Getting to the core of the right cleantech strategy

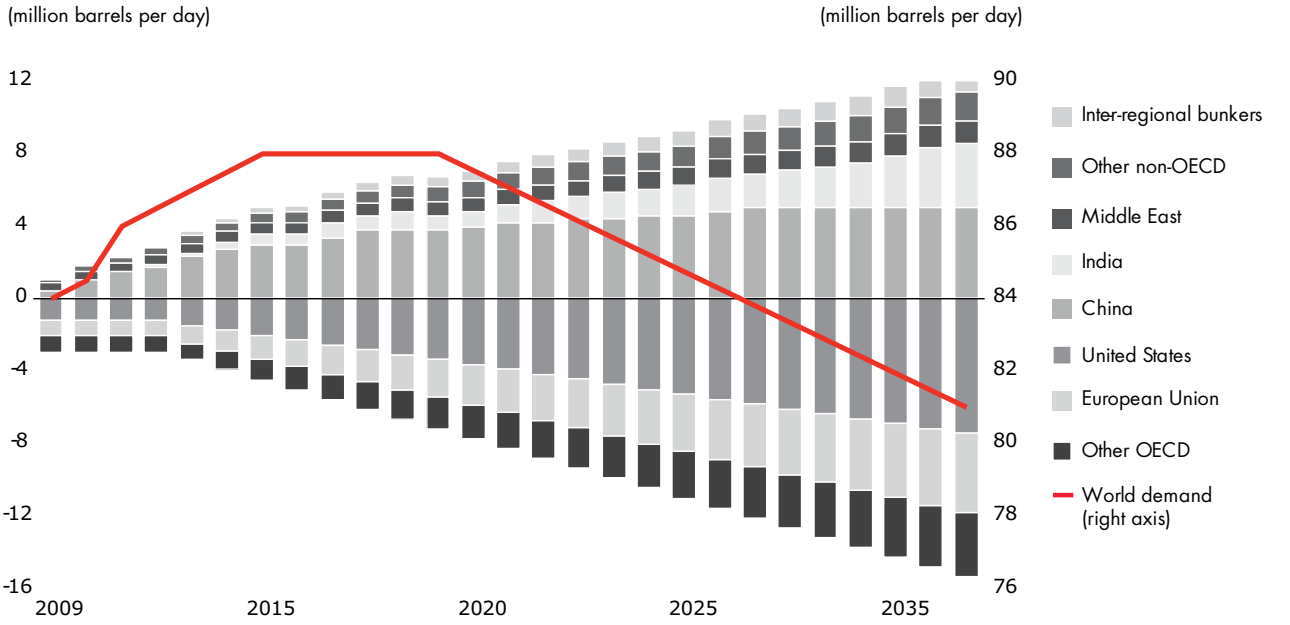
Cleantech promises to change how we operate in the world we live in. Exciting new ideas and ways of thinking abound. Technologies are starting to evolve at a breathtaking pace. And governments, investors and individuals keep pumping money into cleantech to stoke innovation and find solutions to global issues such as the increasing demand for energy. According to one estimate, oil demand may peak as early as 2020[1] (see Figure 1) due to more stringent CO_2 reduction policies, higher fossil fuel prices and declining "clean energy" investment costs. However, cleantech also suffers the shortcomings of all industries in their early stage of development. It lacks a clear pathway to success. Regulation remains inconsistent. And most cleantech investments seem fragmented and unable to deliver the consistent returns investors expect.

Despite the evolving landscape, for the current generation of cleantech pioneers this is an opportune time to press ahead. If they map the right course through the turbulence, they can not only extract the full potential of cleantech's promise, they can strengthen their existing businesses and develop new adjacencies. The experience of a handful of leading companies shows that the right cleantech strategy generates revenues, spawns new business ideas and in small and big ways, transforms the way companies operate. GE's foray into "ecomagination" generated revenues of $18 billion in 2009, with a projected increase to $20 billion by 2010.[2] Similarly, Siemens' environmental portfolio business added $38 billion in revenues in 2010.[3] Investors who committed capital early to solar and wind companies with a distinct competitive edge, like First Solar and Hansen Transmissions, reaped handsome rewards.

An evolving cleantech landscape

More companies can deliver such results if they develop a well-defined game plan for coping with cleantech's current challenges. For one, even now, little clarity exists on what truly defines cleantech—and that makes it hard to map the pathway to success. Recently, when Bain & Company conducted in-depth interviews with 15 global cleantech experts, no one could agree on a generic definition of cleantech. The fast pace of cleantech innovation means that companies continually have to contend with evolving new technologies—and often, global events and concerns result in creating the "hot" technology of the day, which in turn influences strategic thinking.

Figure 1: Potential impact of climate policies on oil demand: Peak by 2020, followed by a fall in demand till 2035



Source: IEA's World Energy Outlook 2010

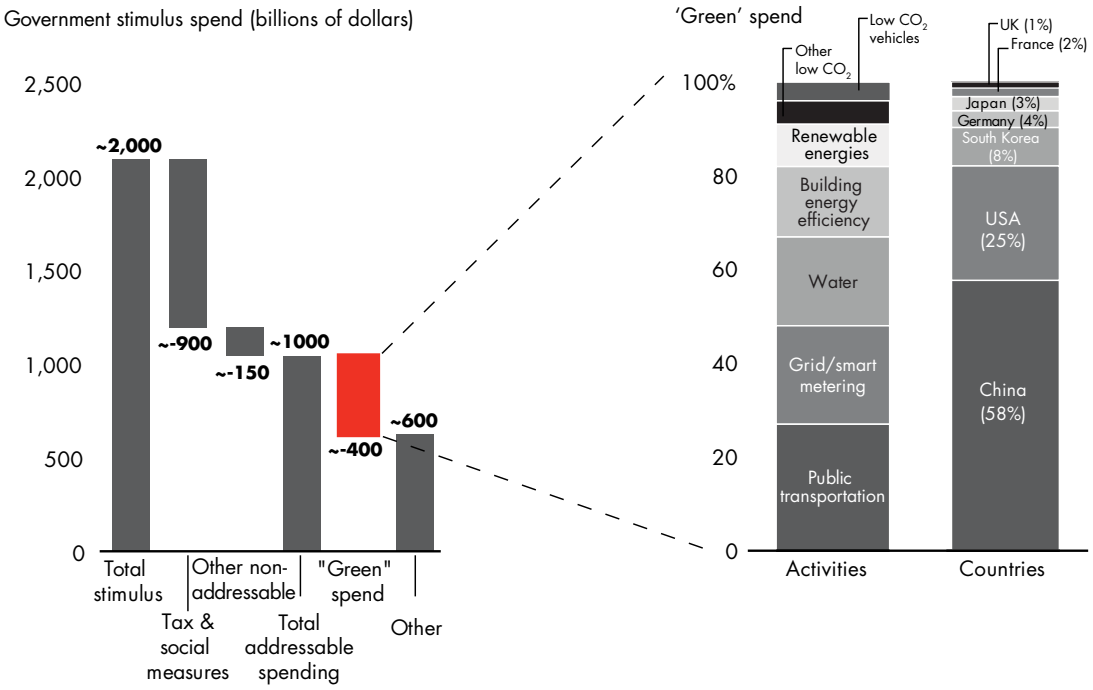
1 IEA. "World Energy Outlook 2010."
2 "Doubling Our Impact." Ecomagination 2009 annual report. General Electric. http://ge.ecomagination.com/_files/downloads/reports/ge_2009_ecomagination_report.pdf
3 "The Siemens Environmental Portfolio." Siemens. http://www.siemens.com/sustainability/en/environment/portfolio

For example, the 1980s saw the first wave of cleantech investments, when leading oil and gas companies focused investments on renewable energy generation for off-grid applications. Ten years later, a second wave emerged with companies concentrating on solar and wind energy for large-scale power generation. Later, companies exited many of these investments. In 2006, Shell sold its solar crystalline operations to SolarWorld. In the past two years, BP Solar closed its solar manufacturing plants in Spain and the US and withdrew plans to expand into wind energy in the UK.

A third, more recent, wave saw companies and investors diversify their cleantech bets by backing a range of technologies, many untested and at different stages of maturity. While a sense of urgency prompted many such investments, it became hard to sustain a broad portfolio in the absence of adequate returns. For example, many utilities invested in a number of power generation technologies early in the past decade, only to find that in practice, their capacity addition targets for clean energy ruled out all other technologies except on-shore wind. In a recent conversation, a senior technology officer at an oil field service company said, "We've pumped millions of dollars into cleantech because we think it's something we should be doing. But if you ask me what our investment criteria is or what our returns will be—I couldn't tell you."

It's an oft-repeated pattern. In 2009, governments across the world allocated $400 billion, 40 percent of the global economic stimulus spending, to "green" initiatives[4] (see Figure 2). In the same year, venture capital and private equity pumped in $6.8 billion in cleantech investments. Corporations and governments spent $15 billion on smart energy technology R&D, concentrating mostly on solar energy, which received the highest funding of around $3 billion.[5] In most cases, the return on the capital deployed remained low. Take biofuels, for example. Companies invested heavily in the development of first-generation biofuel technology. However, despite commercial viability guaranteed by government subsidies, biofuels failed to reach the anticipated scale due to the impact the increased feedstock demand had on food prices. In Mexico, tortilla prices shot up by more than 400 percent when maize was diverted from food production to ethanol production for the US.

Figure 2: Government economic stimulus: Globally, 40 percent of spending is allocated to 'green' initiatives



Note: "Green" spend includes low-carbon energy production (wind, geothermal, hydro, solar, nuclear); energy efficiency & energy management (including transport efficiency, e.g. rail); water, waste and pollution control
Source: Bain analysis based on literature searches and analyst reports

4 Bain analysis based on literature searches and analyst reports.
5 Bloomberg New Energy Finance. "Global Trends in Sustainable Energy." August 2010.

Another challenge for developing a clear cleantech game plan: the evolving nature of regulations. Globally, governments recognize the need to support cleantech. They use a variety of instruments such as subsidies, grants and trading mechanisms to this end. However, as governments fine-tune regulations or introduce new instruments, they can impact investor confidence in the long term. The introduction of feed-in tariffs and tax breaks for renewable energy in Spain and Germany accelerated the development of the wind and solar sectors. A few years later, the momentum stalled when the incentive packages were reduced.

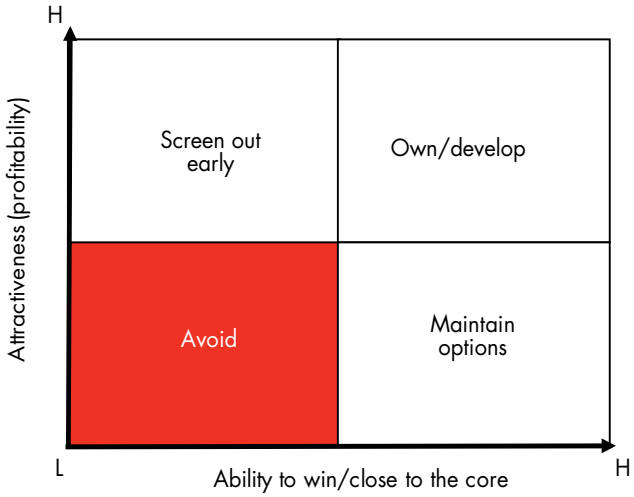
Now, as companies make their next round of bets—call it the fourth wave—they want to target their cleantech investments with greater precision. Increasingly, they want to move away from an ad hoc, scattershot approach, which lacks direction and wastes resources. Instead, they seek to identify opportunities where they have the greatest ability to win. These leading companies first see how cleantech fits into their core activities and then pick and choose options based on the most attractive rate of return.

Mapping cleantech's growth opportunities

The foundation of sustained profitable growth starts with a clear definition of a company's core business. When considering if and where to play in cleantech, companies should first consider the opportunities in which they have a competitive advantage as well as those that complement their core business activities.[6] The first step is to understand what constitutes the core, as well as identify adjacencies to the core, by creating a detailed inventory of opportunities. This process not only reveals choices for growth, but also clarifies the trade-offs required (see Figure 3).

Avoid: Far removed from a company's core business, these least-attractive opportunities represent the lowest ability to win. These initiatives offer low levels of profitability and come burdened with high investment costs. Companies should aim to exit or avoid these expansions before they take up significant investments or resources. For example, a wind turbine equipment manufacturer entering into the biomass boiler installation and maintenance market will soon discover the pitfalls of not having the right capabilities or experience within the organization.

Figure 3: Investment attractiveness matrix: Mapping cleantech priorities



Source: Bain analysis

Screen out early: These are cleantech ideas or opportunities that may already form part of a company's R&D portfolio: they appear to be good investments but do not fit into the long-term strategic objective of the business. Companies should explore the opportunities to maximize the value of these forays without utilizing more funds and resources. Options include selling technology patents, capitalizing assets or spinning off ventures. A number of oil and gas operators and service providers have done just that with carbon capture technology. They are either selling patents or setting up new ventures.

Maintain options: These are cleantech opportunities not immediately considered core, but could evolve close to the core or pose a threat to it in the future. Very often such opportunities entail a long lead time or come with high risk attached. Companies can choose to invest in these through R&D partnerships or act as an asset operator rather than owner. For example, even though the threat from advanced biofuels is many years away, leading oil and gas majors are placing early bets in this space to manage the risk to their minerals fuel business. ExxonMobil said if R&D milestones were met, it expected to invest a further $600 million in its algae biofuels R&D program, and BP committed $500 million to its Energy Biosciences Institute.

6 Governments, too, can use the same approach. They can evaluate and select which technologies offer the best returns to meet their policy objectives such as minimizing carbon emissions or improving the security of energy supply.

Own or develop: These cleantech opportunities are at the core of a company's business and in these areas, it makes the most sense to double-down resources. Technologies that fit into this segment offer the most attractive returns and the greatest chance of success for a company. These technologies have attractive risk profiles (such as stable government subsidies or proven technology) and hold the promise of maximizing returns. One example is the wind power sector in Europe. As growth continues at a rapid pace, fueled by an increasingly competitive cost structure and strong incentives such as feed-in tariffs, the industry is maturing and at an inflection point: the focus is shifting from building new capacity to improving the operational efficiency of wind farms. Experienced asset operators and ISPs (independent service providers) from other industries are now attracted to the growth in this sector as an adjacency to their core business. Their belief: as turbine guarantee periods come to an end, they can capture maintenance and service contracts from the original turbine manufacturers.

Companies and investors that follow a disciplined and objective process in evaluating how cleantech fits with their core business can better hone in on the right strategy in three key ways. One, it can counterbalance the false sense of urgency ("must play in the cleantech space") with a reality check. Two, it can help overcome the challenging aspects—lack of structure, clear pathways and consistent regulation—that characterize cleantech today. Finally, it can help identify the right portfolio of adjacencies to keep an eye on as they develop. As the cleantech industry matures, companies can consolidate further in areas of strength and exit early activities that are non-core to their business. They can create cleantech investment portfolios with dedicated budgets and resources. As the industry grows, these portfolio investments can evolve into standalone businesses. In the best scenario, some of the budding ideas can bloom and even redefine their future, by expanding their core business.

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