The ticking clock of the climate agenda

Cooperation opportunities between the EU and Israel to advance the green and digital transitions in the Mediterranean

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List of acronyms

EEA	European Environmental Agency
ENP	European Neighborhood Policy
EU	European Union
GHG	Greenhouse gases
IEMed	European Institute of the Mediterranean
IEPN	Israeli European Policy Network
NDICI	Neighborhood, Development and International Cooperation Instrument
US	United States

1. Advancing the climate agenda collaboratively

The transformation of our economies and societies towards sustainability is one of the most important challenges of our century. In light of the increasing environmental and water crises, energy security concerns, loss of biodiversity, and climate induced migration, taking the lead on climate change in essential. The European Union (EU) has taken a first major step in this direction, by clearly articulating its goal to make Europe the first climate-neutral continent on the planet by 2050, supported by a package of proposed actions known as the European Green Deal.

EU's proposed multi-dimensional interventions and strategies, if effectively implemented, are likely to generate transformational changes beyond its borders for several reasons. First, EU countries are deeply interconnected with the rest of the world through extensive trade flows that range from high-technology products and services to food products and raw materials. Second, its education, research and innovation programs are grounded in large networks of knowledge exchange that give birth to innovative ideas, products, and business models across sectors, from mobility, to biotechnology, energy, and digital solutions. Third, the EU countries coordinate some of the largest development cooperation programs. Its technical and financial cooperation programs, with a strong focus on advancing sustainable development and the climate mitigation and adaptation agendas, offer great opportunities for knowledge and technology transfer worldwide.

Harnessing the benefits of transformation in Europe and beyond, collaboration across stakeholders and across borders is an imperative. Strong partnerships can unlock the potential of climate-friendly technology. Cross-sectoral collaboration can leverage systemic solutions necessary to address complex sustainability problems. Lastly, cross-national collaborations can contribute to sharing know-how and expertise for specific problems. Ultimately, "when partnerships happen on a global scale, progress ripples outward, with greater impact on everyone" (Kim, 2020).

It is this goal that led the Israeli and European Policy Network (IEPN) and the European Institute of the Mediterranean (IEMed)[1] to focus its Annual EU Meeting between 17-18 July 2022 in Tel Aviv on exploring opportunities for cooperation to advance the green and digital transition in the Mediterranean. The conference brought together experts from academia, research, policy advice, civil society, and public sector, to reflect on how to foster even closer cross-regional cooperation to advance the climate agenda.

This paper sets the scene for the overall event thematic and summarizes the main ideas that emerged from the discussions across the two days. First, it provides a short overview of the European Green Deal, offering a broad landscape for the areas of joint engagement across sectors, stakeholders, and countries. It then presents Israel's already extensive collaboration areas with the EU, especially in research and innovation related to green and digital technologies. Then, drawing largely on the conference discussion, it highlights areas in which EU-Israel collaboration could be further enhanced to advance the green and digital transitions in the Mediterranean. Closing remarks summarize the main points and provide the way forward.

[1] In cooperation with the Friedrich Ebert Stiftung, the Center for Political Economics (MACRO), and the Israeli Association for the Study of European Integration (IASEI).

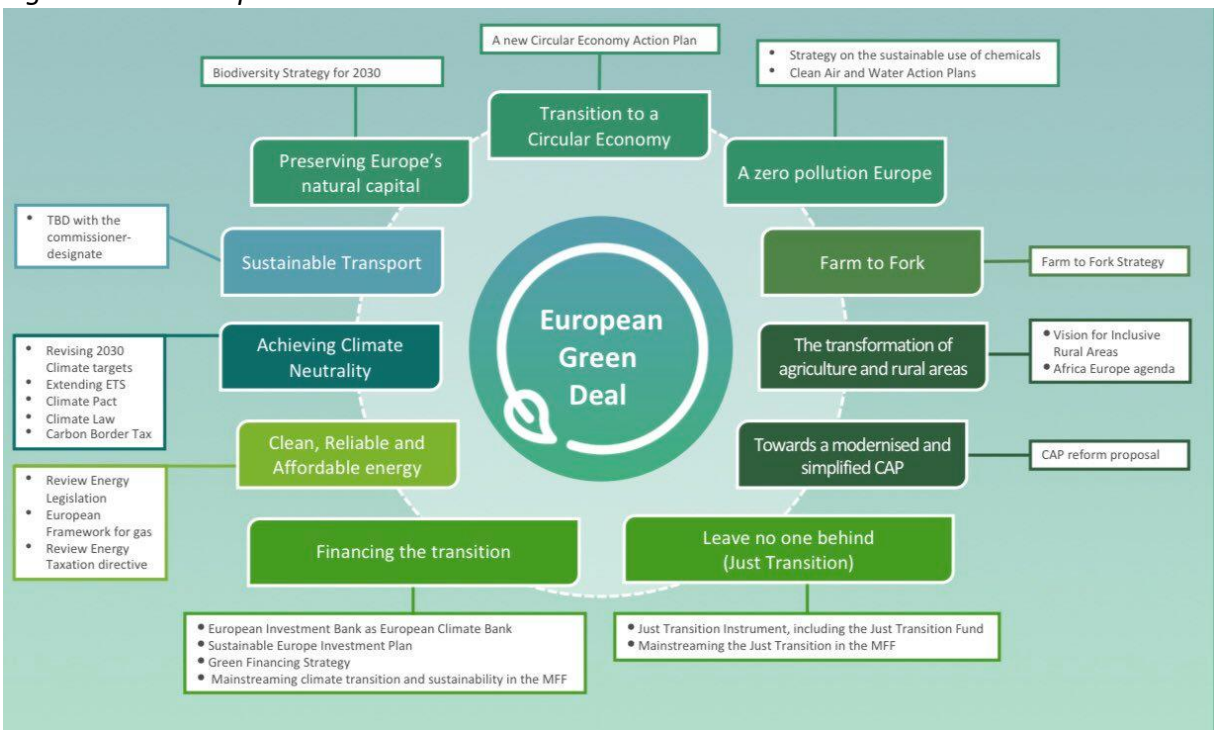
2. The European Green Deal

EU's response to climate change has been one of the most advanced so far, when it comes to strategic and regulatory action. For Europe, taking action is key, as EU was the world third biggest greenhouse gas emitter (GHG) after China and the United States (US) in 2015, according to the European Environment Agency (EEA). As a result, under the Paris Agreement, the EU committed already in 2015 to cutting GHG emissions in the EU by at least 40% below the 1990 levels by 2030. As a result of subsequent interventions, emissions dropped 24% by 2019 and 31% by 2020 (European Parliament, 2022).

The year 2021 was a game changer for climate action in Europe. Under the so-called European Green Deal, the EU made climate neutrality, the goal of zero net emissions by 2050, legally binding in the EU, and it set an interim target of 55% emission reduction by 2030. As such, the European Green Deal became the most ambitious agenda to tackle climate change in a systemic and socially inclusive way for the European countries. The Green Deal's agenda also has significant impact on EU's cooperation with its international partners.

As a roadmap for EU to become climate-neutral by 2050, the European Green Deal comprises a series of action plans at sectoral level, legislative packages to ensure commitment and compliance, and targeted financial support. As seen in Figure 1, several strategic action plans focus on leveraging cross-sectoral transformational outcomes, such as the new Circular Economy Action Plan, the Biodiversity Strategy, the Strategy on the Sustainable Use of Chemicals, or the Clean Air and Water Action Plan.

Figure 1: The European Green Deal



Source: European Commission (2019)

In addition, the goal to achieve climate neutrality by 2050 is being supported through several interventions, such as the Climate Law, extending the Emissions Trading Scheme to a larger

set of sectors, and the implementation of a Carbon Border Tax. All these interventions are meant to achieve a deep decarbonization of the most polluting industrial sectors and to also make global supply chains associated with European trade in goods and services more sustainable.

In addition, specific sectors are also in focus for the European Green Deal. For example, The Farm to Fork strategy for the agricultural sector aims to make food systems fair, healthy and environmentally-friendly, by targeting food loss and waste prevention, sustainable food production, sustainable food consumption, and sustainable food processing and distribution. The transportation sector is also currently under strong focus.

To finance such systemic transformation, the investment plan associated with European Green Deal also comprises multi-dimensional actions. Specifically, the European Investment Bank has been designated as European Climate Bank, requiring sustainability criteria in its investment programs. Further, the Sustainable Europe Investment Plan is the investment pillar of the European Green Deal. The plan mobilizes at least 1 trillion Euro in sustainable investment over the next decade. The Just Transition Mechanism is part of this investment plan, mobilizing at least 100 billion Euro in investment between 2021-2027 to support a fair and just green transition in the regions most impacted by the transition. Moreover, the EU's long-term budget, also known as the Multiannual Financial Framework, also benefits from mainstreaming climate transition and sustainability in its commitments. Lastly, the Innovation and Modernization Funds, financed by a part of the revenues from the auctioning of carbon allowances under the EU Emissions Trading System, will provide about 25 billion Euro for the EU transition to climate neutrality, with a focus on the lower-income member states (European Commission, 2020).

Research and innovation programs are at the core of the agenda of the European Green Deal to accelerate and shape the necessary transformations, deploying, demonstrating and de-risking solutions, and engaging citizens in social innovation. Horizon Europe is EU's largest research and innovation program for the period 2021-2027, having been closely designed to support the European Green Deal. As such, it aims to drive systemic changes to reach climate neutrality and ensure an inclusive ecological and economic transition, also recognizing the need to align the green and digital transformation goals. To foster new technologies, sustainable solutions and disruptive innovation and to spread successful new solutions across Europe and the world, over 35% of the Horizon Europe spending is allocated to address climate change (European Commission, n.d.-a).

Two main types of programs specifically address the Green Deal agenda: Green Partnerships and Green Missions. The Green Partnerships aim at developing close collaborations with private and public stakeholders internationally, to drive major transformations in environment, society and economy within particular sectors or topical areas, such as batteries, clean hydrogen, low-carbon steel, circular biobased sectors, the built environment, and biodiversity. The Green Missions are new ways of bringing concreate solutions to some of the greatest challenges, Four out of the five mission areas of the Horizon Europe directly support the European Green Deal: (1) restore our ocean and waters, (2) climate-neutral and smart cities, (3) a soil deal for Europe, and (4) adaptation to climate change and societal transformation (ibid.).

Important, especially for the topic of this paper, is that Horizon Europe is one of the main tools to implement Europe's strategy for international cooperation. As such, the program is open to researchers and innovators from around the globe to encourage collaboration with EU partners. Association to Horizon Europe is the closest form of cooperation with non-EU countries, allowing participation in program actions on equal terms with entities of EU countries. There are four categories of countries eligible for association with the program: (1) members of the European Free Trade Association (FTA) which are members of the European Economic Area (EEA), (2) acceding countries, candidate countries and potential candidates, (3) European Neighborhood Policy (ENP) countries, (4) other third countries and territories that fulfil a set of criteria related to their economic, political and research and innovation systems (European Commission, n.d.-b). Aside from such association agreements to access Horizon funds, ongoing regional science and technology dialogues and bilateral science and technology agreements are meant to foster project-based and bottom-up research and innovation cooperation.

3. Israel's engagement in European sustainability research and innovation programs (2 pages)

The EU and Israel have a long history of successful scientific and technological cooperation. Known as the 'start-up nation', Israel's excellence in research and innovation has opened various venues for cooperation with EU countries, leading to a range of novel products and services in advanced manufacturing, food and biotechnology, health, information and communication technologies, as well as energy and environmental technologies.

Israel first signed the Association Agreement on 20th of November in 1995, which provides the legal framework for EU-Israel relations, establishing a regular dialogue on scientific, technological, cultural, audio-visual and social matters. Following this agreement, EU has been also associated with the EU Framework Program, Horizon 2020. The agreement associating Israel to Horizon Europe entered into force in December 2021, meaning that Israeli researchers and innovators can now participate in the EU program on equal terms with entities from the EU member states.

Israel has experienced high rates of success in the Horizon 2020 programs. Between 2014 and 2020, 2045 researchers, companies and other entities were awarded 1666 grants amounting to approximately 1.3 billion Euro (Council for Higher Education, 2022). A further 550 million Euros was invested in Israeli companies and venture capital through various financial tools provided to Israel through the European Investment Bank (ibid.). Moreover, 862 companies were awarded grants amounting 430 million Euro, of them 539 small and medium-sized companies which received grants totaling 272 million Euro (ibid.). Grants amounting to 800 million Euros were also awarded to 961 researchers (ibid.). Overall, Israel ranked 3rd in the Horizon 2020 program, when it comes to associated countries (after Switzerland and Norway) (European Commission, 2015).

The active and effective participation of Israel in the Horizon program enabled Israeli companies to access European partners to jointly address environmental and social challenges and has promoted collaboration with researchers and industry.

Box 1: Examples of Israeli-EU funded projects under Horizon 2020

NanoPack[2] is a project coordinated by the Technion – Israel Institute of Technology, funded with 7.7 million Euros EU funding, which will develop state-of-the-art antimicrobial packaging solutions for perishable foods based on natural nanomaterials that will prevent food-borne illness outbreaks and reduce food waste, caused by early spoilage. NanoPack intends to develop, scale up and run pilot lines in operational industrial environments to manufacture antimicrobial polymer films that are commercially feasible and accepted by retailers and consumer alike. Better performing, safer and 'smarter' food packaging materials will position Europe as the leader in food nanotechnology and smart antimicrobial packaging and increase competitiveness and growth of the industry.

The **ENEXAL**[3] project provides the aluminum industry with innovative technological and economic solutions, focusing on: (a) significant improvement of energy and exergy efficiencies in the production process; (b) substantial reductions in GHG emissions; and (c) complete elimination of the solid waste. In order to demonstrate this goal, the ENEXAL project will demonstrate three novel technologies: the red mud treatment in a innovative electric arc furnace (EAF), the high temperature carbothermic reduction of alumina in an EAF, and the moderate temperature carbothermic reduction of alumina in a novel solar furnace. Israel's Weizmann Institute of Science is member of the project consortia along with other European countries.

beAWARE[4] proposes an integrated solution to support forecasting, early warnings, transmission and routing of the emergency data, aggregated analysis of multimodal data and management the coordination between the first responders and the authorities. The goal is to rely on platforms, theories and methodologies that are already used for disaster forecasting and management and add the elements that are necessary to make them work efficiently. Several pilot projects are envisioned for floods, fires, and heatwaves. Motoral Solutions Israel Ltd, as a leading high-tech companies in Israel has been part of the consortia, along with IBM Israel – Science and Technology Ltd.

Backed by €6.9 million in EU funding, the **G2P-SOL project**[5] was conceived to protect solanaceous plant species – including potatoes, tomatoes, peppers, and eggplants – which together account for 66% of the value of Europe's horticultural production. The project's leaders point out the potato alone is a staple food for some 800 million people across the globe. The G2P-SOL project aims to allow farmers and breeders to sustainably cultivate crops using seeds that are most favorable to local environmental conditions, thereby helping to mitigate the negative impacts of climate change on solanaceous species. Participating researchers from Hebrew University, the Agricultural Research Organization of Israel – the Volcani Center, and Phenom Networks Ltd. have established a public database cataloguing plants' genetic data from different gene banks, with an eye toward helping farmers identify the right seeds for their terrain. This data-driven approach is

[2] https://www.nanopack.eu/aims-objectives/
[3] https://www.european-aluminium.eu/about-aluminium/stories-of-innovation/enexal-project/
[4] https://beaware-project.eu/partners/consortium/
[5] https://sciencebusiness.net/eu-draws-israeli-innovation-advance-green-deal

designed to diversify global food production, promote sustainability, and secure the global food supply amidst a changing climate.

The **eForFuel**[6] project, received €4.1 million in EU funding, bringing together a number of prestigious research institutions, including Germany's Max Planck Institute of Molecular Plant Biology and Israel's Weizmann Institute of Science, in a bid to transform carbon dioxide – one of the primary greenhouse gases - into renewable energy. Through an electrochemical process, the researchers reduce CO2 to formic acid – a simple acid which was first isolated from ants – and then feed it to microorganisms to produce hydrocarbon fuels. A wide range of benefits could ensue – starting with efficient, cost-effective, and sustainable production of renewable chemicals and fuels. Via chemical engineering, hydrocarbons, such as propane and isobutene, produced by eForFuel's electrochemical process, could themselves be transformed into new products, including the fuel substitute isooctane.

4. Opportunities for further EU-Israel engagement

As the past decades of EU-Israel collaboration in research and innovation have demonstrated, there is **vast potential for deepening the partnership**, especially in the area of green transformation and digitalization. Due to a vibrant research community in both the EU and Israel, engagements through framework programs such as Horizon emerge often organically, especially in areas with strong expertise. Such collaborations can, of course, be further deepened to expand and diversify research networks through Horizon's Partnerships and Mission programs.

Yet, more mutual benefits can be harnesses by **closely aligning Israel's national strategies and policies to the European Green Deal**, increasing its ambition regarding climate mitigation and adaptation, and playing a stronger role in Europe's Green Deal external dimension in the Mediterranean.

As the representative of Israel's Environmental Protection Ministry mentioned during the annual meeting Tel Aviv, while Israel is lagging behind in environmental policies, waste management, and circular economy, the **European Green Deal strategies and legislative packages have already set the goals for Israel's policy makers**. Israel further advancing its national institutional framework and programs in these areas could open up further opportunities for collaboration. For example, renewable energies currently represent only 6% of Israel's energy mix, an underachievement of its 10% target by 2020. By contrast, EU aims to increase the share of renewables to 40-45% by 2030. Yet, according to Heschel Centre for Sustainable Development, 95% of Israel's energy could come from renewables by 2050 (Surkes, 2021). The Environmental Protection Ministry also estimated that there is enough space for solar panels on roofs and other potential dual-use locations to already provide 46% of Israel's electricity needs (ibid.).

The **external dimension of the European Green Deal** is about EU mobilizing its neighbors to share the same ambitions, which is currently not the case, as the IEMed representative

[6] https://sciencebusiness.net/eu-draws-israeli-innovation-advance-green-deal

mentioned. The external dimension of the European Green Deal in the Mediterranean will be channeled through the ENP and funded by the Neighborhood, Development, and International Cooperation Instrument (NDICI), of which 30% will be dedicated to tackle climate and environmental change. Israel, as an OECD member, will benefit less from the NDICI. But, since most of the bilateral cooperation under the ENP will be channeled through **institutional twinning projects**, this offers the opportunity for EU to share best practices in various areas with Israel. Earlier such programs had, for instance, a focus on water and waste management and energy, among others. Therefore, such programs should be further developed and strengthened to allow a legislative and regulatory convergence on these topics.

With a stronger focus on leveraging its vast untapped potential in solar energy, Israel could, for example, contribute to **strengthening its positive impact on the region and contributing to the European Green Deal's Mediterranean partnerships**. Stronger collaboration with Jordan, for example on solar photovoltaic technology development and deployment and on water management.

Israel's current focus on natural gas may offer opportunities in the short- and medium-term. Yet, as the IEMed representative mentioned, while the natural gas may help achieving energy security and reducing GHG emissions in the mid-term by replacing oil and coal in the energy mix, it may lead Israel into a **carbon lock-in** that will make the alignment of its energy policy with climate goals difficult and costly and **can jeopardise a deep decarbonisation**. Moreover, investments into gas infrastructures can become stranded assets. Therefore, closer **aligning the Israeli target with the EU in terms of renewables** could open up vast opportunities for collaboration, investment, and partnerships across the Mediterranean. Already, the European Investment Bank has financed several solar power plants in Israel, such as Negev Ashalim and Megalim Solar Power Plant, along with other key infrastructure desalination plants.

Yet, natural is an important resource for Israel and has also played an important role in fostering regional collaboration with Jordan and Egypt, and also through the East Mediterranean Gas Forum, as one of the participants in the Annual Meeting mentioned. Therefore, to reduce any long-term negative effects, a **focus on decarbonizing natural gas power plants** could offer important areas for technology collaboration, recently stressed by the recent memorandum of understanding between the EU, Israel and Egypt, as stressed by the IEMed representative.

Green hydrogen is another area for potential collaboration between Israel and the EU, as well with the Mediterranean region. First, making investments in gas infrastructure hydrogen compatible, could further align Israel's strategy to that of Europe. Second, building up its renewable energy capacity, could allow it to capitalise on its natural resources to further advance its transformation towards sustainability and open up new pathways for cooperation in the field of green hydrogen. As pointed by the IEMed representative, Morocco and Egypt are already leading the way in the Mediterranean and closely partnering with the EU in their efforts. In June 2022, EU and Egypt have signed a Mediterranean Hydrogen Partnership to promote investments in renewable electricity generation, strengthening and extension of electricity grids, including trans-Mediterranean interconnectors, the production of renewables and low carbon hydrogen, and the construction of storage, transport and distribution infrastructure (European Commission, 2022).

Moreover, Israel (and Palestine) stands to gain from a **nexus approach between energy, water and food**. The European Green Deal places a strong emphasis on a nexus approach, especially in its Circular Economy Action Plan and the Farm-to-Fork strategy. In close cooperation with Jordan, Israel and Palestine stand to gain from mutual dependencies of regionally integrated water and energy sectors, thus also benefiting the food production sector (EcoPeace Middle East and Konrad Adenauer Stiftung, 2017).

Lastly, **addressing trade-offs between green and digital transition** is another area in which EU-Israel collaborations could be enhanced. As the IEMed representative stressed, both the EU and Israel believe in the digital transition as a key enabler of the green transition. Yet, little emphasis is placed on the environmental consequences of the digital transformation across sectors, as also mentioned by the EU Ambassador to the EU. Such a digital transformation is also likely to lead to a global race to raw materials and the difficulties associated with waste management. Technological solutions can help in combating climate change, but we also need a holistic approach that accounts for our digital carbon footprint, clearly reflected in national and sectoral strategic long-term visions and action plans such as the European Green Deal, as mentioned by the IEMed representative. Therefore, vast opportunities for collaboration to advance this agenda exist, which could be supported through EU-Israel collaboration.

In all these areas, a focus on **strengthening the cross-stakeholders ecosystem approach** to innovation can foster knowledge transfer between the EU and Israel and other Mediterranean partner countries, as the representative of Startup Nation Central mentioned. Initiatives such as the European Institute of Innovation and Technology (EIT)'s Hub in Israel, established in 2019, can further support the growth of innovative EU and Israeli start-ups. The EIT Hub in Israel creates synergies between the EIT community and Israeli innovation ecosystem to support the growth of innovative start-ups and increase the number of EU-Israel collaborative projects with a societal impact.

5. Closing remarks

The discussions around the Annual EU Meeting of the IEPN, as well as the existing track-record of EU-Israel research and innovation collaboration clearly highlight that vast opportunities for collaboration exist to advance the green and digital transitions in the Mediterranean. But, the collaborative journey should not stop here. Further expanding the research networks between EU, Israel, and the Mediterranean countries, could harness untapped opportunities around the water-energy-food nexus, for example. In addition, leveraging the potential that natural gas reserves in Israel offer for short-term energy security purposes, but orienting the energy strategy to take advantage of the large opportunities that renewable energy, including green hydrogen, could be a game changer for inter-regional cooperation and partnerships. Lastly, a closer alignment of Israel's policy frameworks and targets with those of the EU, could leverage ever more of the existing untapped potential in collaboration, promoting peace, prosperity, and sustainable development.

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