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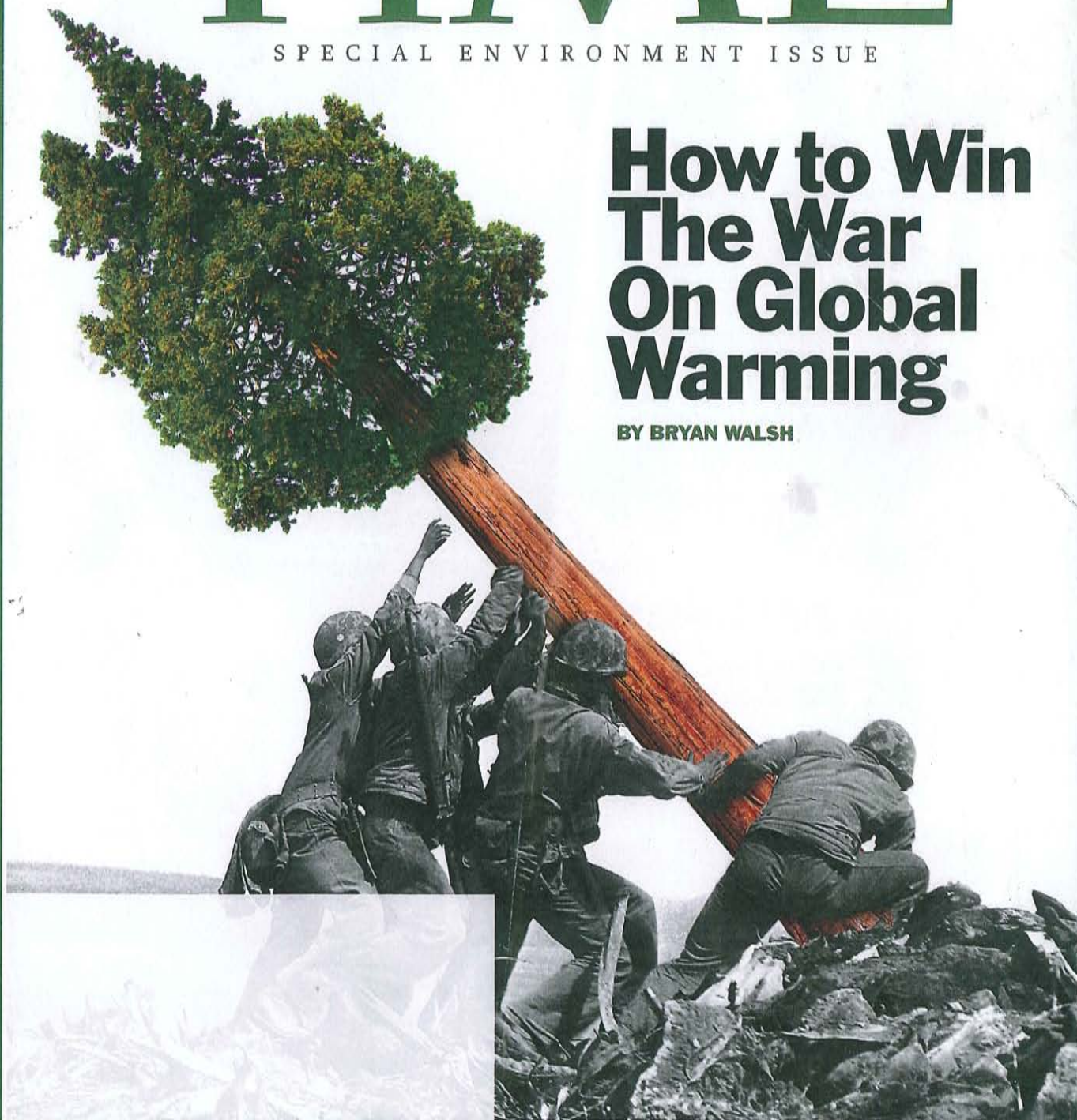
Can Richard Branson Save the Airline Industry?

# TIME

SPECIAL ENVIRONMENT ISSUE

## How to Win The War On Global Warming

BY BRYAN WALSH



## Invent, Invent, Invent

EVEN AN EPIC SURGE IN EFFICIENCY, though, won't by itself solve our energy woes, because demand in the booming developing world will outpace the best productivity measures. Hence the need for the final and most difficult step in the blueprint: the creation of a new energy system, one that doesn't depend on carbon. There's a chasm between where we are and where we need to be—and our current strategy for bridging it is murky at best. "What we need to do over the next 10 to 20 years is redesign our relationship with nature and energy," says Nicholas Parker, chairman of the Cleantech Group, a green research organization.

No problem, right? But the good news is that there are already thousands of very smart people working on alternative energy in what Daniel Yergin, chairman of the Cambridge Energy Research Associates, calls "the great bubbling." Venture-capital funding in the clean-tech sector hit \$5.18 billion in 2007, up 44% from the year before. And no surprise, the biggest bubbling is happening in California, specifically Silicon Valley, where a combination of the state's progressive environmental measures, unmatched scientific talent and entrepreneurial culture is giving birth to dozens of start-ups.

Among the new companies is Amyris Biotechnologies in the Bay Area, where Jack Newman and his team are developing ways to genetically modify bacteria to make better biofuels, sidestepping the food-vs.-energy debate that has long dogged the field. With nearly \$100 million in venture backing, Amyris is trying to engineer yeast or bacteria that can metabolize biofuel feedstocks like wood chips and dramatically increase the amount of biofuel that can be extracted from them. "There are staggering things that technology can do," says Newman. "But we need to make this happen in as short a time as possible."

That's where government can help. There may be nothing like free enterprise to unleash innovation, but there's nothing like government to put a whip hand to the process. A firm carbon price will accelerate creativity by making alternatives that much more economical. If Washington better allocated its own research-and-development dollars—as it did in the storied Apollo days—it could accelerate things even more. Currently, the Federal Government budgets about \$5 billion per year for research and tax incentives for renewables and energy efficiency. With a federal budget of \$2.9 trillion in 2008



### Going Green

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## GREEN MATERIALS

### #4) Hycrete

Battling global warming isn't just about cleaning up power plants. The materials of everyday life use energy—and they can use it better. Hycrete makes advanced waterproof concrete, reducing the amount of nonrenewable waste and toxic chemicals used in construction.



**The American Solar Energy Society estimates that the number of green jobs could rise to 40 million by 2030**

and the Iraq war alone burning through an estimated \$12 billion per month, there is clearly money to be spent if we decide to reprioritize. A plan floated by Democrats to eliminate \$18 billion worth of tax breaks for the oil industry and use the money to support research into renewable fuels would be a smart place to start.

There's no shortage of ways to spend whatever money is made available. Photovoltaic solar panels have made significant improvements, but they are still five to 10 years away from achieving economic parity with fossil fuels—at least at current rates of development. More promising are solar thermal power plants, like the one inaugurated this spring in the deserts of Nevada by Spanish clean-energy giant Acciona. The installation—a 300-acre array of 182,000 mirrors, each aligned to catch and concentrate the sun's energy—heats a synthetic oil that runs in a pipeline and produces steam, which drives turbines to generate electricity. Mirrors and turbines are comparatively cheap, and they're hardly the stuff of high technology. The trick is scaling up and pricing down.

Wind power, the most mature renewable technology, is growing fast, but we need to find a way to store electricity when the breeze isn't blowing. Then there are more fringe alternatives like tidal power, geothermal energy and even nuclear fusion—any of which could take off with enough luck and money.

While Washington should flood the zone with research funding, it should refrain from trying to pick a winner. The great biofuel scam—in which government support for corn ethanol choked the market with a fuel that simply adds to other problems, such as deforestation and food price spikes—shows that straightforward subsidies can easily be perverted for political reasons. But a national renewable portfolio standard, which would mandate that a certain percentage of the nation's electricity supply must come from renewable sources, can force utilities to adopt alternatives on a wider scale, going with the technologies that are producing the best results. For that to happen, though, the government has to stop providing the fossil-fuel industry with billions of dollars in subsidies, which boost the sector's built-in advantage even more. "How can the oil industry need a dollar in the days of \$100 crude oil?" says John Berger, CEO of Standard Renewable Energy.

Finally, there are micropolicies, like tax credits, that can make solar power and green building more economical on