Executive Summary

The citizens of Israel, like all world citizens, currently face a historic crossroads in human history. The way in which world governments will act within the next decade regarding the climate crisis, will determine what the lives of future generations will look like. It is up to governments and industry to slow extreme climate change, which has already visibly wrought damage. The State of Israel is expected to suffer severely from the consequences of the climate crisis, due to its geographical location and dry climate.

Israel surely lacks the power to prevent climate change alone. Yet the NZO program is based on the belief that Israel must achieve net-zero greenhouse gas emissions, while working to create a sustainable economy and society. As such, we may do our best to protect Israel from climate-related harm, and perhaps even create tools and models that will serve the international community along with people at large, in contending with the climate crisis.

Israel, like the rest of the world, faces a historic crossroads. It is up to the governments and industry to slow extreme climate change. NZO strives to achieve net-zero greenhouse gas emissions in Israel

There is significant potential for the production of solar electricity in Israel, namely: electricity generated from energy derived from the sun; this fact is known to all familiar with, or who have experienced the Israeli climate. Yet can solar energy sufficiently account for electricity consumption in Israel in the coming decades?

We seek to answer that question herein. For a professional and well-founded answer, we must offer a clear numerical target for the required "amount" of electricity, and define the time frame being examined. Based on previous work that was recently published by the NZO team,[1] we will articulate the question as follows:

Will it be possible to install 115 GW of PV systems in Israel by 2050?[2] And no less important – may this be done without harming Israel's open spaces and nature?

Why 115 GW? As presented in the aforementioned work, if Israel succeeds in developing that scope of solar power production capacity, along with the ability to store electricity and/or energy to a significant extent, then by 2050 it will be possible to supply approximately 95% of electricity demand through renewable energies.

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[1] Target: 95% of Israel's electricity from renewable sources, 2050 NZO team, Israel: Heschel Center for Sustainability, January 2021. Hereinafter in this booklet: 2021 NZO Plan.

[2] PV systems are photovoltaic systems, primarily solar panels. Read more in the introductory chapter.

The provision of 95% of electricity from renewable energies has tremendous benefits, in nearly every conceivable aspect: climatically it is an essential target for the struggle against global warming; environmentally, the result entails a vast reduction in deadly air pollution in Israel, which leads to the premature deaths of an estimated 2,000 men and women each year; economically, it may save tens of billions of shekels (by 2050) for the economy; and politically it may lead to energy independence and energy security, while improving Israel's geopolitical situation in the Middle East. As noted, all of these positive consequences depend on the capacity to install PV systems to the necessary extent, while integrating them with energy storage systems. This work thus aims to examine the question of whether this is an achievable goal, as well as whether it's possible to achieve the goal without compromising important social and environmental goals, while first and foremost protecting open sensitive territories. We'll cut to the chase and note the bottom line: the answer is yes, there is a realistic, feasible option for the installation of over 115 GW of solar energy in Israel. However, this answer must be not solely be perceived as a fact examined through our research. This is a call for joint, arduous, consistent action, on behalf of decision-makers across all societal sectors.

The realization of solar potential alone, will enable the existence of an advanced society and economy, free of harmful emissions to humans and the environment

To date, Israel has not been able to address its solar potential for electricity generation in a systematic and comprehensive manner. Technological breakthroughs over the past two decades, which have improved the efficiency of PV systems and enabled the storage of energy and electricity, made this failing even more grave. To date, the government has set a low and short-term target for the share of renewable electrical energy expected to be consumed in 2030: solely 30%, though the potential is much greater.

Leaders and leadership across all walks of life, whether in the government, defense system, business sector, or social organizations, must join hands and act. Solely joint action will enable the realization of the solar potential inherent in the State of Israel's territory – and the realization of solar potential alone will enable the existence of an advanced society and economy free of harmful emissions to humans and the environment.

Concentration of solar power generation potential

As this is written at the start of the year 2021, the possibility of installing PV systems in Israel with a capacity of approximately 21.8 GW, remains realistic. Such installed power will enable the production of approximately 37.1 TWh, which is roughly 50% of the existing demand for electricity. By 2030 it will be possible to produce approximately 61%

of the demand through solar energy. By 2050 it will be possible to supply roughly 95% of the demand for electricity throughout the year.