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Sustainability and Business Strategy in Termokir

Following a year of deliberations, CEO Cohen had to make up his mind. As he was heading to the final board meeting for 2015, he would have to decide whether he would lay out a bold new strategy for Termokir Ltd. CEO Cohen had often been able to demonstrate how his unorthodox managerial decisions in the Israeli managerial climate could translate into profit. His management approach, while nontraditional, had steered the company from an imminent bankruptcy a decade earlier. The Board had supported his moves even as it continued to doubt the need to adopt sustainability as a key pillar of its business strategy. For a long time, the market for green building products in Israel had been developing slowly, and in 2015, it was still lagging years behind other OECD markets, as were green building regulatory initiatives. Being a first mover on sustainability had already yielded savings in resource efficiency and had become central to Termokir's brand. In 2015, the company was engaged in developing a sustainability roadmap and a "client at the center" strategy that would unfold in a series of important initiatives over a period of years. Cohen was unsure that moving in such incremental steps would be sufficient to solidify their market position. An alternative strategy would be to make bold movements towards increased sustainability, focusing on a new product line, which would require significant investment. Would moving more boldly constitute a major leapfrog opportunity capitalizing on Termokir's years of being a first mover in what was now a growing green building market? Or would Cohen be moving the company too soon to capture sufficient benefits to justify his planned R&D investments, reaping only dire consequences?

We would like to thank Termokir Industries Ltd. for their cooperation and contributions to the development of this case study. Data presented in this case have been slightly modified to protect the company's proprietary interests.

Building Blocks of our Global Economy and Society: Cement plays a crucial role in the development of the modern world. After water, cement is the second most consumed global commodity. In the USA alone, domestic production of cement increased to roughly 80.4 million tons of Portland cement and 2.4 million tons of masonry cement in 2015. Production took place in 99 plants in 34 states across the country. The overall value of sales was about \$9.8 billion. Most of the cement sold was used to make concrete, worth at least \$50 billionⁱ. According to the USGS, about 70% of cement sales went to ready-mixed concrete producers, 11% to concrete product manufacturers, 8% to contractors (mainly road paving), 4% each to oil and gas well drillers and to building materials dealers, and 3% to others. The trend is global and accelerating in emerging markets. For example, according to USGS statistics, China has used more cement in 3 years (2011-2013) than the US in over a hundred years (1901-2000) and the global use of cement is projected to continue increasing (see Exhibit A).

In the construction sector, Portland cement and its derived products (e.g., concrete and mortar) may be replaced with materials such as aluminum, asphalt, clay brick, fiberglass, glass, steel, stone, and wood. In addition, several other materials, such as fly ash and ground granulated blast furnace slag, can be potential alternatives in certain circumstances. The use of such materials is increasing in various concrete applications, both as substitutes and as components of finished blended cements (USGS). Nevertheless, as limestone and the other raw materials of cement are abundant geologically, there are no forecasted shortages on the horizon and cement is here to stay.

This trend is significant from an environmental perspective as the cement industry is the most energy intensive of all manufacturing industries around the world (EIAⁱⁱ). The energy intensive production of cement co-produces CO₂ emissions. According to the 'Trends in global CO₂ emissions: 2014 Report', CO₂ emissions from cement clinker production are the largest source of non-combustion-related CO₂ emissions. These emissions account for around 4.8% of the total global emissions or about 10% if the combustion-related emissions from heating the kilns are also included. The emissions trend is in line with the global increase in cement production. Emissions increased globally by 7.4% in 2013, after a 4.8% increase in 2012, with China's increased production (by 9.3%) as the key driverⁱⁱⁱ. In Israel, cement production is concentrated in one company, Neshet Israel Cement Enterprises Ltd. Thus, cement users have to develop management strategies that respond to a market with a single local producer, or seek out imported cement materials, in an effort to address what is at times significant price volatility.

Termokir and the Use of Cement as an Input Product: Many different products use cement as a key ingredient, the most notable of which is concrete, followed by various applications of cement mixes in products such as plasters. Termokir Industries Ltd. is an Israeli company producing various dry mix product lines, using cement from both Israel and abroad. It was established in 1983 as a Kibbutz-owned company in Kibbutz Horashim, located in the center of Israel. The company develops and manufactures construction materials in three core product lines: plaster, adhesives and sealing agents (see Termokir's product lines in Exhibit B) and employs approximately 65 people. Termokir's leading products rely on cement for its binding and strengthening properties. If we were to take a quick look at any regular office, living room, area or public space, we would likely encounter one or more of Termokir's or their competitors' products in a wall, floor or other surface. Plasters are used for coating walls and ceilings, as decorative cement-based coatings, for thermal insulation, as sealing materials for foundation tiles and walls, as adhesive mortars for the base of floor tiling, carpeting and parquet flooring and even as acoustic insulation. These plasters can enhance acoustic insulation between two floors or upgrade the sound properties of a room where excellent sound properties are required.

During the 1980s much of Termokir's production was based on European know-how. Operating in Israel's Mediterranean climatic conditions, the company recognized the potential for developing a more localized line of products that would suit the warmer weather. The company began developing a line of products in collaboration with two leading Israeli research and standards organizations – the Technion's National Building Research Institute and the Israeli Standards Institute. The timing turned out to be crucial. As the global markets experienced an energy crisis originating from another part of the Middle East, this small company launched a new product – thermal plaster, an energy saving insulating product. The product responded to a newly embraced market interest in energy efficiency due to rising energy costs. This was particularly evident in the residential sector where communities were grappling with poorly insulated residential structures and where Termokir's Israeli-focused products initially gained popularity.

However, the company's unique management approach went beyond the development and manufacture of a product line that addressed building energy efficiency needs. Being a Kibbutz-owned company has its unique legacy and characteristics associated with the collective and cooperative Kibbutz lifestyle and the shared ownership of its means of production and consumption. Kibbutz companies' share of traditional industrial manufacturing plays an important role in Israeli industry and is often characterized by a special relationship between the employees and CEO as well as between the company and the Kibbutz, as some employees may also be members of the Kibbutz community. In 2014, the Kibbutzim industries accounted for around 8% of Israel's total industrial revenues, number of employees and exports^{iv}.

Termokir's CEO is Elie Cohen, a Kibbutz member who lives in the community that owns the company. The Kibbutz is the location of the company's manufacturing, R&D, and corporate facility. While Cohen's managerial approach is deeply rooted in the Kibbutz movement (as is his decision to raise a family in close proximity to the production site), it also stems from his personal multicultural background and his ability to imagine the implementation of European sustainability practices in a Middle Eastern context. Cohen's management skills brought the struggling Kibbutz business out of a precarious financial position and he slowly introduced a number of sustainability-related operational measures that were embraced by employees and the community. While occasionally challenged by Termokir's Board of Directors on the value of these measures, he earned their confidence in his leadership by seeing the company through difficult circumstances. But by 2015, Termokir had to face some major decisions – how far should they move into a 'green products portfolio', how would that portfolio fit into their overall business strategy, and if it did fit, how quickly should they move to implementation?

A CEO's Vision Paving a Road Less Traveled: During the 1990s, Termokir gradually enlarged its product portfolio, establishing itself as a major supplier in the Israeli market. By the turn of the century, however, Termokir faced a major crisis when a key competitor that had been bought by an industry leader began to take away some of Termokir's market share. By 2002, the year that Cohen was appointed CEO, the company was pretty much on a direct route to bankruptcy. Discussions of a possible merger with the larger competitor failed and the company found itself at a crossroads. Sales were dropping and market share was significantly reduced; most people at the Kibbutz believed that the best way to proceed was to sell the company.

A few years prior to his appointment as Termokir's CEO, Cohen traveled to Sweden with his wife and their newborn baby to visit his family. Cohen's family's recycling practices at their home in Sweden were unheard of in Israel at that time. When he was about to throw away the trash without sorting out the recyclables after a family meal, his mother stopped him, struck by his apparent intention to not recycle any of it at all. At that very moment,

Cohen realized that a change in individual practices in his home and in his company was the way to move forward.

That trip turned out to be a decisive one in shaping his managerial approach at Termokir, resulting in a successful turnaround from bankruptcy in the late 1990s and ultimately in Termokir winning several awards, including the 2015 industry environment award from the Israel Ministry of Environmental Protection (MoEP) and the Israel Manufacturing Association^v. The firm's turnover increased to 107 million NIS (see turnover growth in Exhibit C).

Cohen's sustainability journey began with a dramatic shift towards improving operational efficiency and the management of all aspects of purchasing. Almost immediately, the company began to see results, as sales and market share stabilized in 2003 and the company returned to profitability over the next couple of years. The next step for Cohen was establishing a long-term strategic infrastructure for the company. It was clear that without such a strategy, the next crisis was only a matter of time.

The company-wide strategy included revisiting assumptions about the efficiency of the flow of materials through the production line. Cohen was looking for radical improvements in resource efficiency and while some of what he envisaged could be achieved by technical means, he realized that a major change in the company's culture would be needed to achieve gains that would transform their competitive position. As he pushed to instill a culture of radical resource efficiency across all aspects of the production process, a worrisome level of opposition arose among employees who wanted to maintain the old ways of doing things. The situation became so dire at one point that Cohen's car tires were punctured on several occasions. His steadfastness towards his goal was later described as a general's approach in a war zone.

Cohen complemented the emphasis on production efficiency in 2006 with the development of a managerial infrastructure, an information and communication platform, and a significant increase in resources allocated to the sales department. Over the next few years, Termokir began exporting its products and looking for new growth opportunities.

What was Happening in The Market: Competitors and Customers: By the turn of the century, the global green building market was already developing in two major sectors, new buildings and retrofit buildings. In some areas around the globe, with California as the leading example, the market demand for green building was expanding, both through regulation and due to a flourishing demand for products. In California, a mandatory statewide green building code (codified as Part 11 of Title 24 of the California Code of Regulations), the CalGreen^{vi}, became effective in 2011.

In 2005, the average Israeli consumer was not even aware of green building alternatives. The average annual size of building efforts in Israel between 2005 and 2010 was around 7.7 million square meters, of which around 70% (5.4 million square meters) were for housing^{vii}. Some 30,000 new housing units were being built in Israel every year on average, and of those, very few comprised green buildings, either on the planning or the product level. The retrofit market was estimated to be around 8 billion NIS, including the costs of materials and labor.^{viii}

The market for dry building materials, including gypsum plasterboards, insulation materials, gypsum blocks and adhesives was estimated to be around 1.5 billion NIS with a growth rate of 10-12%^{ix}. Key aspects affecting the total market size and the shares of individual companies within this market included: 1) the dynamics in the building market, 2) creation of new markets, 3) new technological advances, 4) regulations, and 5) changing market share of other players in the market (as was the case, for example, with one particular supplier of gypsum). In addition, the establishment of the Israeli Green Building Council

(ILGBC), along with efforts by Israeli regulators to provide information, training and educational programs on green building, were already bearing fruit. According to a survey by the Geocartography Knowledge Group in Israel, awareness about green building rose from 23% in 2012 to 65% in 2015. The survey also found that 53% of the public declared a willingness to pay an additional 25,000 NIS for green building and 30% a willingness to pay 35,000 NIS more compared to the cost of a traditional building. The numbers for retrofit projects were also on the rise. Around 70% of the public were willing to invest between 5-10% of the total renovation costs to include green features in their updated home and 30% were willing to pay even more. These figures are in line with an overall rise in the level of knowledge about green building, its health and environmental benefits, and the potential for cost reductions in resource use. In 2012, 44% of the public had heard of green building, but did not understand what it was about. By 2015, the proportion of people who did not understand the concept had dropped to 12%.^x

Starting in 2008, green marketing became a central marketing tool for Termokir, providing an opportunity for the company to differentiate its products from those of its competitors. At first, various customers (architects, building contractors, etc.) perceived the concept with deep suspicion. One customer even requested a product without a “green label”, as they did not wish to field questions from their clients that they felt unable to answer. A few years later, that same customer made a point of asking for the “green label” product when their biggest client included some green purchasing criteria in their specification. What began as a somewhat experimental approach to marketing, in a conservative market where change occurred at a glacial pace, gradually became an accepted alternative and even an expectation in some market segments.

The Sustainability and Management Nexus, first steps: The change in company culture, along with specific initial steps taken towards sustainable products and practices, rebranded Termokir as a sustainability leader. Furthermore, these changes allowed Termokir to measure its resource efficiency and pay close attention to the flow of materials and resources through its system, and to identify and exploit opportunities for cost savings. One example is the company’s compressed air system used in various process operations. Replacing its air compressor with a more efficient model and changing the layout of the compressed air piping system increased system efficiency and reduced energy-related costs (see Exhibit D).

In an example of waste reduction and reuse, Termokir implemented a material suction system across the plant to collect the powdered waste material generated in the production process. The company also shifted to the highest quality packaging materials to minimize bag breakage, which had been a significant source of usable material loss within the production process. Reducing the amount of material that became waste and establishing a material collection and reuse effort reduced waste management costs, freed up shop floor space (by reducing the number of waste containers needed), and lowered material procurement costs (by recovering powdered raw material and feeding it back into the system) (Exhibit D). During the year 2014 alone, 119,500 NIS were saved by re-feeding what otherwise would have been waste into the system. Resource efficiency has made economic sense over time. Between 2007 and 2014, the company invested around 850,000 NIS in existing equipment improvements and new equipment that increased resource efficiency. By 2014, these investments led Termokir to reduce operational costs by 720,000 NIS and increase production by 90% (Exhibit D).

The Board’s Response: Initially, Cohen focused his sustainability communications with the Board of Directors on the efficiency improvements. The Board, in turn, regarded sustainability as Cohen’s “hobby”. In 2013, Cohen and his senior team presented the concept of sustainability to the Board as a core aspect of Termokir’s business strategy. The presentation was a disaster. It was not until a leading expert from the US, who had worked

with global sustainability leaders such as Nike, Patagonia, and Aveda, presented the potential for win-wins following a sustainability strategy and highlighted the global trends in business approaches to sustainability at a Board meeting in 2014, that the Board began to see the opportunity for market differentiation.

Additional Steps: Improving resource efficiency and introducing an ISO 14001:2004 (and green labels) for a large group of products demonstrated the company's commitment and efforts towards achieving a standard of excellence in quality. Termokir received the prestigious Diamond Mark (Exhibit E) by The Standards Institute in 2010. The Diamond Mark reflects a recipient company's conformity to seven Israeli and international standard quality marks related to their management systems, processes, and products. For Termokir, these included the ISO 50001:2011, SDX-SMETA, ISO 14001:2004, 18001:2007, ISO 9001:2000, the Israeli Green Label, and the Standards Mark.^{xi} Only four companies in Israel had succeeded in qualifying for the Diamond Mark before that year. The company then decided to take a leap in its environmental management and use the most advanced methodology that was available to assess the environmental impacts of one of its key products. It performed a Life Cycle Assessment (LCA) for its Thermal Plaster. The study identified the cement clinker in its product to be the most significant environmental hotspot due to its contribution to global warming associated with greenhouse gas emissions such as CO₂ and methane. Termokir was the first company in Israel to perform such an LCA study.

Furthermore, in an effort to both speed up and be more systematic in pursuing progress on sustainability, and to address management doubts, the company contracted a specialized US sustainability company to produce a roadmap on how to organize and focus its sustainability efforts in the coming years. As it moved forward with the implementation, the firm realized that sustainability is in practice a much bigger collection of different actions, going beyond green products or energy efficiency. It requires building a strong and high quality industry overall, by addressing clients' specific needs according to an appropriate client segmentation, and by establishing a trust-based relationship with internal and external stakeholders in the supply chain.

The Benefits of Green Building and Changes in the Local Israeli Market: The multidisciplinary principles that are integral to green building can significantly contribute to the creation of more sustainable and healthier building. They can drive reductions in energy and water consumption, catalyze the recovery and recycling of waste during construction and throughout the building's lifetime (including at the end of its useful life when it may be destined for demolition), and provide a healthier indoor environment for occupants.

Economic benefits from resource efficiency and contributions in terms of jobs and wages are already transforming green building into a growth engine in some parts of the world. According to a 2015 report prepared by Booz Allen Hamilton for the U.S. Green Building Council (USGBC), the green building market will contribute an estimated 1.1 million jobs and a total of \$75.6 billion in wages by 2018. The USGBC's Leadership in Energy and Environmental Design (LEED) certification scheme, which requires third party verification, will add an additional 386,000 jobs and \$29.8 billion in wages. Between 2015 and 2018, LEED certified buildings are expected to generate savings of \$12 billion in avoided energy costs, \$715 million in reduced maintenance costs and significant savings in water and waste management costs.^{xii} It should be noted that even in the United States, the market for green building has grown somewhat slowly, partly in response to a fragmented regulatory framework that depends on state and local-level action and partly due to the inherent resistance to change in the sector.

The regulatory framework for the Israeli green building sector has developed more slowly than elsewhere in the OECD. In a striking contrast to Israel's innovative and world class high-tech industry, the construction sector, along with various other industries, remains

surprisingly conservative. While Israeli companies have developed cleantech solutions and other environmental products for water and energy efficiency that are readily adopted across the globe, implementation of many of these technologies “at home” has often been limited.

Over the decade from 2005 to 2015, significant advances were taking place towards a change in this conservative market, the most important of which was the introduction of new standards. Israel’s voluntary green building standard, Israel Standard SI 5281, was introduced in 2005. It was later revised and upgraded in 2011 to cover a broader range of buildings. The standard provides a definition of green building in Israel for both new buildings and existing buildings that are undergoing renovation. It outlines the minimum standard of efficiency that is required in order for a building to be declared “green” by the Standards Institute of Israel. The standard addresses the following areas: energy, land, water, waste, health and wellbeing, environmental management, transportation, materials and innovation. It can be applied to a broad range of buildings including residences, offices, educational institutions, commercial sites, public health facilities, and many others. The revised version meets international standards and is currently going through a second cycle of revisions that potentially will include expansion to industrial buildings, neighborhoods and campuses.

According to Arch. Avraham, head of the Green Building Unit at the Israel MoEP, “Just five years ago, green building in Israel was only of interest to a few. The first green building in Israel was built in 2008 and in 2011 the first residential building was awarded the standard. Before 2013, less than 40 green buildings were built. In 2014 alone, over 3000 residential green building units were built, representing 7% of all units completed in that year. Another 600 are in different stages of construction”^{xiii}.

An important development has been the adoption of the local-level initiative by a group of leading local municipalities in Israel. The Convention of the “Forum 15” for Reducing Air Pollution and for Climate Protection, signed in 2008 by fifteen major municipalities, was later translated into a commitment in 2013 to gradually transition to green buildings in all new projects in the municipalities’ cities in accordance with the green building standard. The first stage would involve high-rise residential buildings exceeding 15 floors as well as public offices and institutions.

According to the Green Building Unit at the Ministry of Environmental Protection (MoEP), by 2014 about 10% of the residential units (4000 residential units out of 40,000) were built to comply with the green building standard in those 15 municipalities and elsewhere. There are similar efforts to increase the diffusion of green buildings through the promotion of green buildings for schools. As in many green building projects, the initial costs for an energy-efficient school may be higher. However, the MoEP estimates a return-on-investment period of five years through electricity savings and a continuous 20-40% reduction on energy consumption during that period. Water savings may produce significant savings as well (Exhibit D).

Another major development in the green building sector was the establishment of the Israeli Green Building Council (ILGBC) in 2007 as a non-profit organization. Termokir was one of the founders of the ILGBC and continues in a leadership role. Cohen has been a member of the management board from its inception, supporting all four of its key focus areas, which are assessment and rating tools, regulation, materials, and education and training.^{xiv}

Currently, various barriers appear to be impeding the rapid expansion of the green building sector in Israel. In a study conducted by the ILGBC for the MoEP^{xv}, issues such as a lack of incentives as well as an inefficient point allocation system for materials within the current standard were raised by specialists and other stakeholders. A planned revision of the standard to address some or all of the barriers has raised hopes that the green building market will be revitalized and expanded.

With regards to environmental life cycle impact assessment, while LCAs in the building market are becoming more and more prominent, only a handful of companies within this sector have performed an LCA in Israel. Nevertheless, one of the recently-conducted LCAs was by the local cement company, Nesher. Nesher also produced an Environmental Product Declaration, which is a standardized method for communicating LCA information about products. This step could be instrumental in increasing interest in LCAs within the building sector considering that Nesher continues to be the sole producer of cement in the country and the main provider for Termokir.

What is Next for Termokir? Currently, under the Green Building Standard IS 5281, Termokir's products can contribute to a building's certification in three sections: thermal insulation under the energy section, solutions for acoustics under the health and wellbeing section, and finally, green materials and recycled content materials under the materials section. The next bold step on the roadmap is the establishment of a sustainable and comprehensive product portfolio to meet the increased market demand for green products. This will require a major R&D investment. New tools such as the ILGBC's free Green Product Catalogue^{xvi}, initiated by Termokir through the materials committee of the ILGBC, will give products better visibility even if these products remain far from the mainstream.

One of the key challenges facing the market in Israel today is the lack of supply and variety of green building products. The approach that Termokir is taking, in addition to developing in-house products, is to import state-of-the-art green building products from reputable suppliers such as The DOW Chemical Company so as to provide a more comprehensive product range for their customers.

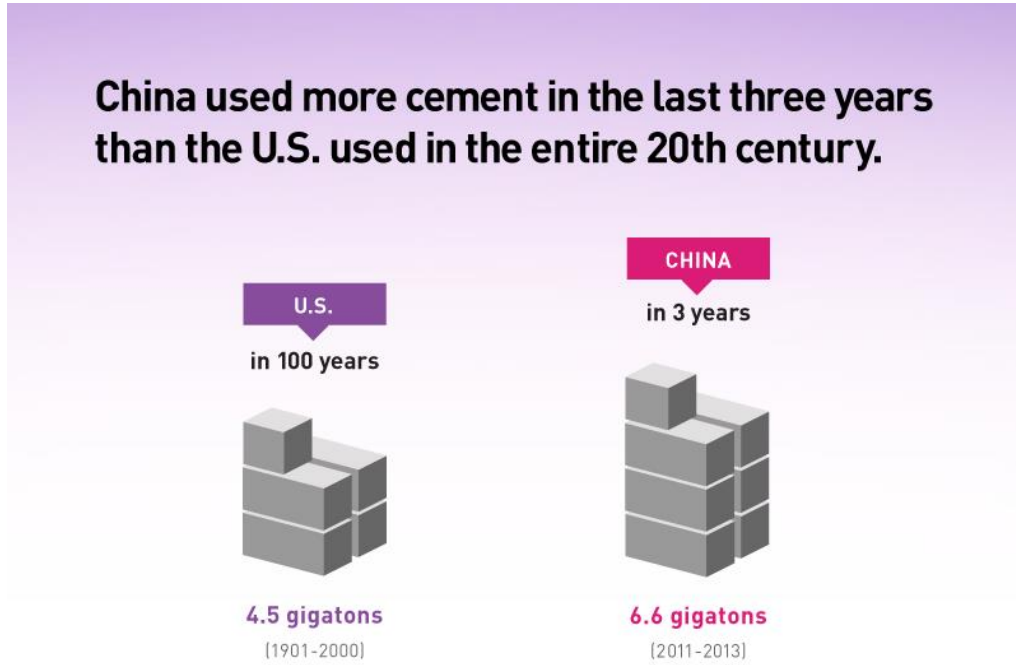
Despite significant advancements, adherence to the Israeli green building standards remains voluntary. In addition, the majority of new constructions and renovations still follow traditional building approaches with few, if any, green building features. In Termokir's case, sustainability remains a key strategy, even though customers value a number of other benefits of the company's products over its green attributes. And so far, Termokir has had little success in capturing a price premium for its green products. Nevertheless, Termokir's fiscal targets are ambitious: they aim to reach 200 million NIS in revenues by 2020 and to double this number every 5 years.

As the company continues to integrate their CEO's vision into their organizational, marketing and operational activities, key questions remain:

- 1) *How much should Termokir invest in their sustainability efforts given that the lower hanging fruit has already been picked and that the market is still in its early stages?*
- 2) *Should Termokir embark on a bigger sustainability venture at the product level and change the core of their product line, thereby incurring higher R&D costs and potential increases in product prices?*

Exhibits

Exhibit A: Cement market



SOURCES: USGS, Cement Statistics 1900-2012; USGS, Mineral Industry of China 1990-2013

Figure 1: Cement use in the USA and China, based on USGS data (illustrative figure from [Gatesnotes](#))

Exhibit B: Termokir product lines (2015)

Termokir’s product lines include the following: Acoustics, Tile Adhesives, Flooring Materials, Waterproofing Materials, Renders & Plasters, Finish Coating, Joint Fillers, Auxiliaries.

Starting in 2015, they graduated from selling products to becoming solution providers. Each product arrives as part of a package of products dedicated to one of the following systems:

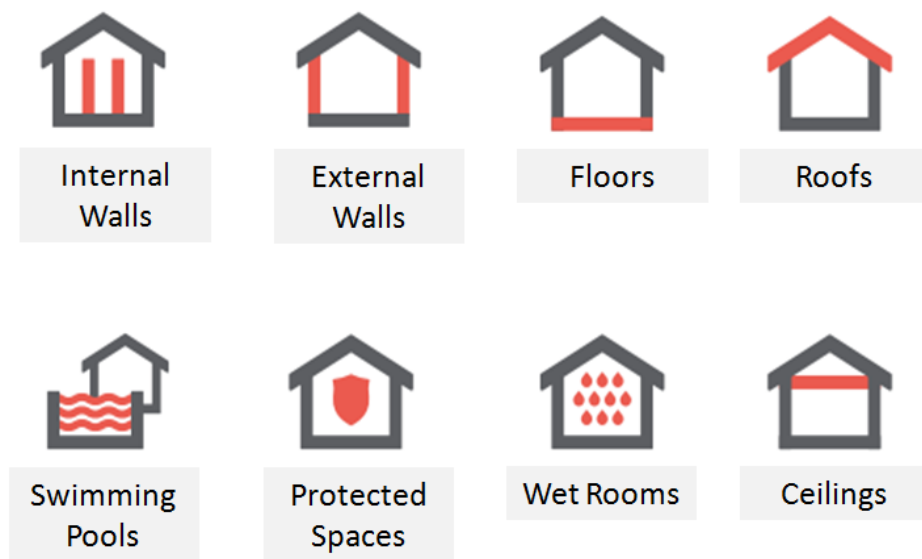


Figure 2: Temokir's solutions for systems (illustrative figure from [Termokir website](#))

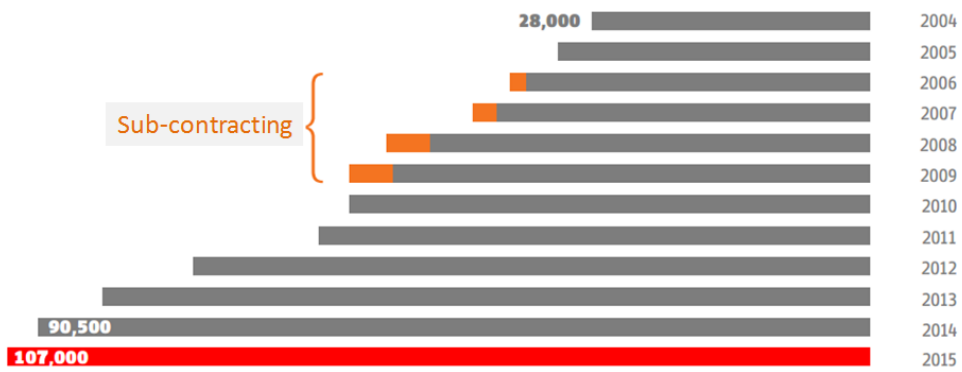
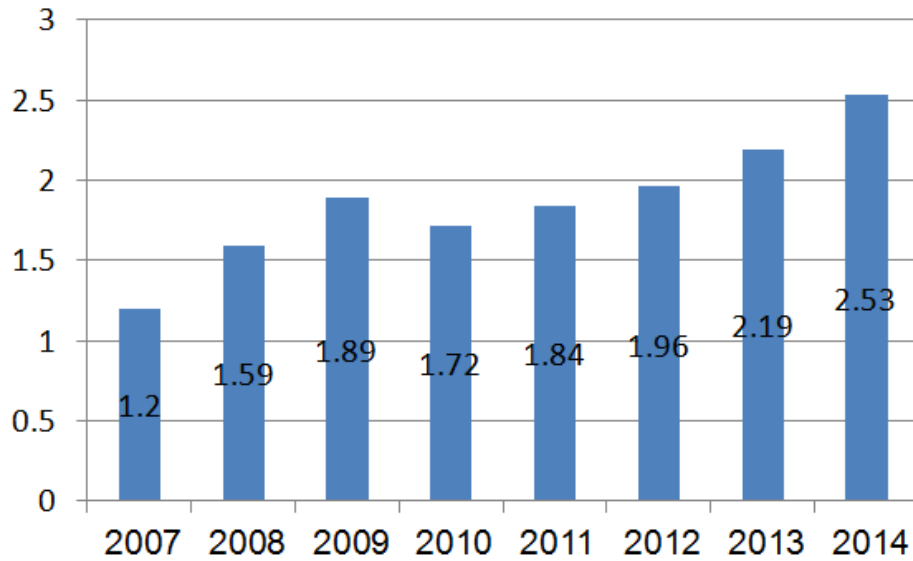
Exhibit C: Termokir's revenues growth

Figure 3: Temokir's revenues growth (2004-2015 in shekels)

Exhibit D: Resource efficiency gains and productivity gains



Number of units produced per kWh electricity per year: Figure 4

Termokir installed a system for the suction and collection of waste (mainly dust) that was created during the production process. Between 2010 and 2014, Termokir was able to save nearly 1,300 tons of waste and reuse it in the production process instead of using virgin materials. These actions saved both transportation and land filling costs as well as materials acquisition costs.

Recycling into raw materials (ton / year)

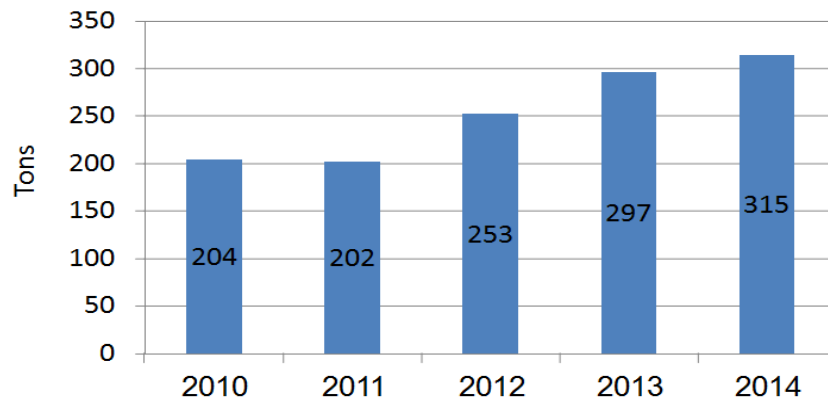


Figure 5: Amount of waste recycled and used as raw materials (tons / year)

Production quantities growth (bags / year)

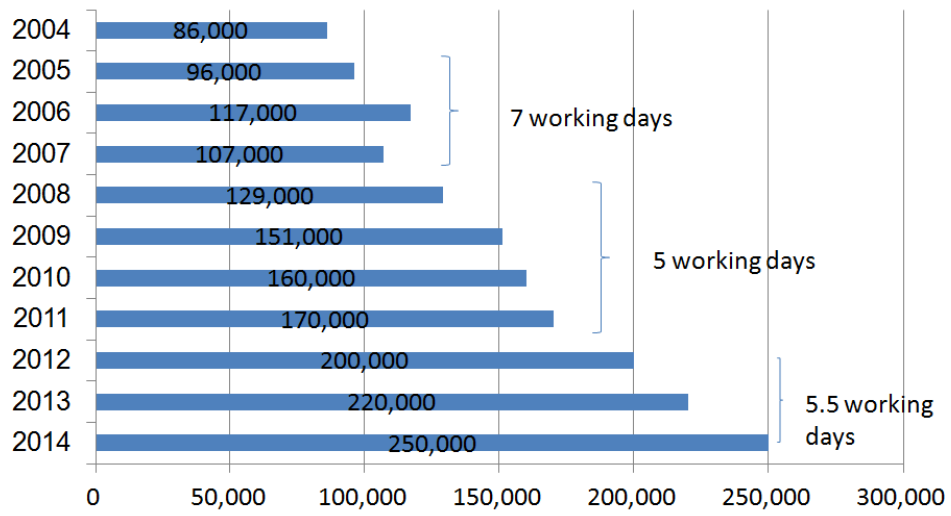


Figure 6: Production quantities growth (bags per year)

Exhibit E: The diamond standard components

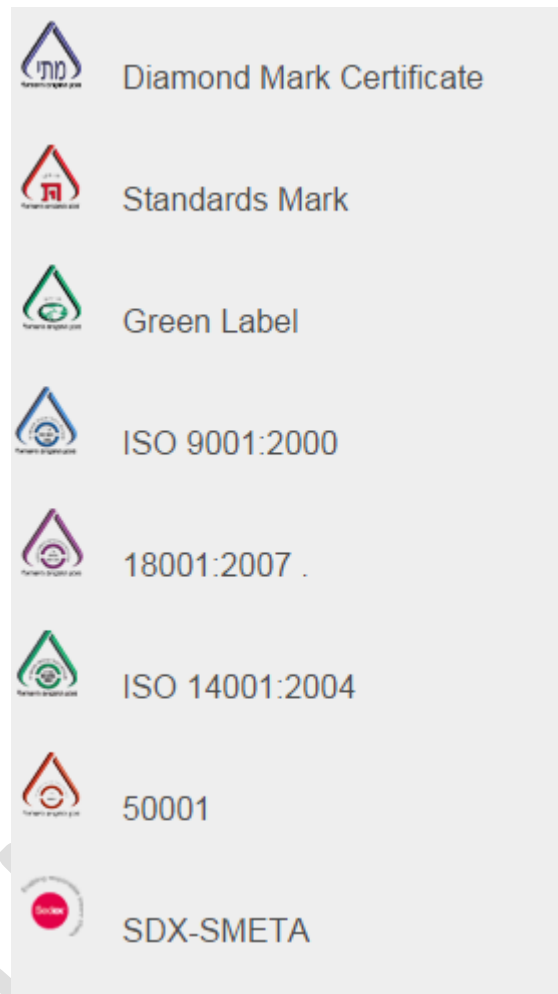


Figure 7: Diamond Mark components

<http://termokir.co.il/en/about/>,

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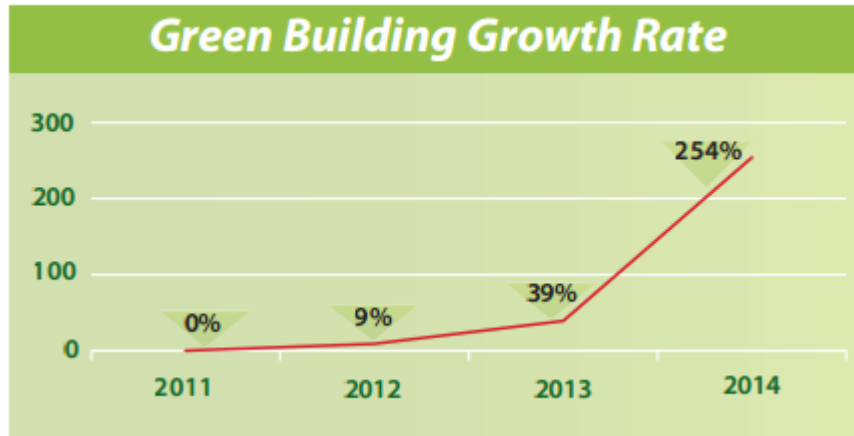
Exhibit F: Green building growth in Israel

Figure 8: Green building growth rate in Israel 2011-14 (Source: MoEP)

ENDNOTES

- ⁱ U.S. Geological Survey, USGS Mineral Resource Program, 2016
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- ^{vii} Israel Central Bureau of Statistics data, provided by Termokir
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- ^x Geocartography Knowledge Group in Israel Green Building Survey, figures from survey detailed in the Environmental Bulletin # 42, Ministry of Environmental Protection, retrieved February 2016, available here:
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