

**September 2017 | Research # 112**

Executive Summary

**Accelerating the Adaption of Energy  
Efficiency Technologies in Commercial,  
Offices & Hospitality Buildings**

**Noam Sonnenberg**



## About the Milken Innovation Center Fellows Program

The Milken Innovation Center Fellows Program accelerates Israel's economic growth through innovative, market-based solutions for long-term economic, social, and environmental challenges. Our goal is to accelerate Israel's transition from a Start-up Nation to a Global Nation with solutions that others can replicate.

The Program awards annual fellowships to outstanding Israeli graduate students. We train and deploy some of Israel's best and brightest young professionals to create pragmatic financing and economic policy solutions. Our applied research and Financial Innovations Labs® are a launching pad for transformative change, using innovative financing mechanisms, programs and policies to bridge social, regional, economic and productivity gaps within Israel and between Israel and the world.

In addition, Fellows craft their own projects during their internship aimed at barriers to job creation and capital formation in Israel. The Fellows' research, carried out under the guidance of an experienced academic and professional staff, support business and policy makers to shape economic reality in Israel. The program offers the ultimate training opportunity, combining real-life work experience with applied research.

Throughout the year, Fellows receive intensive training in economic and financial analysis, public policy and research methods. They acquire tools for communication and presentation, policy analysis, leadership and project management. The fellows participate in a weekly research training workshop where they work with senior economic and government professionals, business leaders, and top academic and financial practitioners from Israel and abroad. They also participate in an accredited MBA course, taught at the Hebrew University School of Business Administration by Prof. Glenn Yago.

Fellows Program alumni can be found in senior positions in the public and private sectors. Some serve in key positions in government ministries while others work at private-sector companies or go on to advanced graduates studies at leading universities in Israel, the United States and Great Britain.

The Fellows Program is a non-partisan. It is funded, in part, by the Milken Institute and other leading philanthropic organizations and individuals in the United States and Israel.

In 2016, the Israeli government executed a National Plan (Government Decision 1403) for Implementation of Greenhouse Gas Emissions Reduction Targets and for Energy Efficiency. The Government Decision set specific policy actions to meet the targets agreed to in Paris (COP21). According to this plan, the electricity consumption in Israel should be reduced by 17% by 2030. With the about one-third of the national electricity consumption driven by the public and commercial sectors, and since almost two-thirds of the sector's electricity is consumed in commercial, offices and hospitality buildings, energy efficiency can have a significant impact. Therefore, at least in part, the government is focusing on this sector to meet its efficiency targets.

There are several particular opportunities in these sectors of the Israeli market. For example, in most developed markets, there is little incremental growth in the built environment. However, in Israel, through 2030, the built floor areas of commercial, offices and hospitality buildings are expected to almost double. This not only creates a substantial incremental market to make a substantial difference in consumption and efficient, it also creates a market to test and implement innovative efficiency technologies in the new buildings. For example, with Big Data and information technologies, which has been evolving over the last decade (and with Israel as its epicenter) is making substantial improvement in the ability to monitor and measure electricity consumption. These advances are lowering the margin costs of these systems, and making them more accessible to a broader market and more reliable. Israel's core competencies in these areas can be leveraged to create a sustainable, scalable export-oriented industry, and move the country closer to meeting its energy efficiency goals at the same time. This research focuses on how the Israeli government can meet the energy efficiency challenges, leverage its strengths, and lead the world in energy solutions.

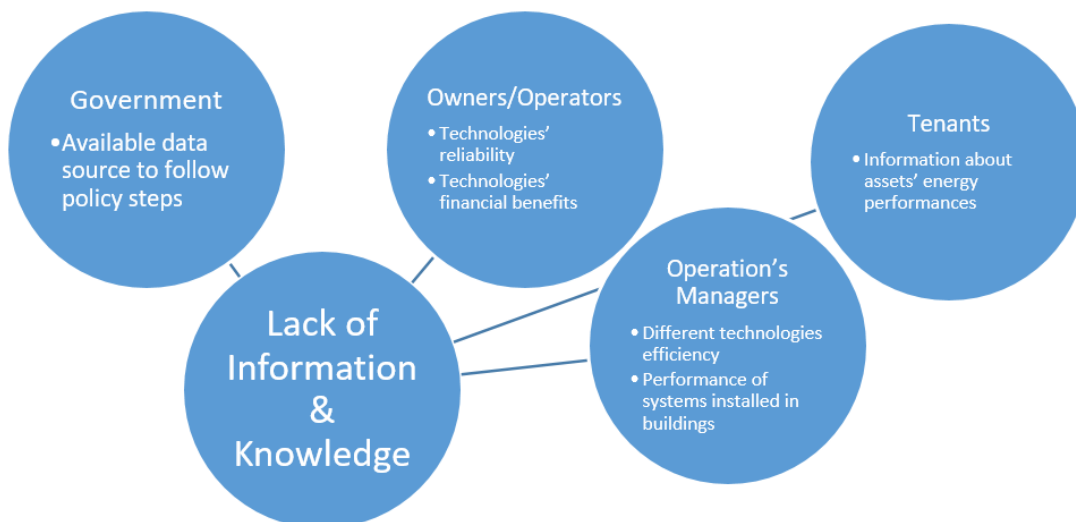
Today, energy use is like driving a car without speedometer. There is not direct feedback on consumption, and the bill is sent weeks after the actual use. In this reality, is not easy to take actions that will affect behavior. Tools are available in the market to implement real-time monitoring systems implement active building energy management systems (BEMS) to fill this gap. However, for individual building operators and tenants, investing in these systems must produce tangible savings that can be translated into a short-term return on investment. In addition, on an aggregated basis, these methods can provide a window into consumption at the national level.

The research also describes the roles and perspectives of the relevant stakeholders in the value chain – from developer to tenant. These perspectives including their motivations for action, interactions between the links in the value chain, and the barriers each stakeholder faces. For

instance, the "landlord-tenant" linkage is found as a common barrier in commercial and offices buildings. For example, the landlord or owner manages and maintains building operation, and markets and leases the building. They seek to minimize their upfront capital expense because the market will not allow them to pass along this cost. Since the landlord or owner does not pay for the utilities, there is a disconnect in their ability to realize the savings. Tenants, in contrast, are sensitive to the occupancy cost, including rent and utilities for the space, however, they are not motivated to investment in property they do not own, especially for a short-term rental. Research indicates, however, that they will make improvements if they have an expectation of a return on their investment (from savings and lower occupancy costs) within the term of their lease.

As part of the research, the Ministry of Environmental Protection convened a steering committee of industry, technology, and policy experts that helped to identify the barriers and possible solutions. The lack of information or breakdown in the communication between stakeholders about systems and how they work and the payback period was identified as a key barrier.

Figure 1: Lack of Information and Knowledge Among the Different Agents in the Value Chain



Source: Milken Innovation Center, 2017.

To address this key barrier, the research included benchmarking examples of effective programs that address the breakdown in information and knowledge between the actors in the value chain.

Two outstanding examples include:

- NABERS- Australia: Since 1999, the Australian government has operated a buildings environmental performance rating system. The program started in the state and regional level and was adapted and implemented at the national level gradually. The program fills the information gap between the different stakeholders in the value chain. It tackles successfully the "landlord-tenant" problem by converting information about good environmental building performances into marketing advantage.
- Energy Star- USA: The program provides varied tools for buildings owners and tenants. They include an online benchmark for energy performance by buildings types. The tools provide options to the owner to help them become more efficient and to see their performance in comparison with others. In addition, the benchmark provides the tenants a tool to understand and compare their actual energy bills, which often do not provide clear metrics about performance or energy efficiency.

The research recommendations are to translate, adapt, gradually introduce Israeli versions of these programs. In addition, the research identified a broader set of regulatory, education and financial tools that can be adopted.

Regulation Steps	Short term	1. Set mandatory energy codes for buildings
Information and Education Steps	Short term	2. Provide energy consumption benchmarks based on the government offices' consumption. 3. Establish a website which provides energy efficiency online tools and information 4. Publicize recommended contract and protocols to engage energy efficiency companies (ESCO)
	Long term	5. Establish an "online arena" to share energy consumption data
Financing and Incentives	Short term	6. Give government guarantees to finance the purchase of energy monitoring and management systems

	Long term	7. Design and execute government tenders to support installation of energy monitoring and management systems
	Requires more research	8. Provide convertible grants for installation on energy monitoring and management systems 9. Provide grants meet ISO 50001 standards 10. Give credit for Negawatts or create a white certificates mechanism to stakeholders who purchase from alternative and/or decentralized electricity

Finally, the research found that Israel does not stand out in the energy efficiency technologies field as it does in other technologies fields. However, with the substantial scale of incremental construction planned over the next decade, Israel can use this as the opportunity to create a laboratory for innovative solutions that can be taken to scale globally.



The Jerusalem Institute for Policy Research  
Milken Innovation Center  
20 Radak St. Jerusalem 9218604  
Office: 02-5630175 (Ext. 34)  
[www.milkeninnovationcenter.org](http://www.milkeninnovationcenter.org)