IN SEARCH OF SUSTAINABLE ENTERPRISE

THE CASE OF GE'S ECOMAGINATION INITIATIVE

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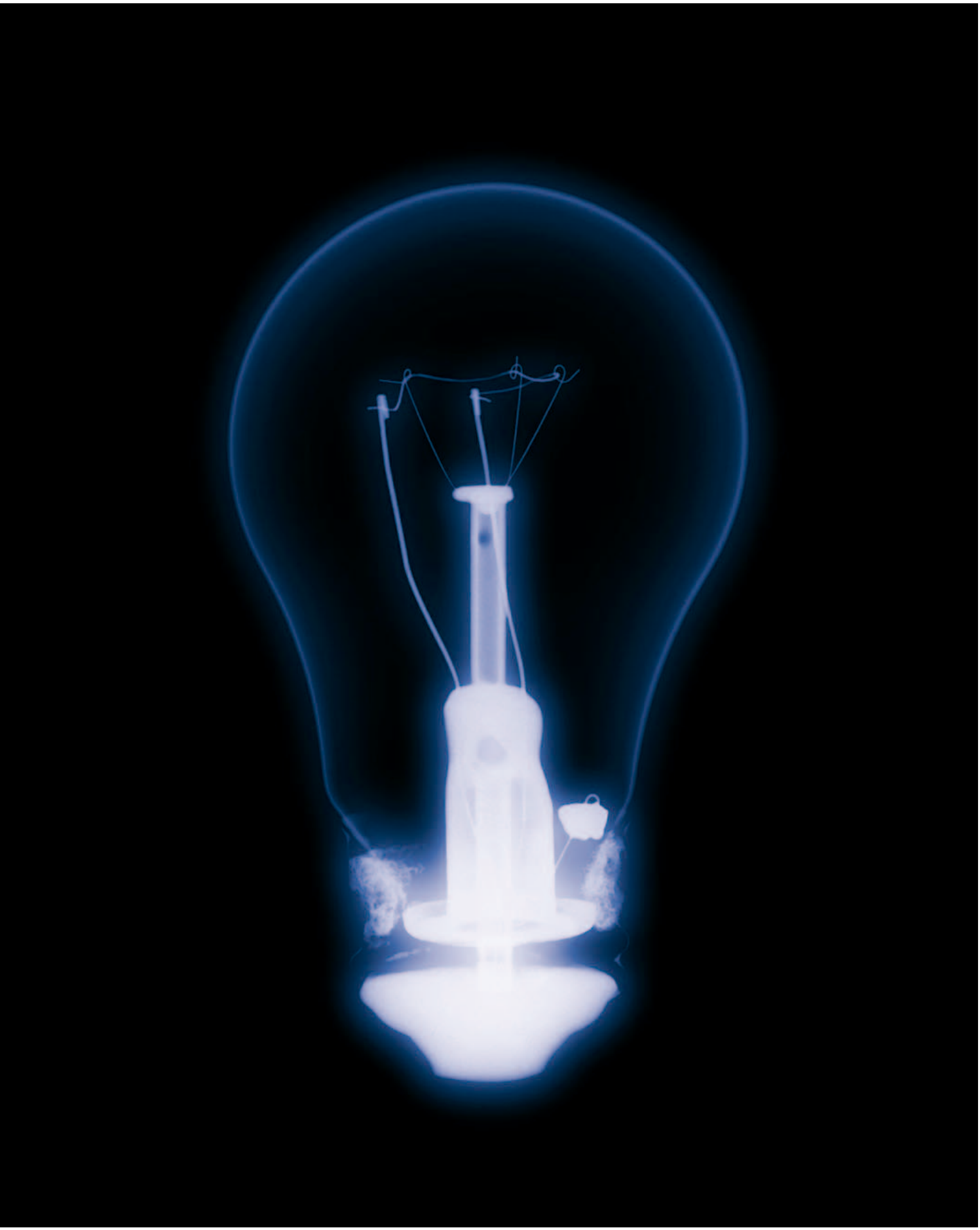
May 2005 may have marked an important turning point for General Electric, the venerable 127-year-old corporate titan. It was then that chairman and CEO Jeffrey Immelt publicly announced that the $150 billion company was betting its future on green technology. Immelt unveiled a company-wide growth plan—dubbed "Ecomagination"—aimed at solving some of the world's most pressing environmental problems through the aggressive commercialization of new technologies such as wind power, solar energy, fuel cells, high-efficiency gas turbines, hybrid locomotives, lower-emission aircraft engines, lighter and stronger materials, energy-efficient lighting, and water purification technologies.



As part of the Ecomagination initiative, GE has committed to **1**_ doubling its annual research investment in cleaner technologies, from $700 million in 2004 to $1.5 billion in 2010; **2**_ doubling its current $10 billion in annual revenues from clean tech products and services to at least $20 billion by 2010; **3**_ reducing its greenhouse gas emissions 1 percent by 2012 from a 2004 baseline (it is estimated that greenhouse gas emissions would have increased by 40 percent without such action); and **4**_ reporting publicly on its progress toward meeting these goals.

Is Ecomagination a bold move? For GE, one of the most respected and valuable corporations in the world today, it may represent a strategic shift that could accelerate the trend toward a clean-tech economy. Indeed, the impact the initiative has on managers in other firms should not be underestimated. For Jeffrey Immelt, Ecomagination represents a highly visible departure from previous CEO Jack Welch's combative stance toward environmental matters, most notably over the cleaning of the Hudson River of PCBs, a toxic chemical that GE dumped legally for decades before the practice was banned in 1977. Since taking over the reins in 2001, Immelt has not only sought to resolve the Hudson River controversy once and for all, but has also staked out a position that is seemingly at odds with U.S. national energy and environmental policies.

Ecomagination has drawn a generally positive response from the business and NGO communities. Laudatory stories have appeared in *Time, Fortune, The Wall Street Journal*, and *The Economist*, among others. Some NGOs, including the World Resources Institute, actually worked with GE to design and launch the program. At the same time, bloggers busily demean Ecomagination as GE's latest PR campaign designed to deflect attention from the company's "toxic past" and its continuing preoccupation with profit and the generation of shareholder wealth at the expense of the environment and society.

How should Ecomagination be judged? When Immelt comments, "we are launching Ecomagination not because it is trendy or moral, but because it will accelerate our growth and make us more competitive," should that be read as an earnest effort by a company to pursue a new strategic direction, or as a very sophisticated new greenwash campaign?

In this article, we contend that Ecomagination is a bold undertaking that still leaves significant opportunities unrealized. It is a credit to the company that Ecomagination is framed not in terms of social responsibility, but rather in the language of business opportunity. Yet to truly judge the efficacy of GE's strategy, it is important to understand it in the context of the broader movement toward corporate sustainability over the past fifty years.

In a nutshell, much of the past fifty years have been characterized by a corporate attitude of denial or obligation. Only over the past fifteen to twenty years have companies begun to look at social and environmental challenges as business opportunities—either by "greening" their current products and processes or by moving "beyond greening" to technologies that leapfrog us into the future and make incumbent technology obsolete through a process of "creative destruction."

GE's Ecomagination initiative is the most recent and visible of these opportunity-driven initiatives.

Looking forward, however, the greatest opportunity may lie not in reaching only the wealthy of the world with clean technology, but the four billion plus at the base of the economic pyramid which have historically been bypassed, underserved, or ignored by economic globalization. To do so will require not only technological ingenuity, but also disruptive new business models and a willingness to listen and co-create rather than imposing new technologies from the top down.

It is here where GE's Ecomagination initiative may have an enormous opportunity for expansion in the future. Indeed, Ecomagination has thus far focused on improving existing products and technologies so as to better serve existing markets and customers. To the extent that more Ecomagination technologies in the future are able to address new solutions, create new markets, and reach previously underserved customers, Ecomagination has the potential to yield results that exceed its already lofty goals, while simultaneously moving us more rapidly toward a sustainable world.

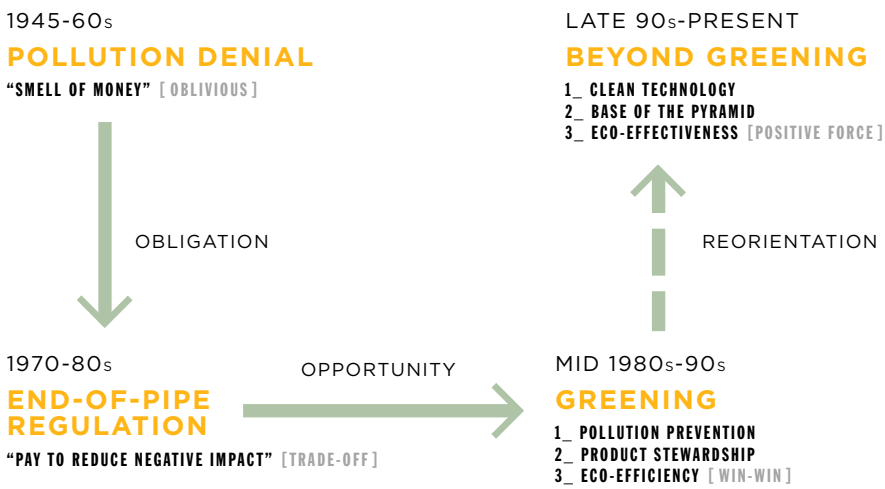
THE ROAD TO SUSTAINABLE ENTERPRISE*

Exhibit 1 summarizes the path, taken over the past fifty years, toward a more inclusive—and sustainable—form of commerce. Following decades of depression, fascism, and world war, industrial capitalism came roaring back in the 1950s, with the U.S. the clear world leader. High-volume, standardized mass production was the watchword. Waste, emissions, and pollution were considered a necessary by-product of economic progress. They represented, as the saying goes, "the smell of money."

By the late 1960s, however, pollution levels reached a break-

EXHIBIT 1

THE ROAD TO SUSTAINABLE ENTERPRISE



NOT SURPRISINGLY, THE MANAGERS AND EXECUTIVES WHO ROSE TO PROMINENCE DURING THE POSTWAR YEARS WERE PREDISPOSED TO THINK OF ENVIRONMENTAL AND SOCIAL ISSUES AS NEGATIVES FOR BUSINESS.

ing point in the U.S. Large corporations, by and large, had been unresponsive to environmental issues, and it appeared that the only way to deal with the problem was to force them to clean up the mess they were making. The Environmental Protection Agency, along with scores of other regulatory agencies, was created precisely for this purpose. A mountain of "command and control" regulation was passed during the 1970s aimed at forcing companies to mitigate their negative impacts.

A generation of business people was shaped by this framing of the situation. Not surprisingly, the managers and executives who rose to prominence during the postwar years were predisposed to think of environmental and social issues as negatives for business. A socially-minded executive or company might "give back" to the community through philanthropy or volunteering, but such concerns would certainly never be part of the company's core activities! The social responsibility of business was to maximize profits, as Milton Friedman advocated, and it seemed clear that social or environmental concerns could only serve to reduce them.

The 1980s brought a growing sense of unease with command and control regulation. Despite enormous expenditures, it was not at all clear that the end-of-the-pipe approach to pollution control and regulation was working. Greening, which first appeared in the mid-1980s, was an important breakthrough, because it eliminated, once and for all, the myth that a trade-off exists between a firm's financial and societal performance. Driven by the realization that pollution is waste and dialogue with stakeholders is superior to court battles, greening opened the door for companies to take a proactive stance toward social and environmental issues. Pollution prevention and product stewardship have succeeded in reducing waste, emissions, and pollution, while simultaneously reducing cost, risk,
and stakeholder resistance. The World Business Council for Sustainable Development, with its mantra of "eco-efficiency,"

helped to erase the false dichotomy between business and environmental performance. And companies like 3M and DuPont have saved literally billions of dollars over the past two decades through greening initiatives.

The "greening" revolution was indeed an important first step on the path to sustainable enterprise. It shattered the myth that business should treat societal issues as expensive obligations. However, greening alone fell well short of what was possible—and needed: Improvements to current product systems and production processes served only to slow the rate of environmental damage. Furthermore, most corporations continued to serve the needs of the wealthy exclusively while exploiting the developing world primarily for its abundant resources and cheap labor pool. A more inclusive—and sustainable—form of capitalism would instead seek to create corporate and competitive strategies that simultaneously deliver economic, social, and environmental benefits for the entire world. By the late 1990s, it was clear that the corporate agenda was much bigger than just greening—and that the business opportunity was much more substantial as well.

Today, corporations are being challenged to move beyond greening, first by pursuing new technologies that have the potential to be inherently clean (e.g., renewable energy, biomaterials, nanotechnology, wireless IT), and second, by reaching out to bring the benefits of capitalism to the entire human community of 6.5 billion people (rather than just the 800 million at the top of the economic pyramid). By moving beyond greening, companies hope not only to address mounting social and environmental concerns, but also to build the foundation for innovation and growth in the coming decades. In so doing they would outperform their competitors in today's businesses, but even more importantly, outrun them to tomorrow's technologies and markets. In short, sustainable enterprises would create competitively superior strategies that simultaneously move us more rapidly toward a sustainable world.

Driven by an accelerating rate of technological evolution and the growing realization that something fundamental must change if we are to accommodate a population of eight to ten billion human beings on the planet, "beyond greening" provides the motivation for companies to think in terms of reorientation rather than just adjustment. Leapfrogging to inherently clean technologies and disruptive business models aimed at serving the base of the economic pyramid enable companies to confront directly the two biggest problems facing humanity today—poverty and global-scale environmental degradation. They also provide the basis for the repositioning and growth that will be needed for companies to thrive in the future.

ASSESSING GE'S ECOMAGINATION INITIATIVE

General Electric's Ecomagination Initiative marked an important turning point, both for the company as well as the evolution of sustainable enterprise more broadly. Before Ecomagination, GE followed a course not dissimilar from scores of other large industrial corporations: Faced with serious (and potentially costly) legacy issues from its industrial past, the company stonewalled and delayed for much of the 1980s and 1990s in an effort to minimize its negative exposure. The emphasis was on legal compliance and most of its "environmental" initiatives were seen as reactive in nature. This strategy had the unfortunate side effect of accumulating significant negative equity among many in the environmental community.

The turn of the century, however, appears to have ushered in a fresh perspective. As Jeffrey Immelt succeeded Jack Welch as chairman and CEO, the corporate mindset regarding environmental issues began to shift—from defensive to proactive. By taking responsibility for the Hudson cleanup, Immelt sent an important and early signal that the company meant business. This set the stage for the Ecomagination revolution that was to follow—a move that rapidly propelled the company into the "greening" and "beyond greening" space.

While May 2005 marked the official launch of the Ecomagination initiative, it clearly built on decades of investment in technology- and product-development at the company. Indeed, GE's aggressive, risk-taking style and innovative technical culture made it perfectly suited to the melding of societal and financial goals. Immelt stated this succinctly in his May 2005 address: "Ecomagination, which is based on GE's belief that solving environmental problems is good business, constitutes a significant growth strategy for the company." The message seems clear: There need be no inherent trade-off between environmental and financial performance. With creativity and imagination, it is possible to solve some of the world's most difficult environmental problems and make money doing it.

Working with Green Order and other third-party environmental groups, GE developed a scorecard system for evaluating products and technologies. To qualify for Ecomagination, products not only must outperform environmentally, but also economically—both for GE and its customers. Under this system, "green products" that deliver a lower level of functionality at a premium price using environmental performance as an excuse would never see the light of day. Only those products and technologies that break free from the tyranny of trade-off thinking would achieve Ecomagination status.

Individual businesses propose products for Ecomagination

AS JEFFREY IMMELT SUCCEEDED JACK WELCH AS CHAIRMAN AND CEO, THE CORPORATE MINDSET REGARDING ENVIRONMENTAL ISSUES BEGAN TO SHIFT—FROM DEFENSIVE TO PROACTIVE.

TABLE 1

CATEGORIZING GE'S ECOMAGINATION PRODUCTS

GREENING

H SYSTEM GASTURBINES
INTEGRATED GASIFICATION COMBINED TECHNOLOGY
COAL MINE METHANE JENBACHER
EVOLUTION SERIES LOCOMOTIVES
HYBRID LOCOMOTIVES
GENX JET ENGINE
LM2500+ MARINE GAS TURBINE
NORYL WIRE COATING
SILWET SUPER SPREADER
COMPACT FLUORESCENT LIGHTING
ENERGY STAR REFRIGERATOR
ENERGY STAR FRONT LOADING WASHER
ENERGY STAR COOLERS/DISPENSERS
GE PROFILE HARMONY WASHER
GER PROFILE DISHWASHER
GE SMART DISPENSE DISHWASHER

BEYOND GREENING

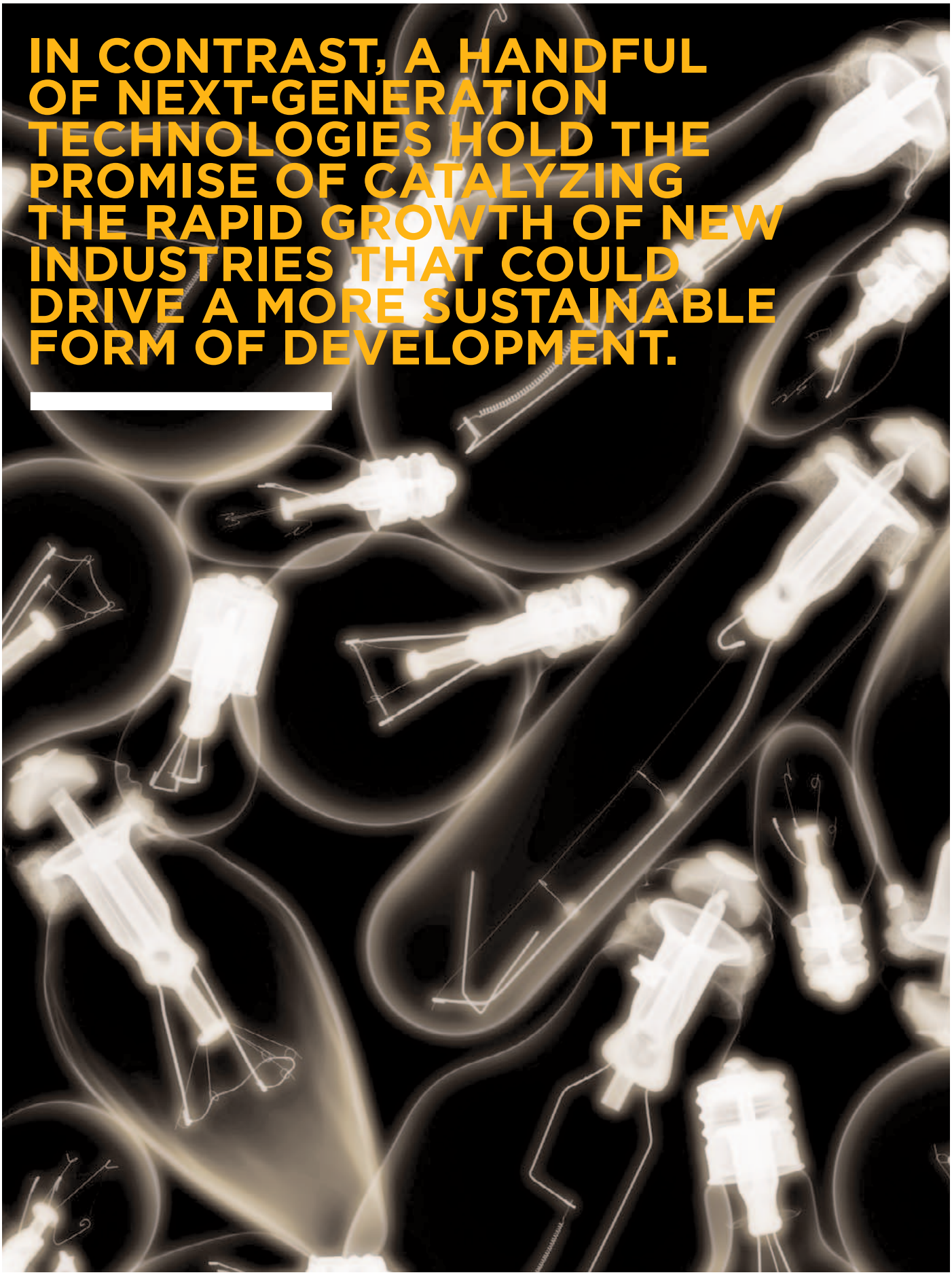
OFFSHORE WIND TURBINES
RESIDENTIAL SOLAR ELECTRIC POWER SYSTEMS
ADVANCED MEMBRANE TECHNOLOGY
DESALINATION TECHNOLOGY
LEXAN SLX RESIN

consideration. The evaluation process is audited by a third party and can take up to a month and a half to complete. Thus far, twenty-one products have met the strict evaluation standards—including five in energy, five in transportation, two in water, three in plastics and silicones, and seven in consumer and industrial products. Interestingly, potential products are not limited to those produced by the company's manufacturing businesses. The program extends to the products and services of the organization's vast financial business as well.

As is illustrated in the table above, the majority of Ecomagination products thus far are "greening" improvements to products that will continue to serve existing customers and markets. However, a few of the products are more disruptive ("beyond greening") in nature since they utilize next-generation technologies with the potential to create whole new markets and industries based on dramatic improvements in environmental performance.

The "greening" products all represent clear (and, in some cases, dramatic) improvements, both economically and environmentally, over competitive products. For example, GE's Integrated Gasification Combined Cycle (IGCC) system converts coal into a cleaner burning fuel which is then burned in a gas turbine combined cycle system. Indeed, the results are much cleaner – more than 50 percent reductions in SO^x, NO^x, mercury, and particulate emissions – and require less water to operate than traditional coal-fired power plants. However, there are still millions of pounds of sulfur dioxides, nitrogen oxides, mercury, and soot pouring into the atmosphere. Thus, if a coal-fired plant is going to be built, we may hope that it employs technology like IGCC, but in the long run, it does not address the fact that carbon-based energy needs to be replaced by non-carbon emitting technologies. IGCC is a good step – focused on reducing negative impact – toward a sustainable future. The same logic applies to super-clean locomotives and aircraft engines since both continue to require fossil fuels and emit greenhouse gases.

In contrast, a handful of next-generation technologies hold the promise of catalyzing the rapid growth of new industries that could drive a more sustainable form of development. For example, GE's super-efficient wind turbines change the economics of wind power, facilitating the rapid growth of the industry and the displacement of conventional fuels such as oil, gas, and coal. The same can be said for the development of next-generation photovoltaic cells. Water-treatment technologies such as


IN CONTRAST, A HANDFUL OF NEXT-GENERATION TECHNOLOGIES HOLD THE PROMISE OF CATALYZING THE RAPID GROWTH OF NEW INDUSTRIES THAT COULD DRIVE A MORE SUSTAINABLE FORM OF DEVELOPMENT.

advanced membranes and desalination can significantly improve access to safe drinking water, helping to address a falling supply of freshwater sources around the world. At first glance, Lexan resin appears to be a "greening" initiative enabling the reduction of paint usage in automobile manufacturing. However, this new material could also prove to be a key component in the development of lightweight, alternatively powered vehicles.

The Ecomagination initiative also includes an important, though less visible, process for fostering corporate investment in disruptive technologies such as biomimicry, nanotechnology, and other emerging clean technologies. At a time when most other corporations are cutting back central R&D funding for projects that lack clear market application with existing customers, the Ecomagination initiative goes in a different direction. Through the initiative, GE is creating options to pursue more radical technologies that may take longer to develop, but promise the potential for step function improvements with large payoffs.

Without detracting from Ecomagination's bold intent and clear, rigorous process, it is also important to point out its shortcomings. As the program matures and evolves there are two important opportunities to extend the program's impact. First, most Ecomagination products and technologies continue to focus on large-scale, centralized solutions. This should not come as a great surprise given the company's large-scale, industrial past, but it does represent a potential blind spot in the Ecomagination strategy. For example, the wind-energy business seems to be organized exclusively around "big wind"—the massive utility-scale wind turbines that lend themselves to connection to the existing grid system.

While technologies such as solar photovoltaics clearly have distributed potential, it appears that there is comparatively little attention being paid to small-scale applications that might address a host of related, yet distinct market needs. Such standalone applications could serve markets not currently connected to a centralized system. Those markets may not look familiar, may consist of potential customers whose problems require different solutions, and probably depend on the development of fundamentally different business models for commercialization.

Second, virtually all of GE's Ecomagination products serve the needs of current, wealthy customers at the top of the economic pyramid. Comparatively little attention has been given to the world's four to five billion poor at the base of the economic pyramid who lack reliable, affordable solutions related to energy, transportation, water, materials, and financial services. Where new technologies might apply to solving the problems of the world's poor (e.g., desalination technology, SILWET super spreader, advanced membrane technology), they are typically large-scale, capital-intensive applications premised on existing business models. To the extent that future Ecomagination products and technologies are developed from the ground up and unmet market needs form the foundation of their design, the program could multiply its impact by increasing economic capacity building at the base of the pyramid in addition to GE's own top and bottom lines.

LOOKING FORWARD

GE's Ecomagination initiative is a bellweather in the quest for sustainable enterprise. It signals a disciplined and transparent new approach to dealing with social and environmental issues through commercially motivated growth strategies. However, it is our hope that GE's vision of "innovating relentlessly" will not be limited to a continuous stream of advancements to existing products; indeed, Ecomagination can also serve as a catalyst for development of the next generation "clean" technologies that will fuel a truly sustainable form of growth and development. In addition, we believe that Ecomagination can expand its bandwidth to include all 6.5 billion people in the world (including the potential for four to five billion new customers in the BOP) and focus much more on the small-scale, distributed, and "disruptive" technologies and business models of tomorrow. ■

* PARTS OF THIS SECTION ARE EXCERPTED FROM *CAPITALISM AT THE CROSSROADS: THE UNLIMITED BUSINESS OPPORTUNITIES FOR SOLVING THE WORLD'S MOST DIFFICULT PROBLEMS* BY STUART L. HART (WHARTON SCHOOL PUBLISHING, 2005).

THE PROGRAM COULD MULTIPLY ITS IMPACT BY INCREASING ECONOMIC CAPACITY BUILDING AT THE BASE OF THE PYRAMID.