Policies

Technologies

13 Best Energy Ideas

(Plus a Few Duds)

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Investments in energy projects will total $16 trillion in the next two decades. That investment—along with spending for long-lived buildings, transportation, manufacturing, and public works—could lock us into climate chaos. Or it could set us on the path toward a sustainable future. How can we make sure that this new infrastructure is climate friendly? For starters, it will have to be both highly efficient and powered by renewable energy—the sun, wind, earth, or ocean. A combination of the right policies and the right technologies can get us there. Here are our picks for the best (and a few of the worst) ideas:

Put a Price on Carbon

What: Carbon pollution costs the polluter nothing; all the rest of us pay the price. Carbon taxes and "cap & trade" mechanisms make it expensive to be a carbon polluter (see Claim Your Piece of the Sky—It's Going Fast). Carbon taxes can be matched by reductions in income taxes to offset the higher prices consumers pay for energy and energy-intensive products.
Why: Making carbon emissions expensive encourages a switch to less carbon-intensive energy.
Examples: Sweden taxes CO2 emissions, carbon-based fuels, and domestic flights, and cut taxes for labor and green fuels.

Ban the Bulb

What: Ban incandescent bulbs.
Why: Changing a 100-watt bulb to a compact fluorescent (CF) bulb cuts the equivalent of burning about 100 lbs. of coal.
Examples: Australia is banning the sale of incandescent bulbs as of 2010, and Canada, as of 2012. Brazil has replaced half its bulbs with CFs. New York is replacing traffic lights with ultra-efficient LEDs.

Make Fuels from Waste

What: Transform landfill methane, animal manure, or straw and other agricultural wastes into fuel.
Why: These produce energy without competing with food production. Methane capture reduces emissions of a greenhouse gas 25 times more potent than CO2.
Cautions: Genetically modified microbes designed to break down cell walls in order to convert agricultural waste into a fuel are possible sources of life-destroying super bugs. Also, in some cases, agricultural waste may be more valuable as organic fertilizer, displacing artificial nitrogen fertilizers that emit nitrous oxide, a powerful greenhouse gas.

Nuclear Guarantees

What: Using taxpayer money to subsidize nuclear power.
Why: Investors know that nuclear power isn't economical without subsidies to cover waste disposal and catastrophic insurance. Nuclear power is expensive, a potential target for terrorism, and a source of nuclear weapons materials.

Coal Plants

What: Allow new coal plants only after sequestration technology is proven and required, and only if mountain-top removal is ended. Meanwhile, clean up and increase efficiency of old coal plants—or shut them down.
Why: Coal-fired plants account for 70% of greenhouse gas emissions from electricity production. Technology to safely capture CO2 from the coal stack remains unproven.
Examples: Germany has cut coal use by over a third since 1990 through increased efficiency and by substituting wind power.

Food-Based Biofuels

What: Ethanol, palm oil, soy oil, and other food crops yield little net energy, drive up food costs, use up scarce fresh water, and harm the environment.
Also: A new study shows that just under half the biofuels studied cause more environmental disruption than fossil fuel burning.

Plug In Cars, Scooters, Bikes, and Trains

Why: Plug-in hybrids and electric cars are efficient and—when powered by renewables—climate friendly. (See The Secret Life of Plug-In Cars.)

Net Metering, Feed-In Tariffs

What: Require utilities to buy renewable energy produced by households or independent energy producers at a price set in advance.
Why: A known market with a set price provides certainty that spurs investment. A decentralized clean energy system results, which taps the entrepreneurship of many diverse players.
Example: As a result of Germany's Renewable Energy Act of 1999, which includes a feed-in policy, renewable energy jobs are up to 200,000, renewable energy is at 12% of total energy production, and annual installation of solar PV systems exceeds those in all other countries combined.

Localize Economies

What: Make, service, buy, and sell locally whenever possible.
Why: Cuts the climate costs of long-range transport. Local economies support long-term jobs, living within ecological means, diverse cultural expression, resilience, and decentralized power.
Also: Use scarce energy for essential transport, not for shipping Florida oranges to California.

Build Smart Grids

What: It's like the Internet, only for electricity. Smart grids can transport electricity from many, decentralized sources—including wind, solar, and other sources whose output varies over time—to where the demand is, in real time.
Why: Smart grids facilitate transition to renewable energy and vehicle-to-grid storage schemes (see Plug-Ins).

Shift the subsidy

What: Shift government subsidies from climate-trashing fossil fuels to climate-friendly renewables and energy efficiency. Each year, U.S. taxpayers subsidize the oil and gas industry to the tune of $39 billion and the coal industry by $8 billion.
Why: You get what you subsidize.
Examples: Belgium, France, and Japan have phased out subsidies for coal. China, Indonesia, and Nigeria have cut subsidies.

Grow Trees

What: Preserve forests as part of ecosystems. Plant trees in cities and suburbs—especially fruit and nut trees.
Why: Trees sequester carbon, underpin diverse life-supporting ecosystems, reduce the heat in population centers, feed people, and provide vital resources.
Examples: Ecuador is seeking international help to preserve virgin forests, home of indigenous peoples. (See Ecuador: Protecting Diverse Forests and Peoples.)
Caution: Forests should be managed to enhance local ecosystems, indigenous control, and water and soil conservation.

Tax Credits for Renewables

What: Tax credits for those who install climate-friendly technology.
Why: A tax credit makes renewables affordable and builds the market to achieve economies of scale.
Examples: A tax credit of up to $2,000, available under the U.S. Energy Policy Act of 2005, helped to achieve a growth rate of 83% in PV installations in 2007, according to the Earth Policy Institute.

Profits for Efficiency

What: Build incentives for conservation by de-coupling utility profits from sales.
Why: If utilities can profit through selling efficiency, they will do so.
Examples: California, Oregon.

Get Efficient

What: Efficiency upgrades for appliances, cars, electronics, industry, buildings. Recycling. Waste reduction. This is the low-hanging fruit.
Why: These are the cheapest and least challenging to the American Way of Life, and can cut associated carbon emissions by half or more. Long-term jobs for efficiency retrofits strengthen the economy.
Examples: Germany and Japan require some cars, appliances, and office equipment to be recyclable.

Livable Communities

What: Compact communities where people can walk, bike, or take the bus.
Why: This is the most efficient way to live. It builds community and improves quality of life, especially for youth and elderly. And it can have major carbon benefits.
Examples: Most of Europe, where quality of life is high and emissions are half those of the United States.