

## What We're Watching in...

### Green Business

This month we're looking at research on carbon. As you read across the next few pages, you'll see that the more closely we examine the problem of emissions reduction, the knottier it gets.

## "Embedded" Carbon: Who Produces? Who Consumes?

**Robert C. Harriss**, president of the Houston Advanced Research Center, is studying "embedded" carbon: the amount of CO<sub>2</sub> emitted during a product's fabrication and shipping. (Carbon-finance experts **Rob Toker** and **Alex Rau** brought his work to our attention.) Since many products are made in one place and used in another, the world can be broken down into net exporters and net importers of carbon.

Historically, developing countries have produced only about 20% of human-

generated CO<sub>2</sub> emissions, but that's where the main growth in carbon pollution is coming from now. Two of the key reasons: Manufacturing processes are more carbon intensive in these nations, which produce millions of products for shipment to the West. Harriss says that in China alone, around 30% of emissions and as much as 50% of emissions growth from 2002 to 2005 came from manufacturing exports.

Looking at products' embedded carbon, and knowing where those products are

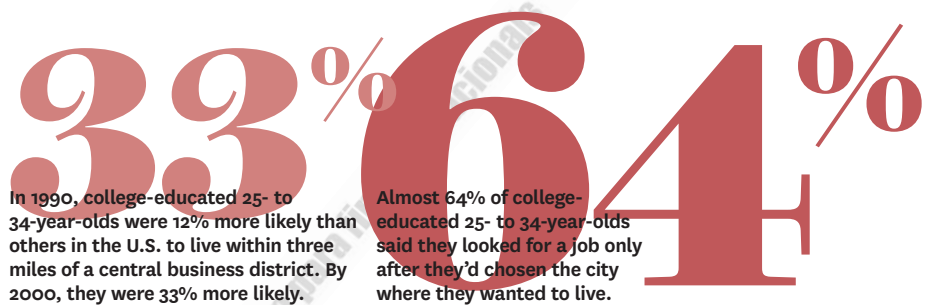
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and [public] transit as well as the car." Max Reim of the urban-planning firm Live Work Learn Play describes the model by alluding to Starbucks's creation of a "third place" for consumers, away from home and work. New Urban centers deliberately put all three places in close proximity, he says, with plenty of room for pedestrians and bikes. Houses are on the same streets (often in the same buildings) as shops; trains and parks are within walking distance from home.

### How Companies Can Benefit

In the last U.S. census, almost two-thirds (64%) of college-educated 25- to 34-year-olds said they looked for a job after they chose the city where they wanted to live. That suggests that businesses like Quicken Loans are on to something: Move in and help build up urban neighborhoods, the argument goes, because that's what will draw the talent.

For example, CEOs for Cities president Carol Coletta says that by supporting education in cities, companies not only help



improve the prospects of entrants to the workforce but also enhance the overall value of the city and hence its attractiveness as a place for people to live and work. CEOs for Cities research suggests that increasing the proportion of residents with four-year-college degrees in the 51 largest metropolitan areas by only one percentage point would be associated with a \$124 billion spike in aggregate annual per capita income.

"Increasingly CEOs understand that without a vibrant central city, their region becomes less competitive," says Coletta. "Good CEOs care about the fate of their cities, because they have to question whether

that is the place where they can attract the talent they need."

A shift to an urban model affects corporate strategy—especially for retail businesses currently thriving in strip malls on busy commuting arteries. Firms base many decisions on store locations and the types of customers served, and a move to the city changes both. Cheri Morris, CEO of the New Urban design firm Hedgewood Commercial Properties, warns that the rigid criteria for national chains' store locations—such as deep buildings and interstate visibility—often render them unable to conform to the aesthetic or logistical requirements of New Urban developments, leaving them locked

## A CAUTIONARY TALE FROM THE LAST BIG SHIFT

The story of 7-Eleven, a classic case from the shift to sprawl, shows how major changes in community planning can affect business.

"Southland Company [7-Eleven] didn't read the spatial patterns and lost its market niche as a result," says New Urbanist planner Peter Katz. He told HBR that U.S. cities used to have a dozen levels in their road hierarchy, ranging from residential streets

to interstates. The strategy at 7-Eleven was to build on streets between residential and commercial areas. But once sprawl took over, many of those options vanished. So 7-Eleven was forced into larger shopping sites, next to stores like Target, which learned its

game of late hours and convenience items.

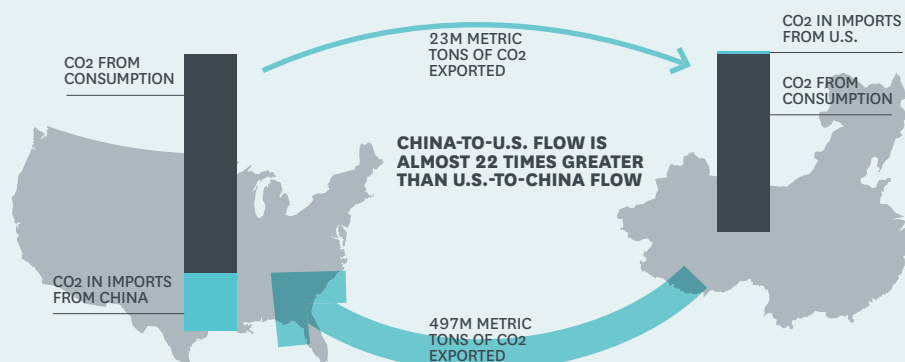
Meanwhile, the chain's model continued to thrive in Japan, where people still walked everywhere. It did so well that 7-Eleven was bought by its largest franchisee, Ito-Yokado. —A.W.

## CO<sub>2</sub> EMISSIONS EMBEDDED IN TRADE

going, gives us a more accurate picture of who's really "generating" the carbon in terms of product demand. For example, the total carbon emitted in the U.S. rose a modest 6% from 1997 to 2004, according to the Global Carbon Project—but the embedded carbon associated with imports to the U.S. rose 17%.

So, who's responsible for the carbon embedded in a toy spaceship made in Guangdong but sold in Cleveland?


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out of such areas entirely. Even in more traditional urban areas, big-box stores are forced to configure their familiar floor plans into narrower, multilevel spaces.

Marketing changes, too. In densely packed, walkable centers of living, "many of the benefits of costly national branding go away, while the benefits of passion and a close connection to the customer emerge," says Peter Katz, the head planner for Sarasota County, Florida. In such settings, he and other New Urbanists believe, it's easier for small, local, experience- and relationship-based businesses to thrive, and indeed many New Urban developers seek merchants like these to populate their newly minted commercial areas. Bigger retail companies will have to work hard to adopt strategies that take New Urban principles into account and learn to provide an authentic "local" experience.

**IN MANY** ways, New Urbanism and the trends it captures are part of broader recent changes businesses already accept: the shift to an experience economy, consumers' and employees' demands for greater corporate social responsibility, an emphasis on work/life balance, and the importance of interaction between companies and their customers. The demographic aspect is simply the newest part of an ongoing conversation. Companies that recognize the larger trend, however, and seize the opportunities that it presents will contribute to its social impact—and may gain a competitive advantage in the process.  **HBR Reprint** F1005B

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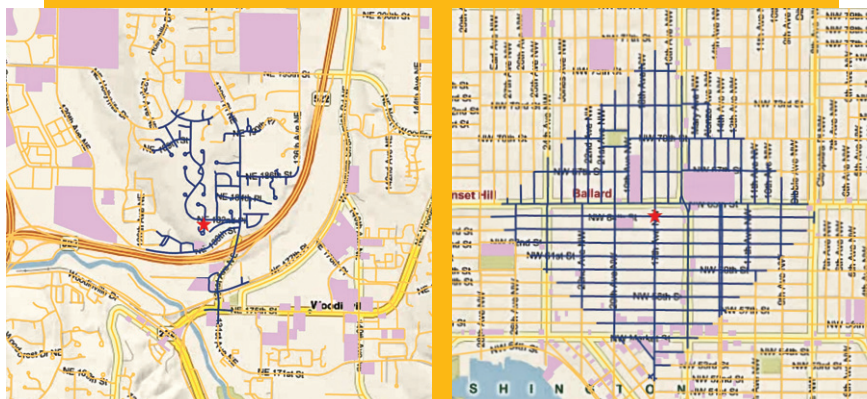
## THE UNINTENDED CONSEQUENCES OF CUL-DE-SACS

**T**hough suburban cul-de-sacs have long been attractive as quiet, safe places for families, their disadvantages are becoming clear. One of the biggest problems is interference with motor- and foot-traffic flow. Research by Lawrence Frank, Bombardier Chair in Sustainable Transportation at the University of British Columbia, looks at neighborhoods in King County, Washington: Residents in areas with the most interconnected streets travel 26% fewer vehicle miles than those in areas with many cul-de-sacs. Recent studies by Frank and others show that as a neighborhood's overall walkability increases, so does the amount of walking and biking—while, per capita, air pollution and body mass index decrease.

Last year, the Virginia legislature took action against the municipal costs of cul-de-sacs and passed a law limiting them in future developments; the new policy was highlighted in the *New York Times Magazine's* "Ninth Annual Year in Ideas." Along with such moves to more-accessible street systems will come an economy that rewards businesses' proximity to customers and employees. —A.W.

### ABOUT THE MAPS

These images compare a one-kilometer walk in the Seattle suburb of Woodinville with one in Seattle's Ballard neighborhood. The former is limited by a disconnected street network and few destinations within walking distance, while the latter offers easy access to parks and shops.



IMAGES AND MAPPING COURTESY OF URBAN DESIGN 4 HEALTH

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“Embedded” Carbon

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Harriss’s research has interesting implications for the potential of “onshoring” in the West. Right now, policy makers are focused on the idea of imposing costs to reduce companies’ CO2 emissions. By attaching a price tag to embedded carbon as well, they could transform the global manufacturing and

trade landscape. If the cost to make that toy spaceship and ship it from China increased because of the emissions price associated with it, products made in the U.S. or Europe might have a better chance of competing.

But imposing a cost on embedded carbon is no simple matter. **Jeffrey A. Frankel** of Harvard’s Kennedy School tells

# Attaching a price tag to embedded carbon could transform global trade.

us that appropriately designed tariffs on carbon-intensive imports could help level the playing field for developed-world companies. However, he adds, such tariffs would be considered protectionist unless the developed nations were already acting under a global treaty to limit their own domestic emissions.

PSYCHOLOGY by Neal J. Roese and Kathleen D. Vohs

# The Visualization Trap

**H**indsight bias—the irrational belief that past outcomes were predictable—is a well-understood psychological phenomenon. Our research suggests that this bias is becoming stronger, thanks largely to an abundance of visual information, including re-creations and simulations. But in measuring it, we’ve also discovered its near opposite, what we call the *propensity effect*: Visualization may also, in certain circumstances, make people hyperconfident of impending events’ outcomes.

We presented study participants with traffic situations. Some received a text description with diagrams, and others watched a computer animation. The amounts and types of information varied within each group. Some people examined normal traffic conditions; others saw or read about a driver error but not the resulting accident; still others saw or read about the driver error and the resulting accident.

Hindsight bias more than doubled for the subjects who watched the computer animation. The propensity effect was significantly greater for those who watched the driver error but not the accident: They were more likely to say they could see a serious accident coming than those who actually saw it occur and *then* were asked if they had seen it coming.

You experience the propensity effect when, say, a baseball that’s hit hard gives you that momentary feeling of “just knowing” it’s going out of the park. People mis-

attribute visual processing of motion to higher-order judgments, such as predicting outcomes. So far, we’ve tested propensity only in relation to trajectory events (cars heading toward an accident), but movement seems to be a key factor in sparking the effect. When we gave subjects still photos of the same traffic situations that they could page through at their own pace—in effect making flip-book animations—the propensity effect wasn’t present.

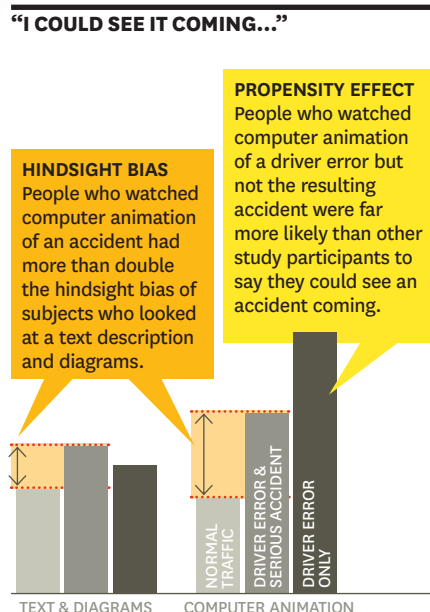
Computer-animated visualization is appealing because it can help make sense of highly complex information, but it’s also, quite literally, a point of view. The information can be conveyed with cer-

tain emphases, shown from certain angles, slowed down, or enlarged. (In a sense, all this is true of text as well, but with subtler effects.) Animations can whitewash the guesswork and assumptions that go into interpreting reconstructions. By creating a picture of one possibility, they make others seem less likely, even if they’re not.

When an objective reading of evidence is critical—as it is in a courtroom and in many business contexts—both the deepening hindsight bias and the propensity effect can be pernicious. A manager with the tools to animate financial data sets, such as sales forecasts, can easily—on the basis of the story the visualization tells—misidentify trends, place blame where it doesn’t belong, or become overconfident about an action plan. Or a sophisticated visualization of customer feedback data might make it appear, for example, that a new smartphone had tanked because it lacked user-friendliness, though pricing and app availability were also responsible. A false sense of certainty about what went right or wrong can make managers unwilling to consider strategic alterations or search for new ways to attack problems.

We don’t suggest doing away with animations. In many cases, they really help penetrate complexity. But we need further research to understand the consequences of using them to depict data and to know how to control for variables. ♡

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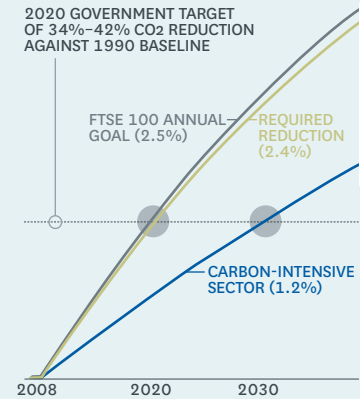
## Is "Footsie" Closing the Carbon Chasm?

The Carbon Disclosure Project, a nonprofit that tracks firms' emission reductions around the world, recently compared the efforts of the FTSE 100—the United Kingdom's biggest blue-chip companies, affectionately called "Footsie"—with the government goal of a 34% to 42% reduction (against a 1990 baseline) by 2020.

The good news: These companies are aiming for, on average, a 2.5% annual reduction, and 2.4% is needed to hit the 2020 target. The less-than-good news: The 24 firms in the energy, utilities, and materials sector are responsible for 87% of all Footsie emissions. And their annual reduction targets average 1.2%—which will

make them miss the deadline by more than a decade.

While praising many companies' initial reduction targets and transparency, the CDP calls on energy, utilities, and materials to set more-aggressive goals. It says that "radical change is required in this sector."



STRATEGY by Andrew Burke, André van Stel, and Roy Thurik

# Blue Ocean vs. Five Forces

**A**re you a five-forces disciple or a blue-ocean enthusiast? That is, do you try to dominate existing markets or look for opportunities to create new ones? Both approaches to strategy have their devotees, but to the best of our knowledge, no one before now has conducted an empirical study comparing the two camps.

So we did. For our research framework, we used a model that dates back to a seminal 1921 economics paper by Harold Hotelling. It posits that as long as there are profits to be had in a particular market, more and more vendors will arrive to serve that market until it reaches a saturation point, where everyone more or less breaks even.

Looking at entire industries in this way allows you to tell over time whether an innovation strategy or a competitive strategy is best. Of course, the blue-ocean approach

**Competition eventually erodes the profits from innovation. But that's a slow process, requiring 15 years or so.**

to this model would call for creating a new market. If that attracted consumers over the long term, industry profits and the number of vendors would both steadily increase—and you could conclude that companies succeed by staking out new markets. If, however, firm profitability went down as the number of firms went up, you'd know that the scope of new opportunities was limited or that the barriers to following the trailblazer were very low. Either way in that scenario, companies focused on competition would outperform those setting their sights on blue oceans.

We tested the model on Dutch retailing. (Although one study doesn't constitute proof, this industry provides a good lab because it has shown signs of being both highly competitive and markedly innovative over the past two decades.) Its frequent new-brand introductions and widespread use of differentiation strategies have led to increased market segmentation, deeper and broader markets, and the rejuvenation of "tired" sectors such as hardware stores.

We looked at profits and numbers of vendors for 41 shop types over a 19-year pe-

riod (1982–2000). In 2000 these shop types accounted for some 83% of all Dutch retail stores and about 90% of the industry's revenue and employment. We were surprised to find evidence that blue-ocean strategy is sustainable. In more than half the shop types, average firm profits and the number of firms were positively related. And more important, after controlling for extraneous factors such as business-cycle effects, we discovered across all types that average firm profitability and the number of vendors rose and fell together over the period.

Of course, it would be foolish to dismiss competitive strategy altogether. Our research shows that competition eventually erodes the profits from innovation. But that's a slow process, requiring 15 years or so, which suggests that it takes the better part of a generation for the blue-ocean approach to yield to competitive strategy.

All this indicates that businesses may want to consider a blend of the two approaches. For instance, by slowing down profit erosion with an effective competitive strategy for an existing market, they can increase the funds available for blue-ocean investments and thus their chances of finding an untapped market with plenty of consumers. HBR Reprint F1005D

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ILLUSTRATION: BARRY FALLS

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## The Nonlinear Path to Green

Companies don't simply go green when they've got the money. Rather, their commitment to sustainability tends to rise and fall over time. **Khaled Elsayed** of Ain Shams University and **David Paton** of Nottingham Business School explain why in a recent article in *Business Strategy and the Environment*. After studying a sample of British companies over a seven-year period, the researchers found that the effect of financial performance on a firm's environmental policy varies depending on what stage of its life cycle the business is in:

### INITIAL GROWTH

Good performance boosts environmental activity as the company uses available funds to send positive signals to a market that doesn't know much about it yet.

### RAPID GROWTH

Performance has no impact on the firm's environmental policy. The researchers chalk this up to increased investment opportunities, intense competition, and "managerial opportunism" (using resources to improve your own unit's returns at the expense of environmental investments).

### MATURITY

Here's where going green most directly maps to the company's financial health: Performance is at its strongest, and so is environmental investment.

### REVIVAL

Performance has some impact on green policy, but less than in the maturity phase. Environmental activity can be used to revitalize the brand, but firms at this stage are often under strict constraints imposed by creditors.

STRATEGY by Jocelyn R. Davis and Tom Atkinson

# Need Speed? Slow Down

In business, there's a speed gap: It's the difference between how important a firm's leaders say speed is to their competitive strategy and how fast the company actually moves. That gap is significant regardless of region, industry, company size, or strategic emphasis. Organizations fearful of losing their competitive advantage spend much time and many resources looking for ways to pick up the pace.

Paradoxically, they should try slowing down instead. In our study of 343 businesses (conducted with the Economist Intelligence Unit), the companies that embraced

strategic speed (reducing the time it takes to deliver value)—and the two concepts are quite different. Simply increasing the pace of production, for example, may be one way to try to close the speed gap. But that often leads to decreased value over time, in the form of lower-quality products and services. Likewise, new initiatives that move fast may not deliver any value if time isn't taken to identify and adjust the true value proposition.

In our study, higher-performing companies with strategic speed made alignment a priority. They became more open to ideas

Simply increasing the pace of production often leads to decreased value over time.

initiatives and chose to go, go, go to try to gain an edge ended up with lower sales and operating profits than those that paused at key moments to make sure they were on the right track. What's more, the firms that "slowed down to speed up" improved their top and bottom lines, averaging 40% higher sales and 52% higher operating profits over a three-year period.

How did they defy the laws of business physics, taking more time than competitors yet performing better? They thought differently about what "slower" and "faster" mean. Firms sometimes confuse operational speed (moving quickly) with

and discussion. They encouraged innovative thinking. And they allowed time to reflect and learn. By contrast, performance suffered at firms that moved fast all the time, focused too much on maximizing efficiency, stuck to tested methods, didn't foster employee collaboration, and weren't overly concerned about alignment.

Ultimately, strategic speed is a function of leadership. Teams that become comfortable taking time to get things right, rather than plow ahead full bore, are more successful in meeting their business objectives. That kind of assurance must come from the top. ♡

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STRATEGICALLY FAST COMPANIES	STRATEGICALLY SLOW COMPANIES
SENIOR LEADERS ARE CLOSELY ALIGNED AND COMMITTED TO INITIATIVES' SUCCESS.	INITIATIVES SUCCEED DESPITE THE LACK OF UNANIMOUS SENIOR-LEVEL SUPPORT.
TEAM MEMBERS SOMETIMES SWITCH RESPONSIBILITIES TO MAKE THINGS EASIER FOR ONE ANOTHER.	PEOPLE FOCUS ON THEIR OWN RESPONSIBILITIES TO ENSURE THAT THE WORK GETS DONE.
TEAMS REVIEW HOW THEIR WORK IS GOING.	PEOPLE DON'T TAKE TIME TO REFLECT.
GROUPS CAPTURE AND COMMUNICATE LESSONS LEARNED.	GROUPS MOVE ON TO OTHER ASSIGNMENTS WITHOUT DEBRIEFING ON PREVIOUS INITIATIVES.
SUCCESS IS BASED ON THE ABILITY TO EXPLORE NEW TECHNOLOGIES.	SUCCESS IS BASED ON THE ABILITY TO IMPROVE QUALITY AND LOWER COSTS.
EMPLOYEES CREATE INNOVATIVE PRODUCTS AND SERVICES.	EMPLOYEES FINE-TUNE OFFERINGS TO KEEP CURRENT CUSTOMERS SATISFIED.
MANAGEMENT SYSTEMS WORK COHERENTLY TO SUPPORT OVERALL OBJECTIVES.	PEOPLE OFTEN WORK AT CROSS-PURPOSES BECAUSE MANAGEMENT SYSTEMS GIVE THEM COMPETING OBJECTIVES.
EVEN EXPERIENCED EMPLOYEES RECEIVE TRAINING WHEN INITIATIVES ARE LAUNCHED.	TIME IS RARELY MADE FOR TRAINING AND EDUCATION.

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