



Twelve opportunities to curb climate change and promote shared global prosperity

There is no high-carbon path to global prosperity.

By the end of this century, perhaps the single most crucial indicator of human well-being will be the concentration of carbon dioxide in the Earth's atmosphere.

That concentration stood below 300 parts per million (ppm) for all of human existence until the 20th century. It is now above 400 ppm and hurtling toward 450 — the limit identified by many scientists as necessary to avoid the worst impacts of dangerous climate change.

If we fail to act on climate, we face the prospect of catastrophic declines in agricultural productivity, skyrocketing food prices, and dire water scarcity.

Yet despite decades of delay, it is not too late to slow down the rapid accumulation of greenhouse gases and turn toward a safer climate. Doing so will require us to confront the challenge head-on in the next decade, with solutions to climate change that are also fundamental elements of a successful and sustainable strategy for economic development.

Achieving the necessary transformations in energy and land use will require ambitious, concerted, far-reaching action across all countries and sectors. Below we present a dozen initial steps that, combined, could reduce emissions enough to allow the world to begin turning the corner toward climate safety, ensuring that global greenhouse gas emissions peak and begin to decline by 2020 (see **chart** for estimated emissions

Energy-related emissions in the U.S., China and Europe account for over one-third of the world's total greenhouse gas emissions.

reduction potential). These steps result from the actions of many national governments, the private-sector, and a range of non-governmental organizations undertaken both independently and cooperatively. Together EDF and TNC have identified these opportunities to demonstrate the many reasons to be hopeful that global civil society can address the challenge of climate change. And, while we do not expect to work on all of these areas, we envision a world in which these opportunities will be seized to help secure a safe and stable climate.

1. Accelerate transition to cleaner, smarter energy in the U.S., with a focus on modernizing the electricity system: Stronger clean air standards, abundant shale gas, cheaper renewable energy technologies, an aging power infrastructure, and the promise of strict carbon pollution standards together create a window of opportunity to accelerate the transition toward cleaner power in the U.S. New technologies make possible an information-rich grid that can match supply and demand in real time and give consumers greater control over their own energy use. And an emerging framework of federal and state rules can provide powerful incentives for further innovation — such as novel financing approaches that can help tap new sources of private investment for energy efficiency and distributed generation.

2. Unleash investment in energy efficiency and renewable energy in Europe: The EU, a global leader on climate change, has announced its commitment to establish a new reduction target for 2030 — with a continued central role for its emission trading system, still the world’s largest. Admired as a leader in deploying solar, wind, and energy-efficient technologies, Europe is now running into regulatory barriers similar to those that keep the U.S. from fully capitalizing on energy efficiency and renewable energy: a tangle of outmoded regulations designed for an era of large centralized power plants. Countries phasing out nuclear power risk reverting to coal in the face of these perceived obstacles. Unleashing the potential of clean technologies, novel financing, and new utility business models will pave the way for greater and less costly emissions reductions and help the region meet its new ambitious cap.

3. Support China’s “peak emissions” and subsequent emission reduction goals: In China, which consumes half the world’s coal, public demands for clean air coupled with the need to alleviate poverty will drive climate action. Path breaking experiments now under way will inform China’s next five-year plan. Already China has put a cap on the future growth in coal consumption; set ambitious targets for increased energy efficiency; launched emission trading pilots in seven cities and provinces; invested heavily in renewable energy; and embarked on low-carbon development pilots in another 35 areas.

4. Cut methane leakage from international oil and gas production in half: While the world looks for alternatives to coal, public anxiety about the environmental implications of natural gas is growing.

The low-carbon path will drive innovation in energy, industry and infrastructure that will create brand-new business models and economic opportunities.

Institutional investors are also expressing concern about the economic and environmental costs of methane emissions from oil and gas production generally. These trends — along with the outsized impact of methane leakage on climate change, the dynamic regulatory and investment environment, and the widespread availability of low-cost sensing and mitigation options — combine to create a global opportunity to reduce emissions from oil and gas production and distribution. An important step is to quantify these emissions globally.

5. Support lower-carbon energy alternatives: A growing number of countries and development institutions, including the United States, United Kingdom, Netherlands, France, and the Nordic countries as well as the World Bank, European Investment Bank, and European Bank for Reconstruction and development have announced that they will cease public financing

for new conventional coal plants in all but the most limited circumstances, and have indicated that they will press other governments and institutions to follow suit. Pension funds and other institutional investors see that new coal investments may become stranded assets, and shareholders and activists are demanding greater disclosure of their carbon risk. To ensure energy access, financing must be ramped up for lower-carbon energy sources – preferably wind and solar, but also efficient natural gas generation where necessary.

6. Harvest industrial energy efficiency gains in emerging economies: Products made in emerging economies generally have more embedded energy

use as similar products made in the U.S. – in some cases twice as much. Policies that create an economic incentive to cut emissions – such as the energy efficiency certificates trading program India is launching – will help drive down inefficiency. Regulations to strengthen minimum performance standards can play a key role as well. And innovative financing approaches, perhaps including loan guarantees and other policies to absorb risk, can help companies tap into sources of private capital.

Cleaner cook stoves could prevent millions of deaths annually.

7. Reach global agreement to phase down production and consumption of hydrofluorocarbons (HFCs): As the world’s middle class grows, it will seek out air

conditioning and refrigeration that run on HFCs, potent greenhouse gases. Use of HFCs is projected to increase more than eight-fold over the next few decades, mostly in developing countries. The agreement between the U.S. and China to cooperate on a phasedown of HFCs, along with a previous joint proposal from the U.S., Canada, and Mexico, will create increasing pressure on other countries to bring HFCs under the successful Montreal Protocol – eliminating a major source of future emissions growth.

To feed nine billion people by midcentury, the world may need to double total food production.

8. Promote cleaner cook stoves: Among the sixteen measures to reduce methane and black carbon identified by the United Nations Environment Programme and World Health Organization, switching to cleaner-burning cook stoves would provide nearly one-quarter of the total climate benefits, with most of those benefits coming in Africa and Asia.

9. Promote proven “triple win” agricultural practices in key areas: In September 2014, the governments of the Netherlands, the United States, and South Africa, along with The World Bank and the Food and Agriculture Organization, launched a Global Alliance for Climate Smart Agriculture that brings together governments, multilateral development banks, foundations, and experts from academia and NGOs to orient funding streams, technical outreach, and policy frameworks around proven “triple win” agricultural practices and approaches at a landscape scale. By demonstrating in key areas that emissions reductions are consistent with more productive and resilient agriculture, the Alliance will align efforts to address climate change with rural poverty alleviation and food security priorities. Increasing agricultural productivity, in combination with the right policy frameworks, is also an essential strategy to address the primary driver of tropical deforestation.

10. Reduce deforestation in the Amazon and Indonesia: Thanks to improved regulatory enforcement and satellite monitoring, Brazil has reduced its deforestation rate by over 75% since 2005 — putting an ambitious target of zero net emissions from deforestation by 2020 in reach. A key to sustaining that progress — and extending it to places like Indonesia — is to create positive economic incentives that reflect the value of carbon in standing forests. Already, major corporations in the Tropical Forest Alliance have pledged to achieve zero net deforestation in their supply chains by 2020. The Brazilian state of Acre is implementing the world's first jurisdictional program to issue verified credits for Reduced Emissions from Deforestation and forest Degradation (REDD); California is preparing to formulate regulations to accept REDD credits for compliance in its carbon market. Billions of dollars in bilateral and multilateral aid have been pledged to support such “pay for performance” efforts; as policies take shape, they will attract increasing private investment, boosting momentum.

Over half the world's population now lives in cities — by 2050 it may be 70%.

11. Partially phase out fossil fuel subsidies around the world: Fossil fuel subsidies amounted to more than half a trillion dollars in 2011, with the majority coming from consumption subsidies in developing and emerging economies that are fossil fuel exporters. Such subsidies distort market prices and encourage wasteful consumption. Efforts to eliminate them face formidable political obstacles, but two factors favor reform. First, G-20 countries made a pledge in 2009 to phase out their fossil fuel subsidies completely; the IEA, IMF, OECD, and World Bank have all highlighted the importance of the issue and called for subsidy reform. Second, as countries continue to face the challenges of slow economic growth and fiscal austerity, they will find expensive fossil fuel subsidies more and more difficult to sustain. New governments in India and Indonesia have both taken steps to eliminate or sharply reduce subsidies on diesel and gasoline.

12. Double the share of the world's emissions covered by a price on carbon by 2020: Market-based carbon caps that put a price on carbon currently cover roughly 12% of global carbon emissions. China is the next major proving ground for using a national carbon market to effectively reduce emissions. International aviation also provides a near-term opportunity for a global market-based mechanism that could cap a fast-growing source of emissions, generate significant demand for reductions elsewhere (as offsets), and provide a powerful and practical example of progress in international cooperation. Just as the structure of world trade grew out of linkages among trading partners, an international carbon market will develop gradually through the linking of national systems as they mature — creating a key role for multilateral institutions in developing quality standards, common registries, and other elements of the legal and policy architecture needed to support the market and ensure its environmental integrity.

Deforestation and agriculture currently account for about one-quarter of global greenhouse gas emissions.

CHART

