hadash) speech referenced global environmental concerns during an Economics Committee deliberation (4 June 2013):

Our world is in a very dramatic environmental crisis and one of the main effects of this dramatic environmental crisis is the climate crisis caused by the burning of greenhouse gases. Therefore, all around the globe, not only in Israel, countries are changing their direction, adopting alternative means for electricity production, renewable energies, which can help to stop this climate crisis. This is the direction the whole world is moving towards. This is the right direction and this is the direction we need to go to.

Shmuel Chen, the director of a third sector association dealing with environmental protection issues took a similar global environmental approach during a Finance Committee deliberation (28 July 2015):

Mr. Chairman, the discussion we are having, regarding a little bit of money here or there is not the real discussion we should have. We end up dealing here with saving lives, I do not exaggerate... We are discussing these issues so that eventually we will be able to advance renewable energy and reduce our carbon emission. We are literally acting to save humanity.

Another significant share of references to renewable energy as a tool for climate change mitigation emphasized Israel’s international commitments. For example, Mr. Ophir Pines-Paz, a former MK (Labor) and the CEO of a private renewable energy company, remarked to a deliberation of the Economics Committee (21 June 2011):

The State of Israel is part of the world, and the world has taken upon itself to produce clean energy, clean electricity, as part of the struggle against greenhouse gas emissions. For those who do not remember, we are part of the world. Shimon Peres, our president, did not speak to himself, he spoke to everyone at the UN conference in Copenhagen and argued that we are committed to reducing the use of fossil fuels and to increase the use of renewable energies to deal with climate change. This was a commitment made by the President of the State and on behalf of the Government of Israel.

MK Yael Cohen-Paran (Zionist Union) took a similar approach during a Science and Technology Committee deliberation (3 September 2016): “Israel, as a state, joined the Paris Agreement, signed recently by all countries of the world during the Climate Change Conference in Paris, in order to significantly reduce global emissions of greenhouse gases and to reach very, very far-reaching targets regarding renewable energies...”

Nevertheless, several participants at Committee deliberations expressed doubts about Israel’s ability to contribute effectively to global efforts to mitigate climate change by promoting renewable energies, which may explain why some policy-makers in Israel favor renewable energy as a domestic adaptation strategy rather than a mitigation strategy. Prof. Itay Sened from Tel Aviv University addressed this issue during an Interior and Environmental Protection Committee deliberation (19 July 2016): “Global warming is global. We as a country have a totally insignificant contribution to the subject.” Indeed, several discussions were devoted merely to adaptation efforts, as can be seen in the opening remarks of MK Yael Cohen-Paran (Zionist Union) to a meeting of a subcommittee of the Science and Technology Committee (27 December 2016):

I am pleased to open the deliberations of the Subcommittee for the Promotion of Renewable Energy Technologies... The discussion today revolves around the subject of adaptation, not mitigation... what we are doing with the current situation, how we adapt to the climate crisis.

When policy-makers talk about renewable energy as an adaptation strategy, they focus mainly on domestic issues, as they refer to the reduction in energy systems’ vulnerability to extreme events caused by climate change, either through the decentralization of electricity systems [21,24,76] or through the diversification of the energy portfolio [77,78]. In a speech to the Science and Technology Committee, chief scientist of the Israeli Ministry of the Environment, Dr. Sinaia Netanyahu, directly referenced decentralization (4 June 2011):

Global warming will lead to extreme events which will also affect infrastructure networks and services. We saw the possible devastating effects on the electricity systems...decentralized production systems based on renewable energy is, therefore, a necessity...

MK Nitzan Horowitz’s (Meretz) speech to a Interior and Environmental Protection Committee meeting offered references to adaptation through diversification of the energy portfolio (7 November 2011): “We should not be dependent on one energy source... regarding the environment, extreme events related to climate change will increase... renewable energy that will diversify the energy portfolio should be part of the solution.” Furthermore, several statements referred to renewable energy as a tool for climate change adaptation in a more general way. For example, Professor Alon Agranat, from The Weizmann Institute of Science, spoke to the Interior and Environmental Protection Committee about the necessity of renewable energy to adapt to climate change (17 July 2007): “We are talking about an increase of at least half a meter in the sea level... 90 percent of the electricity in Israel is produced at coastal power stations, so even if a half-meter wave will hit them, probably five meters, it will be a disaster... we should promote more renewable energies.”

To conclude, it appears that the number of statements about mitigation (64%) exceeded the number of statements about adaptation (36%), though the frequency of both

kinds of statements increased over time. Furthermore, while the discourse on adaptation in Israel focuses almost completely on domestic issues, like vulnerability reduction through the decentralization and diversification of energy systems, the discourse regarding mitigation focuses mainly on global issues, such as decreasing global environmental risks and compliance with international agreements.

5. Discussion and Conclusions

Evidence shows that climate change's effects, such as extreme variations in temperatures and precipitations, floods, droughts, and fires have been continuing to increase over time [4–6]. Renewable energy is considered to be a significant contributing factor for climate change mitigation [13,16,17] and climate change adaptation [18–20]. This study analyzed Knesset committee deliberations and specifically examined statements made by participants in the deliberations about renewable energies as a tool for coping with climate change, whether through the framework of mitigation or through adaptation.

The quantitative findings of this study showed that the total number of statements in the Knesset committee's deliberations about renewable energies as a tool for coping with climate change has increased over time. Even though several policy-makers argue that Israel's influence on climate change mitigation is negligible at the global scale, it appears that most policy-makers' arguments for promoting renewable energies focus on climate change mitigation (64%) rather than adaptation (36%). Furthermore, elected officials' statements significantly favor mitigation. Most of the statements in favor of adaptation were made during the deliberations of the Science and Technology Committee, which has relatively little policy influence on elected officials, in comparison to the Economic and the Finance Committees, which can affect the state budget more directly [98]. The qualitative analysis further showed that while the discourse regarding mitigation focused on global-environmental issues as well as on Israel's international commitments, the discussions about adaptation focused mainly on domestic concerns like the decentralization of energy systems and the diversification of their portfolios.

This study therefore corresponds with other studies dealing with renewable energy and climate change. Some of these studies have focused on how policy-makers in different countries and regions perceive the role of renewable energies in coping with climate change, but examined the notions of mitigation [108,109] and adaptation [110] separately. Such studies have indicated that while climate change mitigation is often associated with global perspectives [22,23], the notion of climate change adaptation is perceived to be more domestic in its essence [21,24]. However, none of these studies have directly compared the notion of globally-oriented mitigation with the notion of locally-oriented adaptation, as perceived by policy-makers who promote renewable energies. Hence, the importance of this study lies in the wide perspective it provides concerning the full inter-linkage between renewable energies and climate change, as perceived by policy-makers, specifically in Israel.

The findings of this study can therefore lead to several key conclusions. First, the policy discourse in Israel confirms that adaptation strategies are perceived as more influential at the local level because they speak more to domestic concerns about climate change, whereas mitigation strategies tend to be associated with global concerns [32,78]. Furthermore, even though Israel has a minor impact on global GHG emissions (i.e., annual estimation of 75 million tons of CO₂ equivalent), and therefore any reductions would only make a limited contribution to global climate change mitigation efforts [111,112], it appears that renewable energy promotion tends to be more motivated by mitigation efforts rather than adaptation. This might be explained by global influence on policy discourse at the local level [25,27,91]. That is, international agreements and global discourse aiming to reduce GHG emission and to raise awareness regarding global climate change appear to significantly increase Israel's commitment to climate change mitigation through renewable energy promotion, while also influencing the domestic discourse in this direction [23,113]. This global influence may also be related to the specific characteristics of

Israel, which due to its complicated political situation in the Middle East has been traditionally making efforts to interconnect with various foreign countries and international institutions, in order to be part of the global community [114–116].

The findings of this study therefore specifically illuminate how policy-makers address climate change in Israel, but they may also have wider implications. In this context, this study contributes to a better global understanding of how policy-makers' comprehensions of renewable energy as a tool for coping with climate change ultimately shapes the domestic policy discourse in this matter. The findings thus confirm that global influence (e.g., international agreements) has an impact on the local discourse about promoting renewable energies to cope with climate change, through favoring mitigation over adaptation [25,27,91]. Thus, this indicates that the international community can indeed influence local discourse on climate change and may drive action at the local level.

Based on these conclusions, Figure 4 summarizes how domestic and global influences shape the Israeli policy discourse on renewable energy and climate change. While the domestic influence encourages discourse about adaptation, characterized by notions such as decentralized energy systems and diversified energy portfolio, through the promotion of renewable energy, the global influence encourages discourse about mitigation, characterized by notions such as GHG reduction and meeting international commitments, through the promotion of renewable energy.

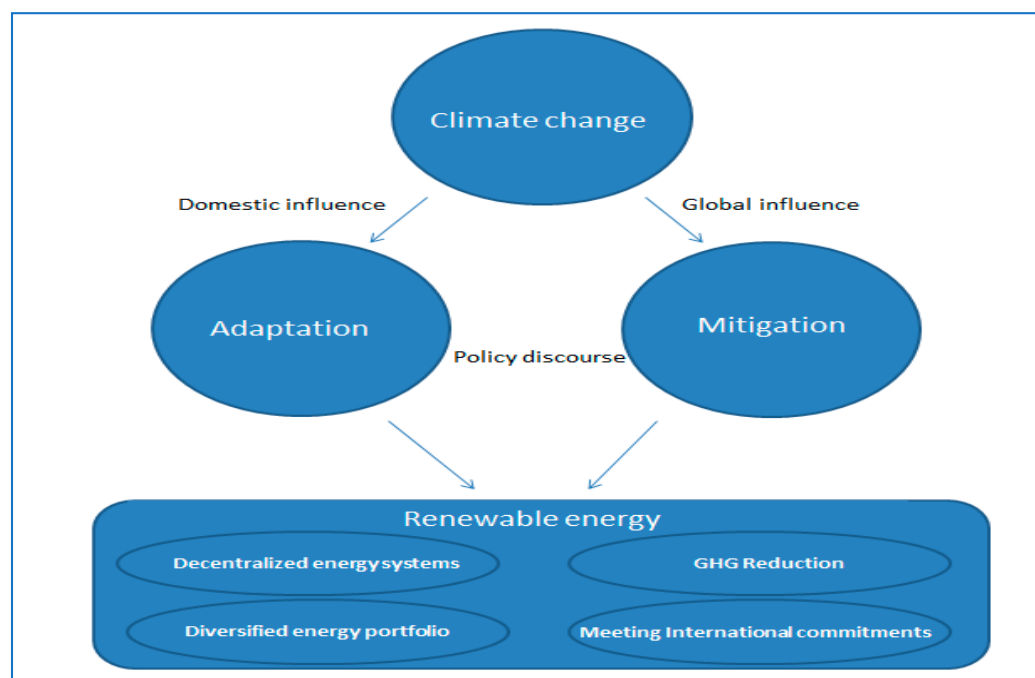


Figure 4. Domestic and global influences on Israeli policy discourse about renewable energy as a tool for coping with climate change.

This study, however, has several limitations. First, while the study explored official protocols of deliberations in the Knesset committees, it has not focused on other research methods which might have been useful. Second, the study did not examine the implications of the deliberations in the Knesset committees, i.e., whether they have been transformed into binding policy plans. Finally, the study has not thoroughly examined the reasons behind the statements of decision-makers concerning the favoring of mitigation over adaptation, as presented. Future research should therefore address these limitations in several manners. The findings of this study should be expanded by integrating other research methods, like in-depth interviews with policy-makers, or examination of forums outside of the Knesset that address policy issues. Future studies should also examine whether the discourse on types of climate change coping strategies (i.e., adaptation or

mitigation) influence the execution of renewable energy policies and the tangible diffusion of these energy sources [58,84,90]. Moreover, further studies can probe why decision-makers and their surroundings prefer mitigation considerations over adaptation considerations when discussing the promotion of renewable energy, and whether the role of international agreements and global discourse in this matter is indeed significant [25,27,91]. Finally, future studies can build on the findings presented here by exploring other countries' discourses on renewable energy and climate change, focusing on both mitigation and adaptation.

By exploring how policy-makers in Israel perceive renewable energies as a coping method with climate change, this study has contributed to a better understanding of how the interlinkage between these two notions is being shaped as part of the domestic policy discourse.

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Conflicts of Interest: The author declares no conflict of interest.

Appendix A. Knesset Committees Examined in the Study

Name of Committee	Protocol Number	Knesset	Date
Interior and Environmental Protection Committee	194	17	17 July 2007
Interior and Environmental Protection Committee	364	17	26 May 2008
Scientific and Technological Research and Development Committee	19	18	9 June 2009
Economy Committee	144	18	30 December 2009
Economy Committee	232	18	12 May 2010
Finance Committee	38	18	20 September 2010
Finance Committee	73	18	16 February 2011
Science and Technology Committee	7	19	4 June 2011
Economy Committee	552	18	21 June 2011
Interior and Environmental Protection Committee	445	18	7 November 2011
Interior and Environmental Protection Committee	511	18	21 February 2012
Economy Committee	24	19	4 June 2013
Economy Committee	242	19	19 April 2014
Economy Committee	276	19	27 May 2014
Science and Technology Committee	48	19	17 June 2014
Economy Committee	2	19	14 July 2014
Finance Committee	20	20	23 June 2015
Science and Technology Committee	6	20	23 June 2015
Finance Committee	54	20	28 July 2015
Finance Committee	66	20	16 August 2015

Finance Committee	512	20	14 October 2015
Finance Committee	157	20	8 November 2015
Finance Committee	153	20	8 November 2015
Economy Committee	132	20	5 January 2016
Science and Technology Committee	39	20	12 January 2016
Science and Technology Committee	44	20	16 February 2016
Economy Committee	188	20	2 March 2016
Science and Technology Committee	1	20	9 March 2016
Government Information Accessibility Committee	44	20	7 June 2016
Finance Committee	367	20	7 June 2016
Gender Equality Committee	87	20	7 June 2016
Science and Technology Committee	4	20	12 July 2016
Interior and Environmental Protection Committee	240	20	19 July 2016
Finance Committee	475	20	1 November 2016
Finance Committee	167	20	7 November 2016
Finance Committee	480	20	7 November 2016
Finance Committee	509	20	23 November 2016
Science and Technology Committee	7	20	27 December 2016
Economy Committee	458	20	1 March 2017
Science and Technology Committee	11	20	17 May 2017

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