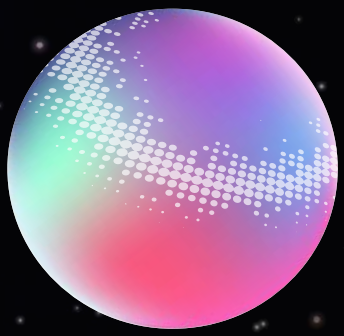

Climate 180°

Business.
Tech.
Environment.

Strategic Insights

Climate 180 Conference | New York, New Jersey | May, 2022

Summary

Developing the new climate economy necessitates utilizing existing and new technological solutions and is seen as one of the key measures required to meet the global objectives for tackling the climate crisis.[1] The May 2022, Climate180 conference brought together the foundational elements and key stakeholders needed to advance cleantech solutions for our climate and examined current market barriers and opportunities. This paper summarizes the key insights from the conference to promote the industry and share knowledge with those who actively seek to participate in perhaps the greatest challenge humanity currently faces.

1) A McKinsey report on reducing carbon emissions in the EU by 2050 estimates that 60% of emissions can be reduced using existing technologies, another 25% -30% by technologies in the maturation stages, and 10% -15% by extraction Technologies in the R&D stages.

Primary Challenges

1. **The government has a key and critical role in advancing the industry, but it lacks the tools and approach required to effectively promote solutions.** Most government entities perceive their role as regulators and purchasers of tech solutions. The traditional ability of the public sector to mark required solutions and promote them directly is lacking in this space but is required more than ever.
2. **The institutional funds and Venture Capital in the industry still look for short- to medium-term returns that do not match the life trajectory of most energy and climate initiatives.** The uncertainty in the capital market in recent months is making the craft of financing groundbreaking initiatives even more complex.
3. **The world of technological entrepreneurship has progressed rapidly in recent decades in the fields of software and data, but these areas are tangent to climate issues and cannot lead to a change in existing trends.** The challenges of the ClimateTech worlds stem from technological and industrial complexities as well as a unique and significant gap between companies and potential customers that makes it difficult to identify the required markets and products.

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Required Responses and Solutions

1. **The role of government of funding and leadership is more critical than ever.** There are current governmental processes that we have identified where the state and local authority are leading dramatic initiatives that if proven to be successful can lead to replication on a large scale and to meaningful transformation. Today these initiatives are still an exception to the rule. Adoption of new incentives, regulations and funding opportunities will drive both a horizontal and vertical shift in achieving quicker results.
2. **Entrepreneurs are required to develop unconventional financing channels,** and more than ever need to acquire the understanding of fundraising complexity in general and particularly in the realm of cleantech, power and energy. The energy players and investors in the industry are often the customer and not (only) the financier of development in their core areas.
3. **The US market remains a major market in promoting climate initiatives** precisely because of its diversity, and the ability of the different states within it to adopt different regulations, and diverse solutions. Along with these conditions, the need to work on a massive scale - greatly challenges the ability of start-up companies to provide relevant solutions. The companies are required to produce collaborations with various factors at the local level to be successful in implementing the solutions in the market. This is not a common business culture within the start-up “rule book”. s.

Background

The ClimateTech industry has in recent years assumed a significant position in the world of technological development and financing, and especially as global, state, and local regulation works to promote a reality of more significant combination of renewable energies, energy efficiency solutions and greenhouse gas emission reduction projects. The Climate180 summit, held in May 2022, was a meeting of U.S leaders in the fields of finance, technology entrepreneurship and government and was designed to examine the best ways to promote initiatives in the industry today and formulate a perception of the current Cleantech status quoe. The premise was and continues to be that collaborative business models around Cleantech and climate are the pre-requisite for achieving success at scale.

The coming together of the entrepreneurs along with the financial and governmental ecosystem on the East Coast of the United States has helped to formulate a number of basic understandings about the state of the industry and the ability to promote significant initiatives within it.

Opportunity

The genral field of ClimateTech and of Cleantech speficially, in the United States, and especially the financial and governmental interest in the possibilities embodied in it, is in a gradual awakening that has reached maturity in recent years. In the background of this awakening are the conscious changes in government and regulatory priority, the rise of interest in the field of climate crisis among investors.[2] In various parts of the United States, recent years have experienced intense natural events associated with the crisis (unusual hurricanes, extreme fires, etc.) The climate crisis has been experienced as an existential event that is already disrupting the course of life in the United States and is expected to worsen. As a result, attempts to develop responses to the current challenge and ways to reduce the crisis in the future are on the rise among various factors.

The described emergence leads in turn to a more significant investment of resources in ventures and the development of relevant technologies,[3] and to a response from various government bodies to the challenges at hand and a reduction in the severity of the crisis in the future. The pursuit of SDG targets set by the UN, the global convergence in the areas of carbon tracking and reduction, and the slow maturation of the U.S. energy market (especially in the utilities industry) place an overly clear definition of the industry's challenges.

These in turn lead to the beginning of an ability to discuss the economic value of ventures in the field. This value stems from a regulation that restricts activity that has a destructive effect

2) According to the FreeingEnergy website in the world, there are about 100 venture capital funds that focus on the field of clean technologies (Cleantech), and about 6,000 investors of various types in the field.

3) According to PwC, every year the investment in the field of climate technologies increased by 210% and in 2021 almost 90 were invested in this field. The number of start-up companies in the field stands at about 3,000 companies.

on the climate and the environment and with it the necessity to develop effective alternatives as well as various incentives for development and investment in the industry.

Strategic Challenges

Along with the described maturation and increasing interest in the industry, the Cleantech industry is facing dramatic core challenges that without dealing with them, the industry will find it difficult to advance its ambitious vision for the future. We identify among most companies in the industry a slow growth process relative to other start-ups. The slow growth stems from a number of components, which will be reflected in the strategic challenges that currently characterize the field:

1 Market / Buyers Challenge

Start-up companies reach product maturity, embodied in the idea of product / market fit by various processes, which one of the main processes is customer discovery. This approach assumes that there is a user or customer who is interested in the service, even if he does not yet know it, and in the marketing, sales, and customer success process we bring the customer into contact with the product in a way that helps us learn about the relevant audiences and product maturity.

All of these components are absent or in deep question when it comes to the cleantech industry. In most of the relevant fields, there is an existing solution that, in economic terms, provides a satisfactory answer to the customers' need: energy, garbage treatment, alternative food and protein, and so on. Companies operating in the industry are often required to provide an alternative solution in a reality that already has existing technology, or to create a need whose presence among the relevant players - from the individual level, through financing factors, to the business and government customer is not felt most of the time.

In addition, the immediate customers of energy solutions tend to be very conservative in adopting new technologies and the system itself (for example - the Grid, power transmission networks) were not built for rapid integration of external solutions (there is no API for electricity today ...). All these components create a deep difficulty in promoting start-ups in the industry using the familiar model from areas where the business proposition is clearer and simpler.

2 The Financing Challenge

The financing solutions that address the needs of startups in other business areas also pose a fundamental challenge to the growth of startups in the cleantech industry and to the establishment of the climate economy. In short - the existing factors today find it difficult to capitalize the risk in the field due to too much uncertainty, and in a way that directs the industry to short-term solutions whose value will usually be limited in its impact. We identify the following factors at different levels relevant to the topic:

- **Venture capital funds -** Although in recent years we have seen more significant capital raising for ClimateTech-focused funds, the basic form of fund activity tends to be irrelevant to most ventures in the field. The risk management of the funds usually leads them to raise the funds for relatively

short periods of time (about 7 years) which are suitable for activities in an area where the technological challenge is more controlled (e.g software) and most of the risk tends to be a business risk and not technological. Therefore, they also place the company's ability to put an understandable business model at the heart of their investment strategy. The fact that companies in the field often deal with hardware and industrial challenges, which require complex integrations with existing infrastructures, and the formation of a market before a business model can be established limits the relevance of the VC model as a driver for industry advancement.

- **Established corporations that provide services in the fields of energy and the environment** - Large companies (CVC's) in the energy field have in recent years invested significant amounts in promoting innovation of various kinds. These companies have been able to offer large sums for significant time frames but have great difficulty in contracting with small companies and assisting them to grow. The solid way of thinking of these entities also makes it difficult to invest in high-risk solutions.
- **Financial entities and holding companies with investments in the field** - Large financial entities with a leaning towards the energy and infrastructure fields are a significant player in promoting solutions across the field (for example: LS-Power). These are smart entities, which are aware of the major trends in the various fields, and of the changing regulation, and are working to preserve relevance over time. Here, too, these are entities that will find it difficult to make a small investment in the company in its beginning but will be able to provide the infrastructure for significant growth in the future.
- **Banks and large financing entities** - These entities enter when there is a model that can be scaled up in large amounts while ensuring the economic viability of the investment. Like most players the risk position does not allow for the growth of solutions from scratch and therefore this factor also does not serve as an optimal response to the challenges of the field.
- **Government funding (more on the role of governments)** - Most government funding for advancing technologies (in Israel and around the world) aims to advance technologies with business applications, while taking an agnostic position on the solution that these technologies promote (example: Chief Scientist Investment or BIRD Fund). The conventional financing structure of matching, in fact, always leaves the lead among private market players. This position is appropriate when it comes to purely business ventures, but since it is not solution-focused, and because it depends on market matching it has difficulty dealing with market failures.
- **Financing of various types of private funds** - Of all the factors described in private funds, family funds have been mentioned time and time again as a factor that can provide a solution to the needs of the emerging ClimateTech market. This is due to the ability to invest significant but not very large amounts and move quickly even in a reality of uncertainty. On the other hand, these funds also tend to be solid in investments and often require significant personal contact with the entrepreneur.

On top of the structural and perceptual difficulties described the trends in the capital market in recent months - economic slowdown, inflation, depreciation of technology companies - indicate that

the fund-raising challenge will be even more difficult for companies in the field. Some estimations discuss the need to focus on areas whose profitability is clear, with more significant dilution of entrepreneurs, longer recruitment rounds, and lower amounts.

3 The Technological Challenge

The rapid technological breakthroughs of recent decades - networks, artificial intelligence, machine learning and the digital applications of all these - make it possible to monitor, streamline and even reduce greenhouse gas emissions, but they do not currently have a comprehensive solution to the core problem of accelerated greenhouse gas emissions. On the drawing tables, there is currently, as far as we know, not a single technological solution that can produce a significant change in trend. The responses discussed today require the integration of many systems - energy generators from renewable sources, solutions for integrating energy in the grid, storage solutions alongside the continuation of traditional energy activities for many years. The fields of mobility and transportation are at the heart of the challenge, and the financial investment in them has also increased significantly over the years.[4] The worlds of software and computing make it possible to develop monitoring and management tools designed to help optimize the complex system described. All these together can provide an aggregate solution that will have a significant impact over time.

The technological challenge of integrating new capabilities is fundamentally different from the challenge of inventing a new solution and implementing it. The industrial and manufacturing aspects make the moves in the field more expensive, more complex and they take longer to implement. Due to a variety of other reasons the Israeli market has an advantage in developing software and data solutions but has a great challenge in developing and implementing a productive-industrial core. This reality causes a focus on the low fruits and a vicious circle that does not allow for a base of the industry as a groundbreaking field.

In addition, the assimilation of new technologies in existing infrastructures often requires a response to very outdated hardware and infrastructure, which must be provided with support alongside the support and construction of modern infrastructures.

4) Of the $ 90 billion invested in 2021 in the field, about $ 60 billion was invested in mobility and transportation

4 The Government and Regulatory Challenge

The public sector has the potential to serve as the generator and the main motivator of the industry. The government has the duty and legitimacy to take care of the long-term public interest even while taking economic and other risks in the present. In recent decades, however, the governments of the world have moved from a position of leadership in technological fields to a position that assists the private market players that are in the lead. This position is well suited to the spirit of the digital era, but it does not fit the challenges of the climate industry.

We identify among the various governing bodies three key roles in advancing the field:

- **The government as a provider and owner of services** - the government is a direct or indirect owner of a variety of services that are relevant in the climate fields. The government regulates the production and distribution of electricity, the various issues of water, waste and sewage as well as the issues of civil resilience that require new responses in light of the changing climate challenges.

  We now see in the United States an awakening among the government at the state level and the municipal level for more relevant solutions at the climate level. There is great variability between countries that experience the climate crisis more acutely, as well as countries where public opinion is more inclined to environmental issues, and countries where there is no such awakening.

  Along with the resurgence, the way governments operate now makes them (mostly) a very poor buyer of services from start-ups. The timeframes for completing a transaction, complexity of the transaction, etc., create a barrier that most start-ups will prefer not to deal with.
- **The government as a regulator influencing the market** - The government's other position in the field is one that shapes the market with the help of regulation. Regulation can be on other governing bodies (e.g. local government), on companies, taxation and more. The US regulator is now starting to operate primarily in the energy aspects in a way that motivates the entire market (energy suppliers and funding bodies) to start developing alternative solutions. The emerging regulation in the areas of hydrocarbon signature, although still in its infancy, is already very much present in the future thinking of many players, and they identify it as a challenge to be faced but also an opportunity for investment and positioning.
- **The government as an investor and developer** - The government, in Israel and elsewhere, sees technological development as an engine for promoting growth and therefore invests significant sums in promoting technological development. The arms built for this purpose (for example - the Innovation Authority in Israel) flow into the investment market, usually in the structure of matching, from a technological-business logic. Governments have a significant potential position in solution-oriented development (rather than growth-oriented) but they are far from offering a significant solution in this area today.

5 The U.S Market

Many Israeli companies in the cleantech industry identify the U.S market as a key growth market for their operations. The market is showing a significant awakening in the search for relevant solutions to these issues. In nominal terms, American investment in the industry is the largest in the world.[5] The American consumer is also developing a growing awareness of climate and environmental

5) According to PwC, about 65% of all investments in the field in 2021 came from the United States.

issues and is beginning to demand responses that are compatible with its values. However, the following significant barriers must be noted in the activities of Israeli companies in the field:

- A very diverse market that requires a significant understanding of the nuances in the market
- The quantities required and the fields to be addressed require the ability to operate on a scale of a challenging size
- The mentality and needs require the ability to provide an immediate response in the United States

In addition to this, it is a market that is largely operated by operators who have a very significant familiarity with their areas of operation. The operators may be a springboard or a barrier to future activity of Israeli companies.

So, what can be done?

The situation described above. is the agreed upon foundation on which startups in the industry are required to work. It contains the risks and barriers as well as quite a few opportunities. There are aspects that should be promoted in a perceptual change, but for now, this document is focused on helping startups succeed in existing market conditions, with the understanding that their long-term success will pave the way for establishing a vital and influential business-technological ecosystem. Considering what has been said in motivating start-up (Israeli) companies in the industry, we understand that it is worth emphasizing the following components:

Funding

The change in the capital market, along with the described trends that are not in line with the nature of the challenge in the areas of ClimateTech, require the formulation of a financing strategy (and not just the finding of satisfactory financing channels). The financing strategy is required to map the various financing options on the table, formulate a desirable plan that will support the various stages of the company's growth, assist in market penetration, and reach additional financing factors, and allow the company to grow at a rate commensurate with the company's growth.

In doing so, it is appropriate to address the following components in formulating the financing strategy:

- **The most significant financing challenge in the field of energy lies in raising seed money and the first round.** The problematic position of venture capital funds in the field can make it very difficult to raise the amount required to reach a position that allows for activity with other players in the field. To address this challenge, it is advisable to work with players who have a longer range of action, or high dedication to the field (e.g. private investors (soul players in the field) and family funds).
- **There is a very big difference between hardware-driven and industrial-development ventures and software- and information-driven ventures.** The strategy should match the nature of the response and speed of reaching the MVP and the ability to generate a scale.

- Smart money in the field comes from the consciousness of infrastructure, and is focused on long-term moves, i.e. the ability to realize a lot of money for very long periods of time. To make use of this type of investment it is necessary to show real potential for an effective solution in the field.
- The financial and operational aspects tend to be the same in these cases. That is, the financing company comes in to provide more successful solutions, in other arms of its operations.
- It is usually advisable not to go for the big players too soon to allow them to invest from a position of growth over time. However, we see that recently very large players have also started to approach small investments to be a part of the game. Even the small investments for them are often beyond regular seed raising.
- It is necessary to understand the business of the investor, because the large investors in the field are not only engaged in investing for the purpose of return, but to be relevant in the field of changing energy. Companies are required to know how to help them develop new solutions and not just how to integrate the developed solution.
- Investors and large banks (for example - JP Morgan) enter the field only when there is a very significant scale of activity. Therefore, reaching them will usually be at later stages.

6) The cumulative investment of venture capital funds in companies has quadrupled and reached an average investment of almost $ 100 million (PwC)

Government

The government is a key player in the field that can promote vision and serve as a leading client and regulator whose role is critical to the success of the industry and its companies. Given the complexity of working with government agencies (and especially with foreign governments) it is worthwhile - in the relevant places - to act based on the following principles:

- **Identification and development of opportunities** - the government, and especially the U.S government is not a unified factor. There is great value in scanning the areas of interest of various government agencies and identifying the entrance windows.
- **The closer the administration is to the area, the greater are its flexibility and agility** (and vice versa). The scale, however, will be smaller. Wherever there is value in local-level co-operation, such successful co-operation may serve as a lever to expand co-operation to the state level or to other municipal bodies.
- **The need to understand the government position is relevant to almost all companies operating in the industry even if at a varying level of interest.** To this end, it is necessary to invest efforts in understanding and sometimes influencing regulation, and in promoting government relations, and if necessary, also through a dedicated function in the company or with the assistance of outsourced parties.

Tailored Solutions for the U.S M

arket

The advantage of working in the US market stems from several key components - the relative maturity of the market, its relative openness (as a result of the size and significant presence of the free market) and its world leadership that allows it to establish activity and then copy it to other markets. In doing so, the following aspects should be considered:

- **The United States is not a single market**, so it is very important to formulate the right penetration strategy, which is based on both the different needs and the different options for action.
- **Significant presence of a variety of players and service providers** - The size of the market produces activity of many service providers at the same time. These have a very good knowledge of space and can serve as operators or partners in the process of implementing solutions.
- **Necessity to be close to the market** - It is very difficult to drive a presence in the climate market without presence and support in the field. Relevant responses to distance challenges must be provided.
- **Importance of creating collaborations** - the model of collaborations allows for maximization of the capabilities of the various bodies.
- **Necessity to understand the aspects of compliance** - The companies and funding bodies will check compliance with the required standards and regulations and these aspects must be considered.
- **Very significant value of economic accompaniment** - since the issue of efficiency and optimization is one of the core aspects of the transition to technologies that are climate-positive, the ability to explain the economic implications to operating partners, buyers and financiers is critical.