Turn Toward Climate Safety

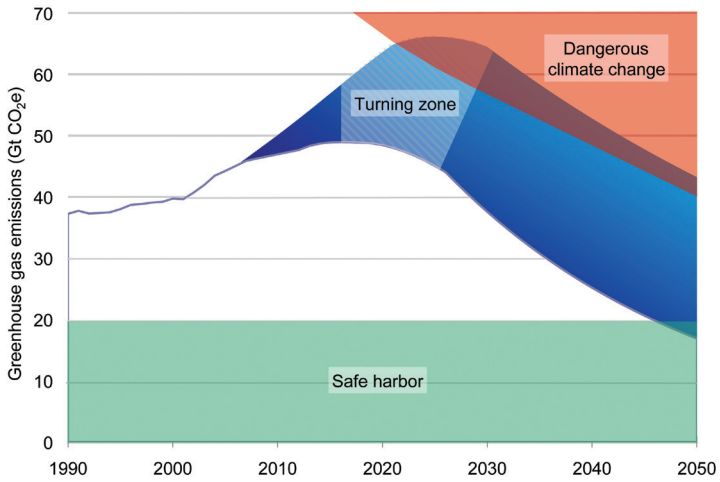
The science is compelling. We are heading in the wrong direction, and we are running out of time. In the critical period from now until 2020 global emissions must start to decline. The sooner we make the turn, the greater the chance that we can avoid the most dangerous consequences. This paper lays out the steps we can take now to achieve the turn toward safety.

The science is compelling. We are heading in the wrong direction, and we are running out of time.

Start turning now

We need to start putting the tools in place now to achieve this "turn toward safety" (Figure 1). The longer we wait, the more dangerous, difficult and expensive it will be. The United States must lead this effort and put a strong cap on its emissions. Others, most notably the European Union, have already acted. They and others need to strengthen and expand their efforts as the United States acts.

Figure 1. Turn toward climate safety[1]



Source: IEA and other emissions data; EDF analysis.

Driving private investment: The power of incentives

The fastest, most efficient way to make the turn is to create economic incentives that harness the power of innovation, making investments in clean energy sources more profitable than the dirty alternatives. A well-structured carbon market will reward entrepreneurs for finding cheaper, faster ways of cutting emissions. A carbon market acts like a magnetic field, drawing private capital toward low-carbon, high-efficiency economic activity. Businesses in large emerging economies do not want to be left out of this opportunity.

A global opportunity

Businesses, entrepreneurs and innovators will lead the way toward lower emissions once the economic signals are clear. The timing and pace will vary across nations, but all major emitters can act now to put the institutions and guide-posts in place to steer their economies toward a low-carbon future and the world toward climate safety.

Turn Toward Climate Safety

Seven key elements

The principal building blocks that need to be put in place by emitters for the turn toward safety are:

1. **Pass a strong U.S. cap-and-trade system** with economy-wide emissions peaking before 2012; emissions should decline at a rate that approaches 4 percent per year by 2020;
2. **Expand and tighten the European emissions trading system** to remain on a declining path and achieve reductions of 4 percent or more per year as quickly as possible;
3. **Cap emissions from remaining OECD countries, Russia and Eurasia** ensuring that emissions peak no later than 2015 and soon decline;
4. **Decrease emissions from deforestation** at least 20 percent below current levels by 2020;
5. **Build a pathway for large emerging economies** to move swiftly to peak emissions by 2020 or shortly thereafter and start on a rapid downward slope;
6. **Enable other countries to create domestic carbon markets** and provide access to the global market through docking stations;
7. **Provide financial aid to the poorest developing countries** to adapt to the most difficult consequences of climate change as they commit to clean development paths.

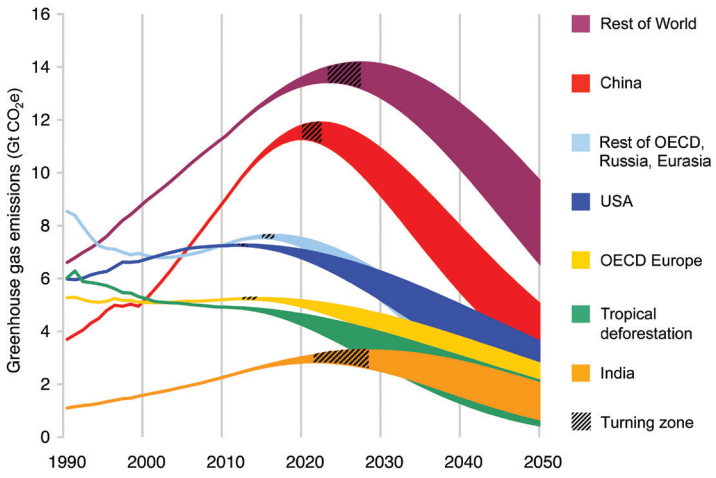
Together, these seven elements, which need to be in place by 2015 at the latest, can provide the platform for a transition to global climate stability (Figure 2).

Funding the turn

Financing currently available for climate mitigation amounts to roughly $50 billion annually.[2] About $5 to $10 billion comes from international government funds, both bilaterally and via multilateral channels. The rest comes from private investments, $10 billion of which comes directly through the present carbon market. Early estimates of the cost of reducing global emissions in developing countries range widely, from $100 to $600 billion per year by 2020.[3] Government funding may increase but cannot realistically make up the difference. The private sector can.

Total global investment averaged around $20 trillion per year before the recession. Foreign direct investment in developing countries alone is over $600 billion.[4] Much of the financing for the turn toward safety can come from funds we are currently

Figure 2. Building blocks for turn toward climate safety



This graph illustrates how the emissions of various nations and regions need to peak in order to combine to achieve the global turn toward climate safety.

preparing to spend on polluting fossil fuels. We now spend $5 trillion annually on them, $200 billion alone on fossil fuel subsidies.[5] The kind of steep downward trajectory in emissions that must be implemented will be extremely effective in redirecting large amounts of private investment toward clean technologies.

But it is crucial as well to recognize the limits of current carbon markets. Currently climate-related capital flows to developing countries primarily via the Clean Development Mechanism (CDM). But the CDM does not provide a platform for achieving global reductions, and cannot mobilize the amounts required to fund the transition to a low-carbon, high-efficiency economy.

The power of innovation and clear economic signals

Reducing emissions steeply and soon is a tall order, but it can be done. It has already been done. In the 1990s, the United States put a cap on the sulfur dioxide emissions that cause acid rain. The program has cut emissions 50% below 1980 levels, essentially solving the U.S. acid rain problem—and has done so at a fraction of the expected costs.

The history of markets and technological innovation demonstrates powerfully that the introduction of new technologies is often explosive rather than linear. Growth in technologies usually follows an S-shaped curve: slow start, rapid acceleration, and then tailing off at the end once the new technologies are

ubiquitous. When innovations catch hold and are propelled by market forces, they spread more widely, quickly and cheaply than anyone beforehand was able to predict.

The transition to a clean energy economy will follow the same pattern. To send the unmistakable signal needed to drive investment and innovation requires hard caps on absolute emissions. This system has the name "cap and trade." It should really be called "rewards for innovation."

Docking stations: Welcoming and rewarding all nations

While different countries may require different mechanisms and time scales, it is essential to create pathways by which all major emitters can move swiftly to join the global transition.

Docking stations—provisions in a global treaty or domestic law that open customized connections to carbon markets for emerging economies—can provide these pathways with environmental integrity.[6] The program for Reducing Emissions from Deforestation and forest Degradation (REDD) offers one; the Small Island Developing States are exploring their own.

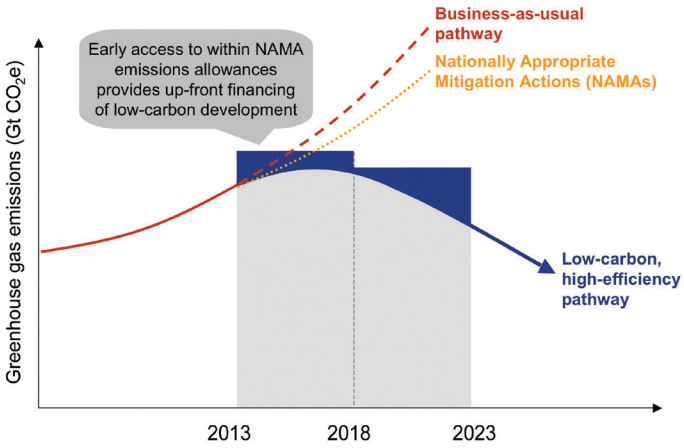
A docking station that allows developing countries to generate additional upfront investments through the carbon market, in exchange for limiting their own emissions on an accelerated basis, could serve as a powerful mechanism for rewarding emerging economies that jumpstart innovation and help drive the turn toward safety (Figure 3). CLEAR: "Carbon Limits + Early Action = Rewards" can generate funding through three channels:

1. Nations that adopt Nationally Appropriate Mitigation Actions (NAMAs) capping the absolute emission of key sectors could gain early access to funds from sectoral emissions allowances.

2. The supply of CLEAR allowances could be linked to more stringent emissions cuts in industrialized countries—like the EU proposal to cut emissions 30% instead of 20% by 2020. More stringent emissions reductions in compliance markets can help assure sufficient demand for CLEAR tons while balancing the impact on carbon markets so as to maintain investment incentives.

3. In the early years, some portion of CLEAR allowances could constitute a "premium budget," drawing on a small amount of atmospheric capacity up front to drive and finance the long-term downward emissions trajectory. This approach must be accompanied by tight safeguards to ensure that these tons are used to finance the most cost-effective investments possible.

Figure 3. A special Docking Station—CLEAR: "Carbon Limits + Early Action = Rewards"



Under CLEAR, relatively small quantities of emissions allowances can generate large financial flows. For example, 0.4 Gt CO_2e/yr of allowances can generate roughly $20 billion per year at $20/ton and a typical leverage ratio of 40:60. In any given country, a mere 40 Mt CO_2e can generate $2 billion—making CLEAR a powerful tool for swiftly generating significant sums.

In all three cases the rationale for CLEAR is the same: a relatively small allotment of tons from a "positive" cap helps finance the transition from business-as-usual to a peak-and-decline course.

Fast forward to the future

We know the turn toward safety must come soon. The clock is ticking.

We know that with clear economic signals we can redirect capital away from wasteful, carbon-intensive infrastructure and use it to finance the turn toward safety.

And we know that within the next decade all major emitting countries must get on a downward trajectory in carbon emissions.

The task before us now is to get to a global deal that makes this happen—without delay.

1 Graph based on IEA and other emissions data; EDF analysis of avoiding warming in excess of 2°C above pre-industrial temperatures for a range of probabilities—50 percent for the upper line of the blue zone, 83 percent for the lower line.

2 Figures from New Energy Finance (2009), UNFCCC (2008) and World Bank's *State and Trend of the Carbon Market* (2009).

3 The lower bound of $100 billion comes from Project Catalyst (2009) and European Commission's *Stepping up international climate finance* (2009); the upper bound comes from IEA's *Energy Technology Perspectives* (2009).

4 UNCTAD estimates Foreign Direct Investment to developing economies in 2008 to be $620 billion.

5 Fossil fuel subsidy figure from UNEP's *Reforming Energy Subsidies* (2008).

6 See http://www.edf.org/documents/10484_Docking_Stations.pdf

Version 11/23/09, http://www.edf.org/documents/10483_Turn_Toward_Safety.pdf

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