



The Israeli Renewable Energy and Energy Efficiency Industry

Status update and policy
recommendations for leveraging Israel's
R&D and industry potential

- EXECUTIVE SUMMARY -





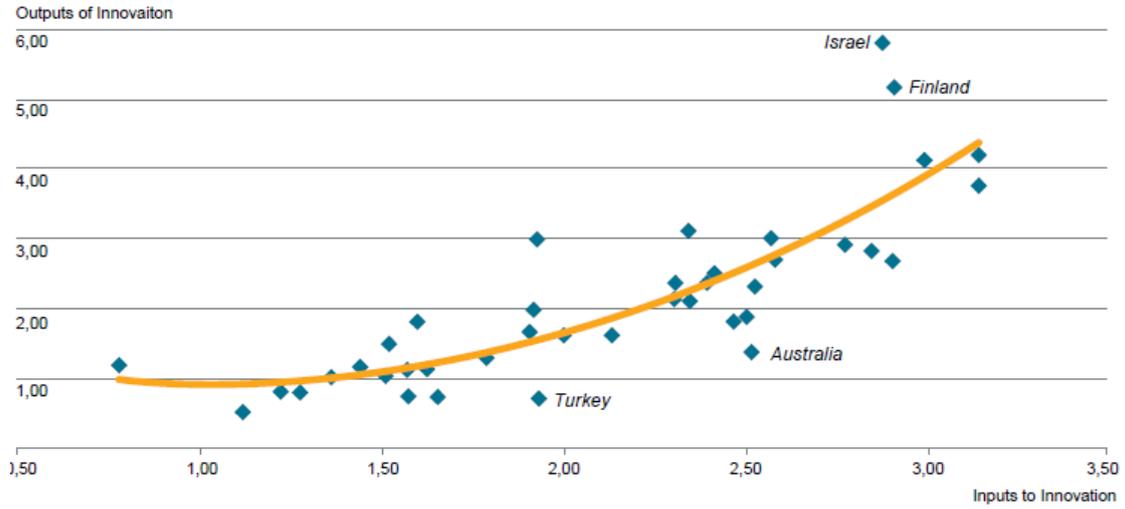
Executive Summary

- **The global renewable energy market is continuously growing** both in capacity installation as well as in the development of innovative technologies. As the share of renewable energy in the grid increases, the need for grid integration solutions becomes prominent, with an emphasis on smart grid and energy storage.
- **The bulk increase in renewable energy installations** is in the developing countries, which have become a major business collaboration target market for the Israeli renewable energy industry.
- **Israel maintains an "opportunities zone" which supports exceptionally innovative developments and applications** in the field of generating renewable energy, due to a synergy that exists between the security industry, the hi-tech industry, and the "startup nation" entrepreneurship ecosystem.
- **Israel's relative advantages in the renewable energy sector are a potential which must be leveraged**, especially given that the industry is both labor- and knowledge-intensive, and that its growth expected to provide significant direct benefits for the Israeli such as employment and exports, as well as external benefits such as emissions reduction and energy savings.
- **The characteristics of the renewable energy industry presents unique challenges**, especially so with regards to financing the transition stage from the technological proof into commercialization.

Israel was recently ranked no. 1 for cleantech innovation out of 40 entrepreneur states, passing Finland and the USA. **Nevertheless, there is an apparent gap between Israel's innovative level and its ability to commercialize these technologies**, in which Israel was only ranked at no. 8.



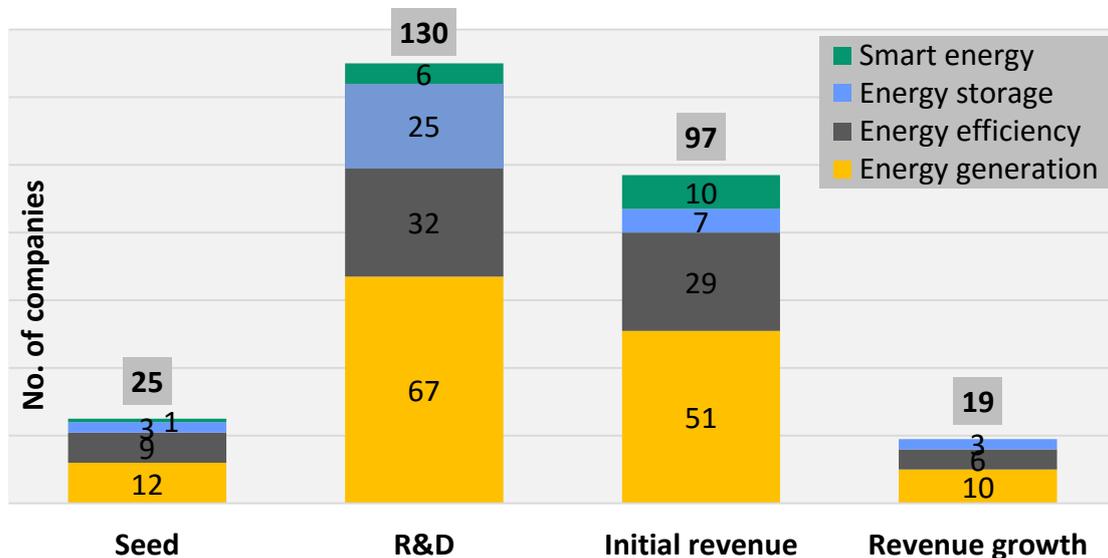
Cleantech innovative efficiency index



Source: Cleantech Group & WWF, 2014

As part of this study, a database listing Israeli companies engaged in the renewable energy sector, under 10 different sub-sectors, was compiled. The data analysis shows that although about 48% of companies are at the R&D stage and about 36% are at the initial sales stage – **only 7% of the companies are at the mature stage**. These findings indicate that on top of this industry being young and in early development, **there is a market failure in the form of a barrier at the critical stage of commercializing technologies**. Therefore, in addition to direct R&D support, the national policies should address this barrier with a dedicated policy measures.

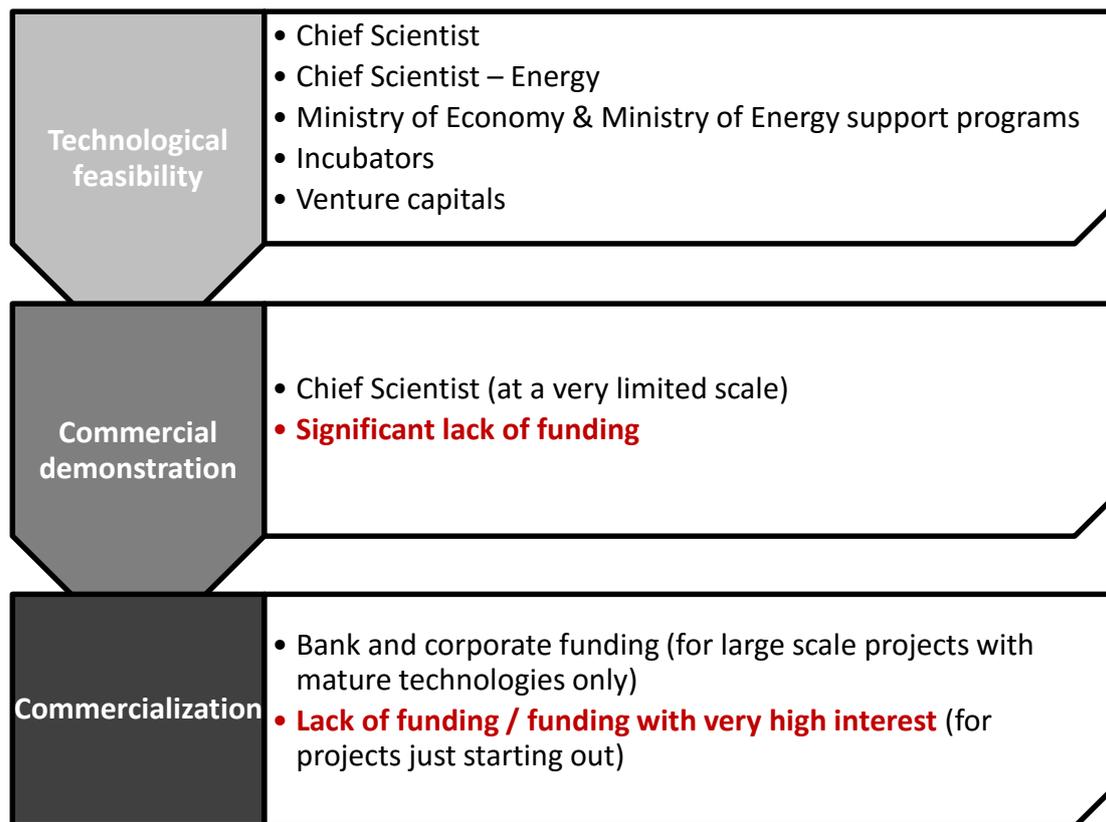
Number of Israeli renewable energy companies, by development stage (2014)



Renewable energy startup companies face several kinds of challenges which are unique for this sector- high capital expenditure investments needed for upscaling, regulatory barriers, the long lifecycles in the infrastructure markets and their conservative nature, disinclined to make frequent changes. Acknowledging these challenges, several countries are utilizing dedicated toolsets targeted at upscaling in the renewable energy sector, identifying this stage's critical role in the industry's development and its potential impact over the economic, social and environmental implications of these technologies.

The following chart depicts the different stages in the lifecycle of a renewable energy startup initiative, and the related existing (and lacking) supportive tools:

Lifecycle and supportive tools for Israeli renewable energy companies



This analysis shows that the main barrier is the funding of the initiatives at the commercialization stage, after proof-of-concept has been achieved. Although the



State of Israel offers support at the R&D stage, entrepreneurs often have difficulty raising capital for the following two stages – even though the technological risk at this point is significantly smaller. At these stages, projects either have difficulty achieving bank funding ("non-bankable"), or get financed at a very high rate of interest – impacting the project's ROI and profitability. Alternatively, raising additional capital through equity financing could result in the dilution of the owners and investors, whereby the project is no longer financially worthwhile.

In order for Israel to be maintain an international competitive appeal in the industry, a critical mass of technological innovation - both quantitative and qualitative - must exist, spread across all stages of the companies' growth and value chain.

Main recommendation – A joint government, public and private capital fund

- The preferred policy is setting up a joint capital fund, invested in by the government and public investors (banks and institutional investors), as well as by private investors. This fund will take part in funding **novel commercial renewable energy projects** based on innovative Israeli technology
- It estimated that at least **5 companies' projects per year** can meet the fund's investment criteria, with an average investment of 10M US\$ required per project
- The suggested overall fund assets size would reach **700M NIS over 5 years**.
- The government's share would amount to up to 50% of the fund at most, thus necessitating up to **70M NIS per year over 5 years** at most, with the remaining vast majority share to be raised from corporated sources
- The fund will limit its investments to Israeli companies, which develop innovative renewable energy technologies (within explicitly specified scope) and are apt to export, and that **are at the commercialization stage**
- **Investments will be made in initial commercialization projects** – i.e. neither in projects at the R&D stage or in bankable projects
- The fund will provide the projects financing at an attractive interest rate, compared to market alternatives



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Additional recommendations include **ongoing research of the industry**, setting up a "**cleantech panel**" to include stakeholders and relevant decision-makers for supporting initiatives, establishing regulations that support integrating innovative technologies into the electricity grid, conducting PR activities to expose "hidden entrepreneurs" in the hi-tech industry, and defining goals for **applying renewable energy and energy efficiency among government offices and the IDF**, as a proving ground in order to leverage Israeli technologies and know-how, based on economic viability.