Climate change: Buying time at no cost

By Dr Fatih Birol
Chief Economist, International Energy Agency

The short and simple truth is that the world is not on track to meet the target agreed by governments to limit the long-term rise in the average global temperature to 2 degrees Celsius (°C). We have seen some encouraging signs of renewed action on climate change in recent months, such as new cooperation between the United States and China, and President Obama's climate action plan, which includes strong positive actions. New action from the world's largest economies reminds us that we cannot afford to let the threat of global warming slip from our agenda. Overall, we must accept the reality that action to tackle climate change is not something to be done only in the 'good times', and that current economic concerns cannot be seen as a reason to dawdle and delay.

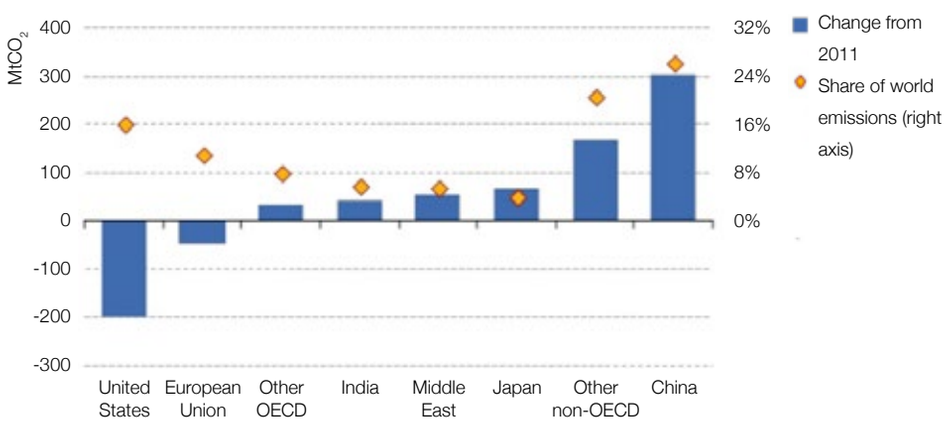
The energy sector accounts for around two-thirds of global greenhouse-gas emissions and is therefore crucial to tackling climate change. Despite positive developments in some countries, global energy-related carbon dioxide (CO_2) emissions increased by 1.4 per cent to reach 31.6 gigatonnes (Gt) in 2012, a historic high. China made the largest contribution to the increase, but its growth was one of the lowest it has seen in a decade, driven largely by the deployment of renewables and a significant improvement in the energy intensity of its economy (Figure 1) In the US, a switch from coal to gas in power generation helped reduce emissions, bringing them back to the level of the mid-1990s. However, the encouraging trends in China and the US could easily both be reversed.

Global leaders have committed to a goal to limit the increase in average global temperatures to 2°C, but existing emissions trends will take us way beyond the 2°C goal. Average temperature increases over land, particularly in high northern latitudes, would be much higher than this and temperatures in cities would be higher still. Weather systems and rainfall patterns will change too, with floods and droughts, heatwaves, and wind storms all being affected. There is also the risk that we push beyond climate thresholds, triggering the release of large amounts of greenhouse-gas emissions from, for example, thawing permafrost or the destabilisation of the Greenland or West Antarctic Ice Sheets.

Climate action at no net cost

The good news is that much more can be done to tackle these emissions without jeopardising economic growth. In the IEA's *World Energy Outlook Special Report: Redrawing the Energy-Climate Map*, we identified four national energy policies that could stop the growth in global energy-related emissions by the end of this decade at no net economic cost (modelled as a "4-for-2°C Scenario"). First, adopt targeted energy efficiency measures for specific products, mainly in the form of minimum energy performance standards. The energy savings achieved means that these would more than pay for themselves. Second, limit the construction and use of the least-efficient coal-fired power plants, also helping to reduce local pollution. Third, reduce methane emissions into the atmosphere that occur during oil and gas production. Finally, phase out fossil-fuel subsidies that act as an incentive to consume fossil fuels, which are much higher than any carbon price existing today. These pragmatic policies have been selected because they can deliver significant reductions in energy-sector emissions in the near-term, relying only on

Figure 1: CO_2 emissions in 2012



Source: IEA World Energy Outlook Special Report Redrawing the energy-climate map (2013)

existing technologies that have already been adopted and proven in several countries.

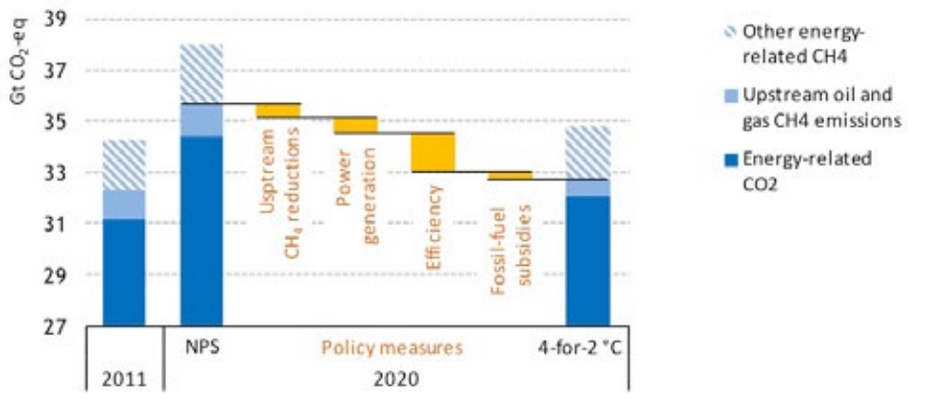
Collectively, these policies would reduce global greenhouse-gas emissions by 3.1 Gt CO_2-equivalent relative to that otherwise expected in 2020 (Figure 2), at no net economic cost for any country or region. Rapid and widespread adoption of these policies could also act as an important bridge to further action, buying precious time while international climate negotiations continue. In parallel to these actions, we must also continue our efforts to deploy and reduce the costs of critical low-carbon technologies at scale, such as renewables, particularly wind and solar, and carbon capture and storage (CCS). CCS is an important asset protection strategy for the energy sector, helping unlock fossil fuel resources that would otherwise need to remain underground. In fact, a delay in CCS deployment could increase the cost of power sector decarbonisation by US$1 trillion and result in lost revenues for fossil fuel producers, particularly coal operators. While increased climate action need not impact negatively on the economic recovery, delay in taking action would make the climate goal more difficult and more costly to achieve, risking significant economic and social disruption for future generations, especially in the most vulnerable regions.

The global energy sector is not immune from the physical impacts of climate change and must adapt. The energy system is currently vulnerable to a range of climate change-related impacts, including extreme weather events that can be sudden and damage or destroy power plants and grids, oil and gas installations, wind farms and other infrastructure. In response to the damage caused by Hurricane Sandy, New York announced a $20 billion investment plan to enhance infrastructure to prevent flooding, increase the resilience of power systems and so on. It is likely that other cities will need to follow its lead in making their critical infrastructure more climate-resilient, particularly where rising sea level increases vulnerability. Other climate impacts are more gradual, such as changes to heating and cooling demand, sea level rise on coastal infrastructure, shifting weather patterns on hydropower and water scarcity on power plants. To improve the climate resilience of the energy system, governments will need to design and implement frameworks that encourage prudent adaptation, while the private sector will need to assess the relevant risks and impacts as part of its investment decisions.

A burden of responsibility

As the largest source of greenhouse-gas emissions, a significant burden lies with the energy sector to deliver the 2°C climate goal committed to by governments. The industry can rise to the challenges brought about by climate change, but this will require the reorientation of a system valued at trillions of dollars and expected to receive trillions more in new investment over the coming decades. In considering our efforts to tackle climate change, we must be careful not to fool ourselves on two fronts. Firstly, we must not think that we can put off action until tomorrow and, secondly, we must not lapse into thinking that a temperature increase of 3, 4 or 5°C is acceptable. The weight of scientific evidence does not justify such a position and it should be challenged before it evolves into a creeping consensus. Our current climate trajectory needs to be seen as a reason to raise ambitions, not as an excuse to lower our expectations. ❑

Figure 2: Change in world energy-related CO_2 and CH_4 emissions by policy measure in the 4-for-2°C Scenario



Notes: CH_4 = methane. NPS = New Policies Scenario. The New Policies Scenario is the central scenario of the IEA's World Energy Outlook and reflects its projections of energy developments based on existing policies and the cautious implementation of announced policies yet to be implemented.

Source: IEA World Energy Outlook Special Report Redrawing the energy-climate map (2013)