



A lean, clean electric machine

Jeffrey Immelt is betting the future of his company on environmental technologies

NEXT month General Electric's corporate bosses will drop a bombshell on the hard-charging managers of its global businesses. In future they will be judged not only by all the usual measures, such as return on capital, that investors typically care about: they will also be held accountable for helping to save the planet.

Every GE business unit will have to cut its emissions of carbon dioxide (CO₂), the main greenhouse gas (GHG) behind global warming, by a different target. Energy-intensive divisions such as plastics and locomotive manufacturing will need to make big cuts in emissions, while the paper-pushers at the group's financial-services divisions will be told to aim at smaller, but still ambitious, cuts.

GE's new goal is to cut its overall GHG emissions by 2012 to 1% below their level in 2004. That might not sound ambitious, but if no climate policies are enacted, the company's projected revenue growth would increase its GHG emissions by 40% above 2004 levels. The firm also vows to cut the intensity of its GHG emissions (that is, the amount of GHG emitted in terms of its economic activity) by 30% by 2008. By comparison, the UN's Kyoto Protocol calls for Europe to reduce its GHG emissions by 2012 to 8% below the 1990 level and George Bush's voluntary climate scheme calls for an 18% cut in America's GHG intensity from the level in 2002 by 2012.

This is a dramatic U-turn by any measure, but will be especially startling to environmentalists,

who have long pilloried GE for boosting coal and nuclear power and for dumping chemicals in New York's Hudson River. It will also come as a surprise to many of GE's industrial customers, who have long thought it a staunch ally against environmental campaigners. Many in both camps may be tempted to dismiss GE's latest rhetoric as "green-wash", little more than a public-relations ploy to confuse the public about the true nature of its businesses.

But that would be a mistake. GE's new-found embrace of greenery appears both genuine and substantive. Jeffrey Immelt, GE's boss, is leading the effort himself, campaigning for it both inside and outside the company, as well as backing it with large amounts of new investment. In fact, it is not an exaggeration to say that Mr Immelt is embarking on the most ambitious and risky strategy for GE since the 1980s, when the combative Jack Welch, then its boss, reshaped the company by slashing costs and selling business units.

Mr Immelt is so convinced that clean technologies will be the future of GE that, invoking the colour of American money, he has made his new

mantra: “green is green”. If he is right, then not only will GE benefit, but businesses everywhere will have to follow in its tracks in one form or another. If he is wrong, Mr Immelt will have led one of the world’s biggest and most powerful companies down a dead-end, and the cost to its reputation, if not its financial performance, is likely to be huge.

Until Mr Immelt’s change of direction, green technologies have not played much of a part in GE’s growth. For decades the company’s energy business has been focused on fossil-fuel power plants or nuclear energy. Nuclear power may now be garnering support from some environmentalists, but GE’s past interest in the atom had little to do with the environment. In the 1960s defence contracting helped fuel the company’s growth. In the 1990s financial services took on that role.

Look at GE today and greenery has moved front and centre. Mr Immelt has embraced a sweeping new strategy—dubbed “Ecomagination”—that he hopes will persuade Wall Street that clean energy can be a lucrative business. The firm has rolled out a flashy advertising campaign to promote its new “clean coal” technologies. GE is targeting politicians too. Mr Immelt himself launched the new campaign in Washington, DC, Brussels and Tokyo, repeating his “green is green” slogan.

The new campaign makes some extravagant promises. The company vows to double its revenues from 17 clean-technology businesses, ranging from renewable energy and hydrogen fuel cells, to water filtration and purification systems, to cleaner aircraft and locomotive engines. This would take such products from \$10 billion in sales in 2004 to \$20 billion by 2010, with more ambitious targets thereafter. To get there, Mr Immelt has promised to double research spending on clean products, from \$700m per year to \$1.5 billion, by 2010. (GE’s total research expenditure was \$3.1 billion in 2004 and its revenues were \$152.4 billion.)

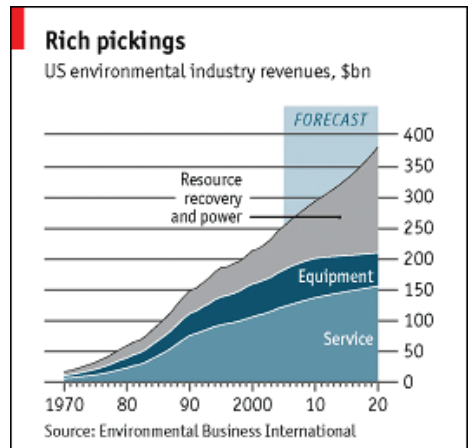
Most striking, however, is GE’s new position on climate change, an issue that divides corporate America. Some large industrial groups have long argued that the climate problem is real. Three dozen such big firms—including DuPont, United Technologies and Whirlpool—have been united by the Pew Centre on Global Climate, a non-partisan charity, to lobby for action by America’s federal government to curb CO2 emissions. Many others, notably Exxon-Mobil, but also much of America’s coal-burning utility sector, have remained deeply opposed to any such efforts—as has President Bush. Awkwardly, many of those utility firms are GE’s customers.

It is therefore remarkable that Mr Immelt and other senior GE officials now publicly proclaim that global warming is real, and also call for American government regulations to deal with it.

GE is sticking its neck out and, among the most influential big American businesses, it has taken something of a lead.

Two big questions will determine whether GE’s green initiative pays off. First, is Mr Immelt right to believe that greenery can be handsomely profitable, as well as socially responsible? Second, can he really transform GE’s recent approach to innovation, which has concentrated mostly on incremental improvements of well understood technologies, to one pursuing riskier and less-proven technologies such as fuel cells, solar energy, hydrogen storage and nanotechnology?

Given GE’s history, many environmental campaigners have been understandably sceptical about Mr Immelt’s Ecomagination initiative. After all, Jack Welch turned GE into a target of green ire with



his arrogant defence of the company’s refusal to excavate noxious chemicals it had dumped into the Hudson River (which was legal at the time). Mr Immelt has wisely accepted defeat on the matter in order to move on, and GE is now removing the offending chemicals from the Hudson’s riverbed.

GE otherwise has a good record on purely local environmental standards and this may yet prove an unexpected bonus as it tries to reshape itself to exploit opportunities created by national and global efforts to control GHG. Daniel Esty, who heads Yale University’s Centre for Environmental Law and Policy, applauds GE for its high standards, detailed use of data and holding its managers accountable for local green goals. The public may not be aware of this, but other companies seem to be. In Mr Esty’s polls of bosses at big firms, GE comes out top for the most “underrated” environmental performance.

There is good reason to think Mr Immelt is sincere about his green strategy. GE does not need to make a bally-hoo about greenery to defend its existing businesses. As an industrial firm that deals primarily with other industrial companies and governments (and rarely direct with consumers), GE is in a better position than many to ignore criticism from environmental groups or the threat of green

boycotts. Furthermore, the company is involved in such a range of energy technologies (including dirty coal plants, nuclear generators, natural-gas turbines and wind) that it does not need carbon regulations in the way, say, a narrowly focused fuel-cell or solar-cell maker might. Despite all this, Mr Immelt is pushing for action by America’s government on carbon emissions. And he wants to turn GE a deep shade of green.

To understand why, turn to the first question hanging over Mr Immelt’s plan: is he right that green is green? Although scepticism towards such claims is generally warranted, Deane Dray of Goldman Sachs, an investment bank, endorses Mr Immelt’s judgment: “Every one of the Ecomagination initiatives looks commercially viable, even without the green angle.”

One reason to think GE’s chief may be right is the potential for dramatic growth for infrastructure technologies in developing markets. David Calhoun, a GE vice-chairman, identifies China and India as the key to rapid growth in demand. In both countries water and sewerage systems need to be vastly expanded, and governments in both countries are also coming under intense public pressure to curb what are often appalling levels of local pollution from factories and power plants. They say they want both to maintain rapid economic growth and to do it more cleanly than in the past. Mr Dray expects 60% of GE’s overall revenue growth to come from such markets over the next decade. Sales of greener technologies, if they can be priced correctly, should be a big part of that.

GE’s hopes are not limited to poor countries. Even in America, overall sales related to environmental technology have been growing rapidly and, if anything, look as if they will accelerate (see chart). Not content to rely on this trend, the company will also seek to build new markets, says Beth Comstock, GE’s head of marketing. “Environmental technologies must have a business model around them to succeed,” she declares.

Ms Comstock points to the ways GE markets its greenery. One is a sales “score-card” that explains to customers in dollars and cents exactly how the lower emissions and higher fuel efficiency of a new GE product (for example, its cleaner locomotive engines) convert into money saved on fuel. Another pushes service contracts for maintaining water-filtration systems or maintaining windmills. These can be five or more times as lucrative for GE as the initial sale of capital equipment. Ms Comstock also points to entirely new lines of business: the company wants to become an “energy services” consultancy and to enter the green construction field.

Listen to the customer

Ultimately, green will turn green only if GE’s customers actually want greener products. Before

launching the new strategy, the firm spent 18 months discussing it with customers. GE invited bosses from various industries to two-day “dreaming sessions” where they were asked to imagine life in 2015—and the products they would need from GE. The company says it took away a clear message: rising fuel costs, ever tighter environmental regulations and growing consumer expectations will translate into demand for cleaner technologies, especially in the energy industry.

Pointing to those customer sessions, Mr Calhoun says, “This is not just GE jamming environment down their throats. We decided that if this is what our customers want, let’s stop putting our heads in the sand, dodging environmental interests, and go from defence to offence.”

Another reason to think that Mr Immelt is not wasting shareholders’ money is one that he perhaps might not advertise openly. He is asking for government intervention on carbon emissions not just to help the planet, but also because he believes it will create opportunities that his company may be better placed to exploit than rivals stuck with older, dirtier technologies. Indeed, GE’s effort, argues Myron Ebell of the Competitive Enterprise Institute, an industry-friendly think-tank in Washington, DC, is a form of rent-seeking that should raise eyebrows.

Even so, it is a noble endeavour, argues Jim Rogers, head of Cinergy, a coal-fired American utility and GE customer. The most interesting of GE’s dreaming sessions were those with electric utilities—which are at the heart of the global-warming controversy. Mr Rogers was at one such event. As he puts it, “in private, 80-85% of my peers think carbon regulation is coming within ten years, but most sure don’t want it now.” After trotting in renowned experts to talk about energy poverty and climate change, Mr Immelt himself made the case for low-carbon technologies, including clean coal. “Jeff was clearly pushing for his economic advantage, but he was masterful,” says Mr Rogers. He thinks that GE’s “visionary leadership, just a little ahead of my industry” may soon help push the American energy business “from denial to pragmatic acceptance” of mandatory caps on carbon emissions.

If so, it would spell still more sales for GE. American Electric Power (AEP), the utility that burns more coal than any other in the western hemisphere, bitterly opposes mandatory action on carbon. However, after Mr Immelt began arguing for Ecomagination, the firm agreed to a joint-venture to test new clean-coal technology that GE is pioneering. One AEP official explains the apparent contradiction: it now expects carbon regulations to come “sometime over the next 30 years”. It wants to encourage low-carbon technologies that will give coal a new lease on life. If carbon caps are enacted

by America earlier than that, GE’s already fast-growing wind-turbine business, as well as its long-established nuclear-reactor business, would also benefit enormously.

Not enough green?

If Ecomagination is not greenwash—and might even make GE some money—that still leaves the final, and hardest, question: can the company pull it off? The answer is not yet clear. Two big obstacles could stand in the way of Mr Immelt’s scheme.

First of all, the environmental markets that the pundits forecast and GE is betting on may not materialise. Grant Ferrier of Environmental Business, an industry publishing outfit, observes wryly that this is not the first boom the sector has seen. Back in the 1980s and 1990s, many blue-chip firms, ranging from DuPont and Dow to big French and British water companies such as Suez, forged into environmental services. Many were confidently predicting long-term double-digit growth and some invested heavily in developing-country markets.

Alas, by the late 1990s many of these firms had scaled back their investments. The market continued growing, but not at the sizzling pace they had originally expected. GE may be better positioned than those earlier entrants, argues Mr Ferrier, given its deep pockets and top-level commitment to the approach. Even so, forecasts of endlessly fast growth should be treated with caution.

That lesson has already been learned by BP, which ran into a similar problem with its “Beyond Petroleum” campaign. The company generated much enthusiasm early on with its lofty talk of a clean-energy revolution, but now appears to be back-peddalling on when it thinks renewables and fuel cells will take off. To be fair, BP did invest large amounts of money in those areas. And the company has just unveiled plans to invest some \$8 billion more over the next decade in its newly created low-carbon energy division, which it hopes will earn \$6 billion a year in sales by 2015. And yet change comes slowly in the energy business, because refineries and coal plants last for 40 or 50 years. Branding aside, BP will remain a mostly oil-and-gas business for a long time. Lord Browne, BP’s chief executive, observes that it is dangerous to promise too much on green issues—a lesson GE would be wise to heed. “Be very careful to separate aspirations from actual promised actions,” warns Lord Browne. “Business is about doing business, it’s not a surrogate for government or public service.”

Even if the green markets that Mr Immelt dreams of do arrive as soon as he hopes, they may not prove as profitable as his shareholders would like them to be. China and India are booming. They may crave the latest and cleanest technologies,

but do they really want to pay rich-world prices for them? Push Mr Calhoun hard and he concedes that margins in China are, in fact, tight—especially in the energy business. He has just sold no fewer than 300 locomotives there, he says. But at what margin? He suggests obliquely that margins will eventually improve, as the last 100 of the locomotives will be built with Chinese labour and parts.

Taking a big swing

The other big risk to Ecomagination comes from GE’s own culture. Some experts argue that GE does not have a record of successful product breakthroughs, unlike such famously innovative firms as 3M or DuPont. Gina Colarelli O’Connor of the Rensselaer Polytechnic Institute, a respected engineering university, has studied innovation at big firms for years. She points out that the company is famous for its relentless pursuit of “Six Sigma”, which was championed by Mr Welch. The axioms of this statistics-based approach to quality control have permeated every aspect of the company’s operations, and are credited with making GE managers extraordinarily good at delivering exactly what they promise. That is fine for a company focused on incremental improvements and fiercely disciplined execution. But that culture may not be ideally suited to creating the innovations and nimble new businesses the green strategy requires. Even if the firm’s laboratories produce the technological breakthroughs, she says, marketing and sales teams may be reluctant to embrace them.

Lorraine Bolsinger, the head of Ecomagination, agrees that Six Sigma emphasised “execution and frowned on deviations from the plan”, and that the new project departs from this way of thinking. It is also different from Six Sigma, she says, in that it starts with the customer and “it is vastly about technology”. During the years when GE’s profits at its finance arms stole the limelight from the industrial and research parts of the firm, she concedes that “techies like me were lonely and overshadowed”. When Mr Immelt announced he would double the research budget for clean technologies, officials at the firm’s Global Research Centre in upstate New York started “doing the Snoopy dance out in the parking lot”.

Mr Immelt has set out a vision for growth and is backing it up with hard targets and lots of money. But he is asking his managers to depart from a well-known and successful path. Can GE rise to the challenge? It remains an open question. “Jeff is asking us to take a really big swing. Fail early, fail fast,” says Ms Bolsinger, a 25-year GE veteran—before adding, with endearing honesty: “this is hard for us.” ■