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# Unkept Promises: Israel's Implementation of Its International Climate Change Commitments

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## Introduction

Like environmentalists around the world, Israelis concerned about climate change were despondent in November 2019 when President Donald Trump confirmed his intention to take the United States out of the Paris Climate Agreement. Perhaps the most remarkable diplomatic triumph to emerge from eight years of the Obama administration's many international initiatives, the 2015 Paris Agreement successfully brought some 186 countries together and induced them to establish quantifiable national targets to reduce their greenhouse gas emissions. When aggregated, these commitments would still not be enough to stop the warming of the planet by two degrees Celsius, a level at which catastrophic damage is projected.<sup>1</sup> Still, it was a critical start. If the participating countries' action plans or, in UN jargon, "Nationally Determined Contributions" (NDCs) are in fact implemented, the pace of emissions worldwide would be reduced significantly. The agreement also promised to deliver massive resources to poorer regions to help them begin pursuing low carbon strategies.<sup>2</sup> The American disengagement was so disturbing because it threatened to unravel decades of painfully slow progress in global efforts to mitigate climate change and to snuff out any optimism that dramatic temperature increases and disastrous climate chaos might be averted.

From the outset of the Trump presidency, Israel's government made a strategic decision to support America's mercurial leader. From Prime Minister Benjamin Netanyahu down through the cabinet ministers and all the coalition members, the ruling political leadership opted for a sycophantic response to a range of US

positions with which they were often uncomfortable, such as Trump's decision to withdraw US forces from northern Syria<sup>3</sup> or his remarks on neo-Nazi marchers in Charlottesville, whom he compared to counterdemonstrators.<sup>4</sup> For the short term, at least, that strategy generated meaningful diplomatic benefits, most notably the transfer of the American embassy to Jerusalem<sup>5</sup> and the recognition of Israeli sovereignty over the Golan Heights.<sup>6</sup> No one expected the Israeli reaction to Trump's controversial climate change notification to be any different.

Despite Israel's impressive contributions to the efforts to deal with global environmental challenges such as combatting desertification or marine pollution prevention, its record in the United Nations Framework Convention for Climate Change (UNFCCC) has been anything but stellar.<sup>7</sup> The likelihood of the Israeli government's "flouting" the new American predilection for climate science denial, isolationism, and self-serving economic avarice seemed remote. Very quickly, however, the country's leadership made it clear that it had no intention of abandoning its commitment to combatting climate change.

Within hours of President Trump's press conference, Israel's minister of energy, Dr. Yuval Steinitz, released a tweet that was hardly obsequious. Steinitz has been something of an enigma on the Israeli political scene ever since his meteoric rise through the Likud hierarchy, culminating in his successful tenure as minister of finance from 2009 to 2013. Within the generally populist Likud political culture, he is positively anomalous: A Tel Aviv-trained intellectual with a PhD in philosophy who quickly received tenure at Haifa University, his biography would have suggested a left-of-center orientation and a distaste for rough-and-tumble Likud power struggles. But he not only succeeded in reaching the pinnacle of Israel's right-wing ruling party; he has demonstrated tremendous political stamina, surviving considerable turbulence and numerous hard knocks. This makes the positions of Dr. Steinitz difficult to predict.

His four years as energy minister and frequent interactions with his peers in other governments undoubtedly affected his views on climate-related issues. Perhaps it was his core sense of environmental ethics, the new dynamics of sustainable energy, or his considerable autodidactic capabilities that propelled him to learn more and to learn quickly. Whatever the influences, when Trump pulled the Americans out of Paris, Steinitz appears to have been as disappointed with that stance as the greenest of Israeli activists when he tweeted:

The withdrawal of the United States from the Paris Agreement to reduce air pollution and greenhouse emissions is unfortunate, but the State of Israel remains committed to these agreements. In the past five years, we have succeeded in reducing air pollution and greenhouse gas emissions by tens of percentage points, thanks to a process of replacing coal and

polluting fuels in power stations with natural gas and renewable energy, and we will continue with this process in the coming years.<sup>8</sup>

Israel's decision to stay the course and even upgrade its commitment to reducing carbon emissions was particularly encouraging because of its historically lackluster engagement with the issue. In 1992, in order to ensure the participation of the entire international community, The United Nations Conference on Environment and Development convened in Rio de Janeiro and agreed to divide the world into "developed" versus "developing" nations, putting in place a new global system intended to stabilize the planet's climate. Developed nations were expected to begin reigning in their greenhouse gas emissions while poorer countries were, at most, asked to monitor theirs. Even though Israel's economy was already close to European levels of prosperity, it quietly chose to define itself as a developing country, and over the subsequent decades let its carbon emissions double.<sup>9</sup>

Stated euphemistically, ever since the international community decided that climate change was a global problem, Israel's official policies on the issue have been decidedly anemic.<sup>10</sup> This contrasts with the country's long history of embracing commitments to address other global problems threatening the natural world.<sup>11</sup> Its ratification and implementation of such international environmental conventions as the Barcelona Convention for the Mediterranean and the Convention on International Trade in Endangered Species (CITES) were extremely impressive.

Israeli environmental officials are well aware of a general international consensus that sees global warming and biodiversity loss as the world's paramount ecological challenges. But Israel, like many other countries that have reached "pragmatic" conclusions, determined that the economic consequences of adopting a range of climate change interventions were simply too costly. From the inception of the UNFCCC, Israel has elected to make very modest, symbolic efforts to curb its carbon footprint; it has been anything but a paragon of ecological virtue.

The convening of the twenty-first session of the Conference of Parties to the UNFCCC (COP 21) in Paris in November 2015, however, ostensibly marked a turning point in Israel's attitude toward the planet's climate crisis. For the first time, an Israeli prime minister attended a UN environmental gathering; Israel acknowledged that it needed to shed its dubious status as a "developing country" under the climate convention and assume the responsibilities of a developed, Western nation; and it made a binding international commitment to adopt concrete mitigation targets and enact policies that would reduce its greenhouse gas emissions.

In less than a year, Israel will return to the UN's Climate Change Conference at COP 26 in Glasgow and offer its own assessment of how it is has been doing and how much more it is willing to do. The initial implementation of its local

climate agenda was indeed languid. A year after signing the Paris Agreement, Israel's performance was summarized by this author in this journal:

While official Israeli representatives are happy to repeat a mantra of climate change providing an unprecedented economic opportunity to seize market share in a global, low-carbon economy, the reality is very different . . . . There is considerable danger that Israeli leaders will see American withdrawal from its leadership role in climate change mitigation as an excuse to do even less to curb the country's greenhouse gas emissions. Reducing greenhouse gas emissions is not just a function of top-down policies but also public engagement. There has been far too little effort to engender the behavior changes that should be part of a comprehensive, societal effort to address climate change. Climate change demands moral leadership.<sup>12</sup>

The dust has settled since Israel made a historic commitment to join the international community in stabilizing atmospheric greenhouse gases and reducing climate-associated damage. This article offers an independent evaluation of the country's progress relative to its international commitments, and the actual objectives Israel's government subsequently set for the country in 2015. The scorecard is not a particularly favorable one. Notwithstanding a few key policy shifts and recent promises to do much better, Israel's performance in mitigating climate change falls far short of the targets it embraced in Paris.

In rendering this fairly harsh verdict, several conclusions emerge:

- Israel's significant shift in the way it generates electricity, its single greatest source of greenhouse gas emissions, is a bright spot. In abandoning the historical reliance on coal-fired plants in favor of natural gas, however, Israeli decision makers still have not internalized the dramatic advantages (and inevitability) of renewable energy. Rather, they cling to exaggerated and imprecise assumptions about the benefits of natural gas as the centerpiece of their present climate change mitigation policy.
- The country still lacks a comprehensive, integrated, creative, and bold climate policy that could catapult it to the status of an international climate change leader—a vaunted position it enjoys in other environmental areas through its achievements in micro-irrigation, desalination, and dryland afforestation.
- While Israel's Ministry of Environmental Protection has proven to be a relatively minor player in this arena, other government ministries have begun to take on leadership roles on the climate issue. Nonetheless, the lack of a single coordinating agency directing climate programs leaves the country's policy efforts disorderly and less effective than they might otherwise be.

- Unlike in some countries, climate change has not degenerated into a polarized issue in Israel, dividing right- and left-wing politicians. The understanding that Israel is already affected by global warming and needs to do more to adapt to and mitigate climate change is an example of a rare consensus in an increasingly divided country.
- Israel's rapid increase in population size and its meat-intensive diet threaten to sabotage even the most ambitious renewable energy-friendly climate change mitigation policies the country might pursue.

In recent months there have been several positive indications that Israel's climate policies might be improving in a meaningful way. It would seem that the country is at a crossroads: Israel can either continue its penchant for economic expedience, ambiguity, rationalization, and obfuscation, or it can adopt a program of sustainability and global responsibility. Given the international stakes and the pernicious impact of climate change on quality of life across the globe and in the Middle East in particular, Israel can—and indeed must—do more.

### **Israel's International Climate Change Commitment in Paris**

Historically, international efforts to make meaningful progress toward lessening greenhouse gases were unsuccessful because they relied on the “top-down” approach of international, multilateral environmental agreements. Due to concerns about the economic ramifications of changing energy, transportation, industrial, and agricultural infrastructures, quantifiable emissions targets imposed by a UN framework were resisted by many countries. For years, some of the world's most prodigious emitters—such as China and India—attained total exemptions from compulsory actions owing to their formal status under the UNFCCC as developing countries.

Strategically, the Paris Climate Agreement was designed to finesse this dynamic by inducing countries to make independent “non-binding pledges” even prior to the convening of the actual UN meeting. When implemented, these programs would lead to significant aggregate global reductions in greenhouse gas emissions. Then-US Secretary of State John Kerry reportedly met with some ninety heads of state, using the full moral authority and economic clout of the US under the Obama administration to coax, cajole, and pressure them to step up to the plate and submit their NDCs.<sup>15</sup>

Israel was one such country for which the Paris accord signaled a shift away from mere lip service to international mitigation efforts and toward a new era of verifiable actions to reduce carbon emissions. Recalling the 2009 COP 15 in Copenhagen is instructive in this regard. As mentioned, from the outset of the climate

convention in 1992, Israel clung to its prerogatives as a “developing country.” This meant that any obligations under the agreement were minimal, primarily involving emissions monitoring. Seventeen years later, at Copenhagen, Israel’s government apparently understood that its improved economic circumstances along with the growing scientific certainty about the egregious effects of climate change required it to do something to reduce its burgeoning carbon footprint. The country’s internationally esteemed president, the late Shimon Peres, headed the delegation. But when his time came to speak before the convention, Peres merely offered vague assurances that “by 2020, the government of Israel intends to make [its] best efforts to reduce CO<sub>2</sub> emissions by 20 percent compared to a ‘business-as-usual’ scenario.”<sup>14</sup> Although Peres voiced his personal opposition to the proposed expansion of the coal-based Ashkelon electricity plant, in fact he had no authority at all in the matter.<sup>15</sup>

Subsequent to the convention, the skepticism of local cynics was validated as Israel’s political leadership did practically nothing to facilitate meaningful reductions in greenhouse gas emissions. This paralysis came at a time when the European Union was adopting an ambitious emissions trading system and numerous countries began their transition to a low-carbon economy.<sup>16</sup> By the time of the Paris gathering six years later, American pressure and new international norms had changed Israeli perceptions, and, for the first time, there was an inkling of political interest in the subject. A month prior to the convening of the COP, Israel submitted its NDC, pledging a reduction in per capita greenhouse gas emissions to 7.7 t CO<sub>2</sub>e (tons of carbon dioxide equivalent) by 2030—ostensibly a 26 percent drop below 2005 levels.<sup>17</sup> Prime Minister Netanyahu announced that he would be joining the gathering, the first time that an Israeli prime minister made the effort to attend a UN-sponsored, environmental event.

There was considerable consultation between Israeli ministries prior to the finalization of the action plan. Israel’s decision to frame its intended objectives in per capita reductions rather than in absolute reductions, therefore, was premeditated. Environmentalists criticized the NDC as disingenuous, given the country’s 2.1 percent average annual increase in population. This meant that any emissions reductions would be smaller than the increase in emissions caused by the country’s expanding population. At a time when the world’s scientists were calling for a 6–7 percent annual reduction in national carbon footprints, Israel was congratulating itself for a program that was expected to produce, at best, a 20 percent overall *increase*.<sup>18</sup>

Israel’s NDC envisioned “per capita” progress being achieved through activities in three key areas:

- *Energy efficiency*—Attaining 17 percent reduction in electricity consumption by 2030, relative to the “business-as-usual” scenario;

- *Renewable energy*—Ensuring that 17 percent of the electricity generated in 2030 would be from renewable sources; and
- *Public transport*—Achieving a 20 percent shift from private to public transportation.

Several critical areas were never considered at all in the program. For instance, desalination is an extremely energy-intensive technology. By the year 2020, it was estimated that Israel's reverse osmosis sea water desalination plants were likely to utilize 1,961 million kilowatt hours (kWh) per year—roughly twice that of 2010 levels and close to 3.7 percent of the country's entire electricity production. (The water sector, including delivery, consumes roughly 5.85 percent of Israel's electricity supply.) Yet, when officials from the Water Authority considered the possibility of making Israel's new sources of municipal water carbon neutral (as was already the case in several Australian facilities), they concluded that the country lacked the space for the renewable energy facilities required to power new water production.<sup>19</sup> Accordingly, Israel's National Masterplan for Water promises only that “coordination in the development of infrastructures between the water sector and the energy sector will be increased.”<sup>20</sup> Other more controversial topics, such as rapid demographic growth and the reduction of emissions from animal consumption, were never even discussed.

### **Evaluating Israel's Climate Change Mitigation Efforts**

Three years following the Paris gathering, Israel submitted a progress report to the Secretariat of the UNFCCC. It did not to hide the fact that its carbon footprint was growing. The summary of emissions reads as follows:

In 2015, Israel's total GHG [greenhouse gas] emissions were 80.18 million tons CO<sub>2</sub> equivalent (MtCO<sub>2</sub>e), representing an absolute increase of around 40 percent relative to 1996 GHG emissions, 20 percent relative to 2000 emissions, and an increase of 4 percent relative to 2010 emissions.<sup>21</sup>

At the same time, there are recent signs that Israel would like to “up its game.” The Paris Agreement was designed with the expectation that every five years, countries would need to improve their mitigation performance. The upcoming 2020 COP 26 in Glasgow is the first opportunity for such an improvement. Before Israel promises to do better, it would behoove us to evaluate whether it is on track to meet any of the earlier 2015 commitments appearing in the NDC it submitted to the UN at Paris. Unfortunately, little progress can be identified, although the recent transition from coal to natural gas provides a modest reason for encouragement.



***Improved Energy Efficiency—A Conspicuous Lack of Progress***

The first operational commitment of Israel's 2015 NDC was to reduce electricity consumption by 17 percent (relative to a business-as-usual scenario) by the year 2030. Here, the verdict is in on Israel's performance and it is abysmal. In fact, the most recent report by the Israeli government's Electricity Authority explains that there has actually been more than a 10 percent increase: "Over the last five years, demand for electricity has increased by an average of 2–3 percent per annum."<sup>22</sup> Indeed, in the decade since Peres promised to reduce emissions by 20 percent, electricity consumption in Israel has increased by over 25 percent.<sup>23</sup> To what can the present failure be attributed?

Part of the increased demand can be linked to Israel's burgeoning population, which is growing at an annual rate of roughly 2 percent. Much also has to do, though, with the rising standard of living and the absence of any meaningful policy efforts to manage energy demand. Even the programs created in the aftermath of the Paris Agreement have been disappointing. Indeed, a National Plan for Implementation of the Greenhouse Gas Emissions Reduction Targets and for Energy Efficiency was approved by the cabinet as part of Government Decision No. 1403 on April 10, 2016. It called for a 17 percent reduction by 2030. The plan contained numerous action points and allocations including:

- NIS 300 million (roughly \$83 million) over four years to be earmarked for grants for projects that improve energy efficiency. An emphasis was placed on assisting municipalities with low socioeconomic rankings as well as small and medium-sized businesses. Grants were to be awarded competitively for projects with lower reduction costs per ton;
- an additional NIS 500 million (\$138 million) to be allocated for government guarantees from 2016–25, earmarked for investment loans in the areas of energy efficiency and GHG emissions reduction.

In December 2016, the plan became operational, with the Ministries of Economics and the Environment working alongside the Energy Ministry to select grant recipients. At the time of this writing, some 80 percent of the funds designated for grants have been allocated over four cycles. Roughly 150 applicants from diverse institutions across Israeli society, including Israel's Arab communities, requested support, with about half of the requests coming from municipal governments. The program has been able to provide funding to most—but not all—of the applicants.<sup>24</sup> Typically, recipients receive 20 percent of the costs of undertaking projects that are likely to reduce electricity consumption. These primarily involve the replacement of old, inefficient chillers in air conditioning systems as well as the installation of new, efficient monitoring systems.

The half billion shekel allocation for loans, however, has proven to be a dismal failure. Critics claim that the program was probably designed to discourage the public from taking advantage of it.<sup>25</sup> The loan allocations were directed to a fund tasked with providing loan guarantees for banks. This would enable the banks to offer better terms to property owners who wished to improve their buildings' energy performance. Unfortunately, the conditions of the agreement also required a personal guarantee from the associated recipients. It turned out that this undermined the incentives and risk-reduction benefits the government funding was intended to provide. Israelis voted with their feet. Since the inception of the program, only one request has been filed and it did not meet the criteria for approval. Efforts to publicize the availability of the loan guarantees through a PR campaign were not successful.<sup>26</sup>

Unfortunately, both programs are designed to be extremely limited in their scope. Indeed, Section 17 of the cabinet decision stipulates that additional funding for grants and loans would not be made to advance climate change mitigation—presumably until 2030. Accordingly, even if implementation had been flawless, its impact would still have been nominal. The Energy Ministry would like to see the grant program extended and expanded in the coming years, but given the general paralysis of the past year caused by the prolonged absence of a government budget along with the constraints imposed by pandemic-related austerity, it is in no way certain that this will happen any time soon. This is not to say that no progress has been made in energy efficiency at the household level. However, most of the progress in reducing electricity demand among the public can be linked to the steady technological improvements made around the world—from LED light bulbs to efficient appliances—which are largely imported into Israel.

The Ministry of Energy recognizes that Israel's energy efficiency efforts have faltered. In a recent public hearing, it presented a new draft plan proposing a multifaceted strategy that could generate 8.5 terawatt hours of energy and NIS 20 billion in savings by 2030. The draft strategy includes the updating of air conditioning, refrigeration, and home appliance and automotive tire standards; the expansion of the grants program by NIS 700 million over four years; the full utilization of existing loan guarantee funding; and the imposition of green building standards on new construction.<sup>27</sup> Again, it is unclear whether government funding for the program will be forthcoming given the anticipated budget cuts required by Israel's present deficit. In the interim, Israeli energy efficiency gets a failing grade in a post-Paris evaluation.

### *Excessive Reliance on Natural Gas*

At last count, energy production was responsible for 52 percent of Israel's greenhouse emissions.<sup>28</sup> Accordingly, Israel's pre-Paris NDC promise that by 2030, 17 percent of the electricity generated within its borders would be from renewable

sources is of crucial importance. Unfortunately, during the past twenty years, while several countries made a strategic decision to transition to renewables, Israeli governments did precious little to promote such a conversion. It can be argued that recent improvements have more to do with the dramatic drop in the price of solar and wind energy than government incentives or interventions. At the same time, recent Israeli government policies have prioritized natural gas over all other energy sources. It would be wrong, however, to be dismissive of the progress made over the past two years.

This article began with Minister Steinitz's public announcement regarding Israel's commitment to combating climate change. Indeed, during his tenure as minister, Steinitz moved to change the essence of Israel's traditional electricity market by declaring a phase-out of coal that would begin gradually and accelerate over time. After three cabinet meetings, and despite tremendous resistance from the Israel Electric Corporation and the defense establishment, Steinitz received the green light to convert the country's five major coal-fired electricity power plants to natural gas.<sup>29</sup> From the campaign trail to the Knesset, he waxed enthusiastic about Israel's embrace of natural gas, the "zero-pollutant."<sup>30</sup>

Israel's transition from coal to natural gas is dramatic by international standards. [Figure 1](#) shows the rapid reduction in the use of coal by Israel's five electricity facilities in relation to the same phenomenon in other countries. Within six years, the percentage of coal-fueled electricity dropped by more than 50 percent, with the Ministry of Energy promising that this percentage would essentially drop to zero by 2025. At COP 25 in Madrid in December 2019, Israel's coal reduction was singled out as the most significant in the world in the past few years.<sup>31</sup>

This is surely good news for the quality of ambient air in Israel and for public health. However, the ministry seems oblivious to the considerable literature that indicates that natural gas is hardly pollution free, particularly as gas-powered plants age and emissions of oxides of nitrogen grow exponentially.<sup>32</sup> If reduced respiratory and cardiological illnesses were the sole criteria of progress, Israel's decision to leave coal-fired electricity behind would be praiseworthy in the extreme. In a world that needs to be fully focused on reducing greenhouse gas emissions, however, the climate change mitigation benefits from the planned fuel transition in electricity generation have been vastly overstated.<sup>33</sup>

Indeed, the adjective "natural" should not be misunderstood: Natural gas combustion is not good for the planet. Unfortunately, all gases are not created equal in terms of their global warming potential. Natural gas is primarily comprised of methane (CH<sub>4</sub>), which has always been recognized as a much more potent greenhouse gas than CO<sub>2</sub>. However, as the science improved, it became clear that methane was a far more effective agent of global warming (trapping heat on the earth) than was originally assumed. In other words, scientists always knew that

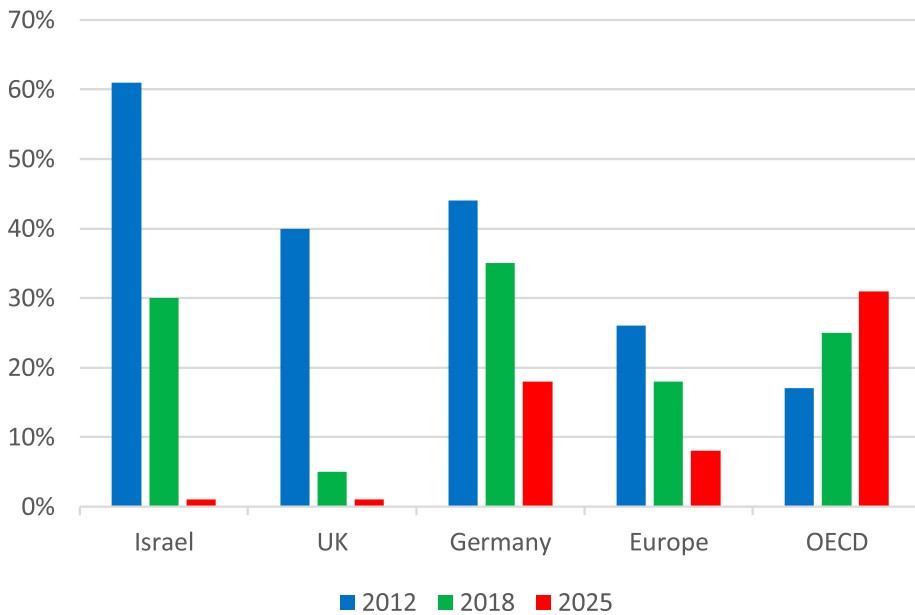


Figure 1. Israel's present and planned reduction of coal to produce electricity, 2012–25. Source: Israel Ministry of Energy and Water, 2019.

methane was bad for the environment; now we realize that its climate impact is far worse than previously imagined.

Indeed, in calculating its 100-year time horizon global warming potential, methane's heat-trapping potential relative to carbon dioxide's has grown steadily: In the UN Intergovernmental Panel on Climate Change's (IPCC) early 1995 consensus assessment, it was estimated that methane had an impact twenty-one times greater per mass unit than carbon dioxide; by the fourth assessment in 2007 it was up to twenty-five times greater; and in its fifth assessment report in 2014, the data indicated that it was twenty-eight times more.<sup>34</sup> Recent research, however, suggests that the arbitrary time horizon for measuring impact creates a bias. If the significance of the next two decades is emphasized in order to prevent a two-degree warming, all of these calculations constitute extreme understatements: During its first twenty years in the atmosphere, methane is actually eighty-four times more powerful than CO<sub>2</sub> and "has a larger GHG than do coal or oil for any possible use of natural gas and particularly for the primary uses of residential and commercial heating."<sup>35</sup>

In a recent article in the highly respected publication *Nature Sustainability*, it was explained that the problem with the UN estimates is that they take the long view at a time when urgent action is needed in the short term to stabilize global warming and greenhouse gas concentrations in the atmosphere.<sup>36</sup> In a 2012 study, a team of Stanford University researchers concluded that switching electricity

production from coal to natural gas would only reduce a global warming effect during the coming hundred years by 20 percent—assuming that electricity generation was stable, which is a highly improbable assumption.<sup>37</sup> By way of contrast, a transition from coal to nuclear or renewable energy could result in as much as a 75 percent reduction. These initial estimates were soon disproven by a 2014 study conducted at Stanford and the University of California at Irvine that concluded that maximum greenhouse reductions that might be achieved by a shift from coal to gas between 2013 and 2055 would not exceed 9 percent. Under certain scenarios, the shift actually increases greenhouse gas emissions from the power sector by 5 percent because it precludes the much more important shift to renewable energy.<sup>38</sup> It did not take long for the popular press to trumpet the meaning of these findings.<sup>39</sup>

There is also increasing recognition that natural gas production releases far more methane into the atmosphere than was previously thought. In 2017, even the Trump administration's highly conservative Environmental Protection Agency (EPA) acknowledged: "Some natural gas leaks into the atmosphere from oil and natural gas wells, storage tanks, pipelines, and processing plants." The agency explained that methane emissions from natural gas and petroleum systems, as well as from abandoned oil and natural gas wells, were the source of about 32 percent of total US methane emissions—and about 4 percent of total US greenhouse gas emissions.<sup>40</sup> But the official American estimates of fugitive emissions of natural gas are almost certainly far below the 20 percent losses that reach the atmosphere, according to independent research. For instance, in a recent article prepared by an independent group of scientists and published in the distinguished journal *Science*, it was revealed that fugitive emissions are, in fact, 60 percent higher than the US EPA estimates.<sup>41</sup>

The twin phenomena of methane's higher global warming potential and underreported fugitive releases during the production and delivery of natural gas mean that transitioning from coal to natural gas produces extremely modest climate change mitigation benefits at best. Notwithstanding the evidence, many policymakers worldwide continue to cling to the notion that natural gas is a panacea that should be at the heart of climate mitigation strategy. Israel's leadership constitutes an extreme case.

The discovery of enormous reserves of natural gas off Israel's Mediterranean coast was generally considered a welcome development for both economic and environmental reasons. A consortium of Israeli companies—Delek Drilling, Ratio, and Noble Energy—invested some \$3.5 billion in creating the infrastructure required for mining deep water reserves. The returns on the investment are expected to be handsome: \$40 billion in revenues, \$13 billion of which are profit. When environmentalists raised concerns about the potential for oil spills and air contamination, the government emphasized that natural gas was a critical "national project" that would grant Israel full energy independence. In actual fact, some 85 percent of the gas contained in the newly opened Leviathan offshore gas reserves was sold

to Egypt and to Jordan—and for a price lower than that paid by Israel’s Electric Company.<sup>42</sup>

In 2017, the Israeli cabinet decided to double down on natural gas as the fuel of choice for its next generation of power stations. Government Decision No. 2952 called for the construction of seventeen new electricity plants to be powered by natural gas. The decision relies on private developers reaching agreements with land owners and submitting their construction plans for an electricity plant as a “national project” that will enjoy accelerated review by the government’s hyper-efficient Committee for National Projects.<sup>43</sup> Dozens of communities around the country suddenly woke up to the meaning of massive fossil fuel power plants flanking their neighborhoods. Protests alternately highlighted environmental concerns and the massive profits that would be enjoyed by entrepreneurial “tycoons.”<sup>44</sup> The desire for billions of shekels in anticipated revenues from taxes and royalties undoubtedly informed the government’s decision, but not all politicians were motivated by the prospect of lucrative returns. For instance, the Blue and White party is calling for a reevaluation of the new energy strategy because of environmental concerns: Building a new generation of gas-powered electricity plants surely does not bode well for Israel’s meeting its Paris commitments, much less exceeding them.

By 2019, Steinitz’s sanguine assessments about the contribution of natural gas to a reduced carbon footprint were taken to task, first by the press, and eventually by Israel’s scientific community.<sup>45</sup> In November 2019, several hundred scientists signed a petition calling for more significant implementation of Israel’s commitment under the Paris Agreement, specifically the expansion of renewable energy installations, greater education, and more extensive mitigation efforts.<sup>46</sup> Then, a month later, another group of 130 scientists (including this author) signed a letter to the minister of energy that was far more prescriptive. It called on the ministry to abandon plans to build the seventeen private, gas-fired electricity plants across Israel. The letter cited the latest data on the global warming potential of natural gas, focusing on the dramatic drop in solar and wind energy costs, which made them more cost-effective alternatives. It also highlighted the increasingly feasible storage technologies that would soon make operating gas-fired plants economically unwise.<sup>47</sup>

### *Renewable Energy: A Very Slow Start*

In retrospect, Israel should have long been a world leader in the solar energy field. Following the energy crisis and boycott of Israel by OPEC countries in 1973, the country was forced to find ways to increase its energy independence. Its pioneering regulations during the 1970s led to the widespread adoption of passive solar water-heating systems on rooftops across the country in buildings twenty-seven meters high or less.<sup>48</sup> Despite the initial breakthroughs in solar-thermal energy by Luz

Technologies and groundbreaking research conducted in Israeli universities, actual adoption of photovoltaic, thermal, or other solar electricity technologies remained trivial.

Israel's 2015 NDC promised to change this pervasive lethargy, pledging that "17 percent of the electricity generated in 2030 will be from renewable sources."<sup>49</sup> At the time, there were ample reasons for skepticism among sustainability advocates. Israel had never made good on a long litany of previous commitments to produce electricity from renewable sources. For instance, the country did not come close to implementing the 2009 government decision calling for a modest 5 percent of its electricity to be powered by renewables by 2014.<sup>50</sup>

Following the Paris accord, it took a few years for discernible progress to be made. However in 2018, Israel's largest solar electricity facility, Ashelim (based on solar-thermal technology), became operational in the southern Negev highlands.<sup>51</sup> It added 220 gigawatt hours of electricity per year to the national grid at the relatively high cost of roughly twelve cents/kWh, purportedly raising the price of electricity by three percent in Israel.<sup>52</sup> By the beginning of 2020, Israel was on the verge of crossing the 7 percent mark in the portion of electricity generated by renewable sources.<sup>53</sup>

Energy Ministry officials, justifiably, see this as a significant achievement, given the fact that at the time of the Paris Agreement, the country's production from renewables was not even 2.5 percent.<sup>54</sup> Unlike their previous approach, they seem to be taking Government Decision No. 1403 from April 10, 2016, very seriously, including its commitment to reach 10 percent renewable electricity sources by the end of 2020.<sup>55</sup> On the other hand, when compared to countries such as Denmark, in which 43 percent of electricity came from renewables in 2018,<sup>56</sup> or even Greece, which crossed the 29 percent mark in 2019,<sup>57</sup> Israel's present performance is hardly impressive.

The Energy Ministry's position has traditionally been that the country's ability to make a more significant commitment to solar energy is stymied by a lack of feasible storage options that can be brought to scale. Typically, electricity can only be generated by solar panels for six to seven hours a day. Backup capacity, therefore, is essential. Unlike countries such as Denmark and Germany that can rely on regional grids to provide backup when renewable power generation drops (e.g., during cloudy days), Israel is essentially an energy island that must rely entirely on what it generates. Although wind energy could provide some of this backup supply, most proposals for turbines were met with virulent opposition by local groups. Israel has a very narrow continental shelf along the Mediterranean, which limits the potential of constructing turbines in the sea. From the ministry's perspective, natural gas is considered to be the only truly reliable backup solution for solar power. Faced with the need to provide electricity "24/7," even in the rainy

winter months, energy officials believe that for now, adding more solar generation capacity will not reduce the need for natural-gas facilities. They cite the high probability that plants will be called into service when weather conditions limit solar electricity availability. They also point to the problem of transmission lines that will be required for a solar-driven grid.

The aforementioned letter to the energy minister signed by the 130 scientists, including two Nobel laureates, took issue with these assumptions. It began by pointing out that by the end of 2018, the entire economic calculus that had historically driven decisions regarding renewable energy had shifted dramatically. The average price on the international market the previous year for generating one megawatt hour (MWh) of electricity was \$151 for nuclear power; \$102 for coal; \$59 for natural gas; \$42 for wind turbines, and \$36 for a MWh of solar energy.<sup>58</sup> In other words, any decision that prioritizes more expensive, non-renewable alternatives should be called into question.

The scientists also argued that energy storage will soon no longer constitute a meaningful obstacle to expanding the utilization of solar energy:

In recent years the price of storage has dropped—especially due to the improvement in the performance of lithium batteries, the price of which has gone down by 76 percent since 2012 and 35 percent during the past 18 months. The price of batteries is expected to drop even more in the coming years. In other words, today it is already possible to use clean energy at night that was stored during daylight hours at a reasonable price. The future energy system will not be concentrated, but rather dispersed, reliant on regional grids and small urban networks ...<sup>59</sup>

In their letter, the Israeli scientists cited, *inter alia*, a study by a team from MIT, which found that in order to enable confidence in a 100 percent renewably supplied electricity system, storage capacity costs would have to fall below \$20/kWh in order to be competitive.<sup>60</sup> This is nowhere near achievable with present “off-the-shelf” technologies. However, the scientists highlighted another finding of the MIT team: If the requirement for a 100 percent renewable-based grid is relaxed even slightly, allowing other sources to provide electricity 5 percent of the time, the price of storage would become competitive when storage costs reach \$150/kWh—a likely scenario in the very near future. Accordingly, the scientists argue that investing heavily in new natural gas facilities makes little sense. By the time these plants become functional, it will be far more cost-effective to rely on less expensive solar electricity, plus storage, than to pay the ongoing costs for natural gas supplies.

In subsequent discussions, the minister responded that according to the evaluation of his staff, present storage technologies are not yet ready to be scaled up



to a national or even a city-wide electricity system. At the same time, his office is closely following the development of state-of-the-art solar energy storage technology and anticipates a breakthrough that will allow large population centers to store solar energy at acceptable costs. Steinitz has said that he is open to considering a shift away from natural gas toward the solar/storage alternative when such a breakthrough occurs.<sup>61</sup> Indeed, following a challenge by Blue and White party parliamentarian Miki Haimovich over the adequacy of Israel's present commitment to solar energy, Steinitz announced that Israel should consider expanding its Paris commitment to 30 percent renewables by 2030.<sup>62</sup> That declaration has no formal legal status, nor does it enjoy budgetary backing yet. Nonetheless, it is a sign of the changing orientation at the Energy Ministry.

### *Elusive Emissions Reduction from Transportation and the Continued Prioritization of Private Cars*

In Paris, Israel promised the world that it would facilitate a 20 percent shift from private to public transportation, and then seemed to do everything it could to undermine this objective.<sup>63</sup> The 2018 Ministry for Environmental Protection report to the UNFCCC states that transportation remains the country's second largest source of greenhouse gases, responsible for 22 percent of emissions.<sup>64</sup> Although this is slightly lower than the 23 percent contribution of transportation to emissions worldwide, it constitutes an 8 percent increase domestically since 2010.<sup>65</sup> For anyone who has encountered Israel's chronic traffic jams, this surge should come as no surprise.

In 2014, Israel's roads were already recognized as the most congested in the OECD, with 2,700 cars per kilometer of road—compared to the OECD average of 773. Israelis are also among the world's most avid drivers, second only to Americans in their per capita annual mileage rate.<sup>66</sup> Historically, the Israeli government has collected extraordinary tax revenues from the extremely high import tariffs on private vehicles. Annual revenues from this tax still amount to NIS 50 billion (\$14 billion).<sup>67</sup>

This may be one of the reasons for the low priority given to public transportation over the past thirty years. It is certainly no coincidence that the net number of new cars on the road essentially doubled between 2012 and 2016, with the annual addition of vehicles currently reported to be around 150,000.<sup>68</sup> Based on existing trends and policies, in April 2019, the Israeli Ministry of Environmental Protection published an assessment that anticipates the Israeli automobile fleet to increase two-fold, from 3 million to 6 million, by 2030. A daily commuter who is stuck in traffic for half an hour per day today is projected to be experiencing in ninety-minute delays in ten years.<sup>69</sup>

There are many ways that Israel encourages its citizens to take trips in private vehicles rather than to avail themselves of public transit. One involves the inclusion of “vehicle reimbursement” as a significant component in salaries for workers in both the private and public sector. It is not a small perk, typically adding 20 percent to an employee’s salary. A recent analysis calculated that over 10 percent of Israeli workers receive this benefit. Salary guidelines prescribe that individual car ownership must be proven before the bonus can be received. Therefore, employees go out and buy a first, or even a second car for the family.<sup>70</sup> The reason for this peculiar practice is a bit idiosyncratic, linked both to employers’ desire to reduce base salary levels for its pension co-payments and to workers’ desire to circumvent Israel’s high income-tax rates.

At the same time, in an effort to accommodate the rapid demand for housing, new neighborhoods and communities are constantly being built with little or no public transportation infrastructure. This locks residents into a culture of automotive dependence. While the Ministry of Transportation’s investment in public transit has increased somewhat relative to its investment in highway infrastructure, it remains too small to offset years of neglect.<sup>71</sup>

The bottom line is that rather than seeing a 20 percent reduction in private vehicle rides with attendant emissions benefits as promised at Paris, there is no improvement in sight. It is true that the total number of trips taken on public transit has increased,<sup>72</sup> but Israel’s population is growing even faster. In short, the 750,000 new cars on the road since the Paris Agreement suggest that the 20 percent reduction in private trips pledged in 2015 will not be achieved any time in the foreseeable future. Admittedly, this alone would not preclude a reduction in greenhouse gas emissions were Israel to transition expeditiously to an electric car fleet. Such a shift could be a game changer in terms of local air quality. With the appropriate incentives and infrastructure, it also could help solve the nighttime electricity storage problem. But Israel’s electricity supply would have to have a lower carbon footprint than it does today for it to provide climate change dividends in that scenario.

### **Conclusion: What Is and What Is Not on Israel’s Climate Change Policy Agenda**

The “1.5 Report” published in 2018 by the United Nations IPCC was a landmark of sorts in the climate discourse. For the first time, this most august of international scientific bodies painted a clear and disturbing picture of what the world would look like if the temperature were to rise by an average of 2 degrees due to global warming. It would be a world without coral reefs and a world in which the North Pole is regularly devoid of ice in the summer. It would be a world with more droughts, more refugees, higher sea levels, fewer islands, and greater

ocean acidity<sup>73</sup>—one that nobody on the planet would like leave to their children. On that, an international consensus exists. The relevant question from the perspective of foreign affairs is: What are countries willing to do to avert it?

For most of its history, Israel's climate policies have been akin to someone trying to swim without getting wet. Even though it was quite evident that the country was showing signs of higher temperatures, extreme weather events, prolonged droughts, and rising sea levels, politicians "talked the talk" but did little to "walk the walk" to mitigate greenhouse gas emissions. During the past three decades, while much of Europe significantly reduced its carbon footprint, greenhouse emissions in Israel essentially doubled. This constitutes a grave ethical failure. As Dante wrote centuries ago: "The hottest places in hell are reserved for those who in times of moral crisis preserve their neutrality."<sup>74</sup> Israel can do far better.

In 2017, the Knesset passed an amendment to the Electricity System Law, the ostensible objective of which was to increase legislative oversight on the promotion of renewables.<sup>75</sup> Initiated by Labor Party parliamentarian Eitan Broshi, it gave the renewable energy objectives set by the cabinet statutory status and obligated the government to submit a multiyear strategy to increase renewable energy as well to establish an interministerial committee to promote the topic.<sup>76</sup> Unfortunately, the law has not yet been implemented.

In September 2019, seventy-seven countries that participated in the Climate Action Summit at the UN headquarters in New York—many with industrial economies—pledged to reach net zero carbon emissions by 2050.<sup>77</sup> While it is not certain that they all will reach this goal, at least they went on record as being willing to try. Israel should consider joining this group of countries who have stepped up to the plate in a last-ditch effort to make the planet livable for future generations. Embracing a vision of an electricity supply based on 100 percent renewables is a good place to start.

In 2017, a research group from Stanford University headed by Mark Jacobson published a series of "road maps" that detailed the ways in which over 139 countries could reach 100 percent renewable energy based on their individual circumstances.<sup>78</sup> Israel was one of them. Subsequent graduate research in Germany and a detailed blueprint by a team of researchers coordinated by the Heschel Center, an Israeli NGO, have improved upon of the initial Stanford road map, explaining how this might happen.<sup>79</sup> In order to phase out fossil fuels from electricity generation, energy storage systems will have to be scaled up. For now, Israeli energy officials prefer not to pursue a policy of "technology forcing," but rather to wait for reliable, low-cost energy storage options to emerge.

Presumably, they will not have to wait long, as the field is progressing rapidly. A 2017 report by the UN-affiliated International Renewable Energy Agency

(IRENA) offers encouraging projections, highlighting several technologies that already appear to be falling below the aforementioned \$150/kWh threshold. For instance, two main “flow battery” technologies (vanadium redox flow and zinc bromine flow) are expected to come well within the cost-effective price range.<sup>80</sup> One American startup, Anotra, claims to have a thermal storage system that transfers heat into inexpensive raw materials and then converts it back into electricity with a thermophotovoltaic heat engine—for a price that is expected to fall below \$10/kWh.<sup>81</sup> As more and more electric car batteries become decommissioned—while still maintaining as much as 80 percent of their original capacity—they offer a low-cost storage solution, which brings along with it the added environmental benefit of battery recycling.<sup>82</sup>

Around the world, progress in storage technologies on a macro scale is accelerated by government support, based on the growing recognition of the long-term economic (and environmental) benefits of renewable electricity systems. For instance, in November 2019, South Australia announced the construction of the world’s largest battery, expanding an existing battery’s output from 100 to 150 MW. Financed by the federal government’s Clean Energy Finance Corporation, the project will be implemented by the French company Neoen and will rely on Tesla technology. Although initially mocked by Australian Prime Minister Scott Morrison as a “Hollywood solution,” the battery will actually save local electricity consumers some AUD 47 million annually, beyond the 40 million per year that the initial, 100 MW battery saved.<sup>83</sup>

Like Israel, Hawaii is also an “energy island.” Nonetheless, it has set a goal for itself of 100 percent renewables by 2045. This has pushed local electricity utilities to become pioneers in solar storage, with extraordinary results. Initial solar-storage pricing in 2016 cost 13.9 cents/kWh; within a year, the price of storage went down to 11 cents and then in 2019 prices dropped further to 8 cents/kWh. Hawaiian Electric, the local utility, announced that the increased storage capacity will enable the company to add 262 MW of solar and 1,048 MWh over three islands—rather than rely on fossil-fuel based electricity, which presently costs 15 cents/kWh, even as a specific timetable for the expansion has yet to be announced.<sup>84</sup> This 42 percent drop in cost over just four years validates optimistic forecasts of the economic feasibility of solar-storage systems. Surely the markets offer sufficient incentives to motivate additional entrepreneurial resourcefulness. For instance, for California to meet its 100 percent renewable energy goal by 2045, an estimated 11,000 MW of storage capacity will be required by 2030.<sup>85</sup>

While there are legitimate concerns about the long-term, environmental lifecycle of lithium batteries, other storage technologies are already being scaled up. In the US, a new 50MW/400MW liquid air energy storage system is now being built in Vermont. This is the first utility-scale energy storage plant that uses electricity to cool air until it liquifies and then stores the resulting liquid nitrogen in tanks.

When electricity is required, the liquid is returned to a gaseous state, which then turns a turbine and generates electricity. In addition to helping support renewable energy development, the new facility promises to resolve longstanding local energy transmission challenges.<sup>86</sup> Likewise, in Petah Tikva, a company named GenCell continues to develop hydrogen-powered fuel cells that can provide primary power for off-grid areas as well as store energy.

Examples of private–public partnerships are not unknown in Israel. Indeed, they are at the heart of Israel’s remarkable progress in many areas (e.g., desalination and irrigation). In other words, the Israeli business sector already knows how to make this work.

Even short a full-scale move to solar and storage, there is much that can be done to create a larger place for solar energy within Israel’s electricity profile. Policies need to be enacted that manage electricity demand, incentivizing a shift of peak consumption hours to the late afternoon in order to take advantage of solar energy’s peak production time. California and Arizona have already begun to align renewable generation with power demand.<sup>87</sup> Desalination plants, banks, shopping malls, office buildings, and government offices could all synchronize their activities according to renewable energy availability. As electric plug-in vehicles begin to take their place in the Israeli fleet, afternoon hours could be prioritized for recharging. All that is really required is the right price point.

Israel also must provide logistical and financial support for “prosumers” to get started. This refers to users who both produce and consume their own solar electricity. Institutions—from synagogues and mosques to elementary schools and universities—should be encouraged to install “prosumer” panels and batteries. Such a move would take a significant amount of national energy demand off the grid completely while saving “prosumers” money.<sup>88</sup>

A comprehensive climate change mitigation agenda is not just about renewable energy. There are other critical issues that unfortunately are not yet part of Israel’s climate change strategy but need to be. The UN Food and Agriculture Organization attributes some 14.5 percent of the world’s annual greenhouse emissions to livestock production, 65 percent of which come from cattle.<sup>89</sup> Others believe this figure to be far too low.<sup>90</sup> In at least twenty-four countries, agriculture constitutes the single greatest source of emissions.<sup>91</sup> Yet, according to the Israeli greenhouse gas inventory released by the Ministry of Environmental Protection, agriculture accounts for a relatively trivial 2.1 tCO<sub>2</sub>e—or roughly 3 percent of the electricity sector. This is almost certainly a tremendous understatement.

Israel is a country of extremes in terms of dietary preference. On the one hand, some 5 percent of the public defines itself as vegetarian and another 5 percent

as vegan.<sup>92</sup> This purportedly constitutes the highest percentage of vegans in any country in the world.<sup>93</sup> On the other hand, Israelis have the dubious distinction of being the fourth most enthusiastic meat consumers in the world—with a per capita average of 16.3 kilograms consumed each year.<sup>94</sup> Some 63 percent of the beef eaten by Israel is imported, which may be one reason for the modest official calculation of agriculture-related emissions.<sup>95</sup> Even so, whether the cattle raised locally or overseas, the carbon footprint is meaningful. And while raising chickens releases far less greenhouse gases than cows,<sup>96</sup> Israel still has the world's highest poultry-related carbon footprint in the world.<sup>97</sup>

It is unfortunate that with the exception of a 2009 report prepared by the McKinsey consulting group for Israel's Ministry of Environmental Protection in the run-up to the Copenhagen meeting,<sup>98</sup> there has never been an attempt to describe the environmental benefits of programs to reduce meat-related emissions. Nor has the Israeli government taken any serious measures to discourage meat consumption. Such a policy option is simply not on the radar of Israeli decision makers. Cutting back on the consumption of meat may not matter as much as transitioning to solar energy from natural gas in terms of Israel's overall emissions, but it matters a great deal. Interventions in both areas would bring about significant public health and climate change benefits. The time has come to talk about the benefits of a plant-based diet and to create public policies that nudge people away from their high beef and chicken consumption habits.

There is another, even more important, climate change driver, about which Israel's policymakers are even less willing to talk: overpopulation. The time has come to start this conversation—and take action. Most Israeli politicians continue to adhere to the antiquated notion that increasing the country's population size is axiomatic to progress.<sup>99</sup> The climate policy corollary of this blind-spot is the self-righteous belief that the country's rapid demographic growth, unique history, and security challenges entitle it to a different set of rules than the rest of the international community for mitigating carbon emissions. Almost from the inception of global warming as an international issue, Israelis across the political spectrum acted out of a sense of "exceptionalism," presuming that the country's circumstances are so unique that it should be exempt from having to take meaningful action to change its emissions profile.<sup>100</sup> This position began with Israel's decision to categorize itself as a developing country (with minimal associated expectations) in the initial 1992 UNFCCC designations and continues until the present. It is a self-serving and unethical stance.

This indefensible position is manifested in Israel's recent 2018 report to the UN that seeks to create the impression of climate conscientiousness, even as it acknowledges a doubling of total emissions. It reads:

Emission intensity has shown an overall declining trend since 1996, in both GHG emissions per capita and GHG emissions per unit of GDP. The 2015 values, 9.38 tCO<sub>2</sub>e/capita and 0.28 tCO<sub>2</sub>e/\$1000 GDP, are the lowest levels since the inventory was first published in 1996. Emissions have decreased in recent years largely due to a reduction of GHG emissions from the power sector. GHG emissions from power generation peaked in 2012 due to a natural gas shortage that led to increased use of more GHG-intensive fossil fuels.<sup>101</sup>

Given the massive growth in Israel's aggregate emissions, such verbiage is little more than obfuscation and duplicity. Notwithstanding its objective circumstances, if Israel wishes to show that it is exceptional, it should do so by serving as a proverbial "light unto the nations." Israel is fully capable of demonstrating that its technological savvy, smart management, and solemn commitment to the future of the planet allow it—even as an "energy island"—to move toward 100 percent renewable energy, based on solar power.

The association between population growth and greenhouse gas emissions growth has been well established for some time. Indeed, a series of studies confirms that overpopulation is the greatest single driver of climate change worldwide.<sup>102</sup> An important 2017 study by Whyntes and Nichols published in *Environmental Research Letters* demonstrated that by far, the single most effective way to reduce an individual's carbon footprint is to reduce family size.<sup>103</sup> Well aware of cultural sensitivities, the IPCC has meticulously avoided mention of the association between demography and carbon, even as it has finally begun to consider the role of consumption in its policy analysis. Recently, however, at the Madrid COP 25 gathering, the international NGO Scientists Warning openly called for the issue of overpopulation to be put on the international climate change agenda.<sup>104</sup>

Israel is a country that subsidizes fertility and encourages large families. This public policy made sense when Israel was a sparsely populated country with a need to establish demographic facts along its borders in order to ensure its sovereignty. But those days are long gone. Today Israel finds itself essentially the most crowded country in the developed world. During the next thirty years, over eight million children will be born in Israel, each imbued with his or her own inalienable human rights—and carbon footprint. It is hard enough to reduce greenhouse emissions when the population is stable, but when it grows at a rate of 2 percent annually it is practically impossible. [Figure 2](#) shows the per capita electricity consumption in Israel during the past twenty-five years. It reflects only a very modest increase. But as population grew at an annual rate of 2 percent over the same period, demand increased by some 60 percent.

Here again, a policy that promotes stability or sustainable population growth would bring about enormous social benefits, such as reduced congestion on highways, in

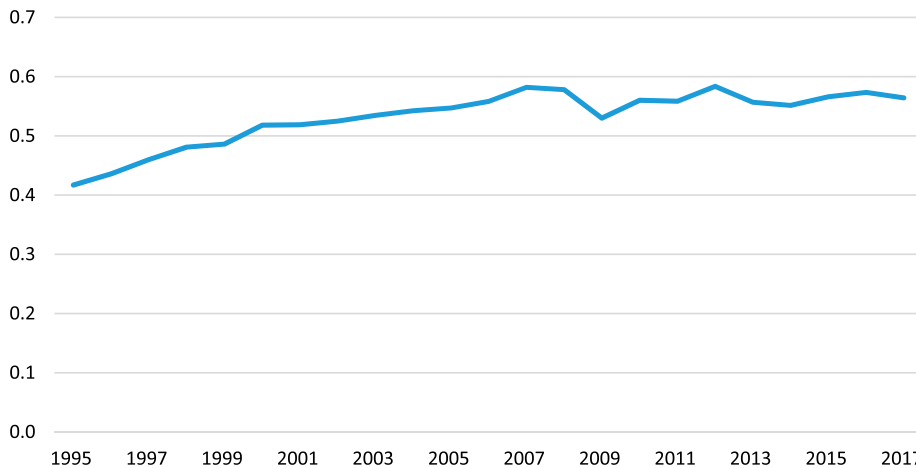


Figure 2. Consumption of electricity in Israel, per capita, 1995–2017 (in tons of oil equivalent). Source: Israel Central Bureau of Statistics.

hospitals, and in the court system, as well as the alleviation of poverty. In the present context, it also offers the only real hope of reducing Israel’s collective carbon footprint to a level commensurate with future climate stability for the planet.

Israel’s record in the four years that have passed since the Paris Climate Conference has hardly been exemplary. Its transportation policies have done little to reduce motorization rates or to change driving patterns. It has totally failed in disseminating the gospel of energy efficiency. The Ministry of Energy overstates the climate change benefits of its transition from coal to natural gas. Renewables remain a fraction of where they might be if Israel were as conscientious as other countries. Most of all, Israel’s Minister of Environmental Protection Zeev Elkin has simply not shown meaningful leadership or proposed policies that would reduce the country’s carbon footprint significantly. Rather than seeking sustainability, it seems as if he mostly pursues the path of least resistance. While members of the staff at the ministry openly talk about the need for a carbon tax and climate change legislation, during his three and a half years as minister, Elkin has spoken amorphously about the issue. At present, there is no apparent progress in moving such important, normative reforms forward.

Yet even in the face of these unfavorable circumstances, there remains ample reason for optimism. During the past few years, Israel’s minister of energy has stepped in to fill some of the void created by a passive and politically pallid Ministry of Environmental Protection. Israel has taken bold actions to end its dependence on coal. This should serve as a reminder that trend need not be confused with destiny. It demonstrates what a passionate and effective minister of transportation might do if he or she decided to phase out gasoline-powered vehicles and truly expand public transportation alternatives. It suggests that a competent



minister of environmental protection could introduce a carbon tax, launch a campaign promoting plant-based diets, and put the issue of overpopulation and family size on the national agenda.

These scenarios are possible because the single most important resource required to address climate change is hope. Israelis have never been overtaken by despair. The Israel Association for Environmental Justice undertakes periodic public opinion polls about how Israelis perceive climate change. In 2015 it found that 60 percent of the public believes that the government of Israel should do more to mitigate Israel's impact on global warming, an increase of 7 percent from what was seen in a 2003 study.<sup>105</sup> Israelis appear to have seen enough signs that the "weather is changing" to understand that tomorrow may be fundamentally different than today. Perhaps this offers the best explanation as to why the Israeli government decided to stay engaged in the UN's climate convention and its expectations to mitigate emissions. As a democratic country with an intelligent, patriotic citizenry that cares about the planet, Israel may yet rise to meet its global climate change commitments.

## Notes

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