

Today's emissions must be significantly reduced at the same time as the global economy and the world's population are growing, posing significant political, economic and security challenges worldwide.

Climate Change Can Be Curbed – Will It Happen?

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Can climate change be slowed down? If nothing is done, total annual greenhouse gas emissions will increase from 40 billion tonnes of carbon dioxide (CO₂) equivalents in 2002 to 58 billion tonnes in 2030. In 1990 the emission level, calculated in the same way, was approximately 35 billion tonnes.

If global warming is to be limited to 2 degrees C with a reasonable degree of certainty, the sustainable concentration of greenhouse gases in the atmosphere should be limited to a level of 450 parts per million. The annual emissions in 2030 must be restricted to 31 billion tonnes, or in other words there must be a decrease of 27 billion tonnes.

Our observations indicate that this is fully possible. Over two thirds of the measures can be achieved with available solutions. A significant proportion – 25% – appears possible to introduce at costs that are insignificant or negative, provided that suitable control measures are applied. No one technique or solution can solve the problem, but the sum of all options makes the necessary changes viable. (fig. 1) The measures are largely linked with new building or major investments, which shows that there is no conflict between continued economic growth and increased climate efficiency – quite the opposite in fact.

Beyond 2030, new technology can have significantly

greater effects. An estimate of one possible trend from 2030 to 2070 shows that the power sector in the long term could be entirely free from emissions and that the quantity of emissions from other sectors could be substantially limited despite continued vigorous economic development and population growth on a global scale.

How is the transformation to be brought about? We must put prices on emissions and in this way use the power for change that is offered by the market. The total cost of this transformation depends primarily on how it is introduced. Sudden changes that give shock effects in the economy and late measures in the form of emergency braking will prove to be expensive. Sustainable and long-term measures can reduce the total costs to very low levels.

The climate challenge is basically political. The countries of the world must agree on binding emission restrictions. If this is to be possible, the restrictions will have to be designed so that they do not constitute obstacles to development and do not create an economic shock for any one country. At the same



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Global cost curve

Marginal cost of abatement - examples

€/t CO₂

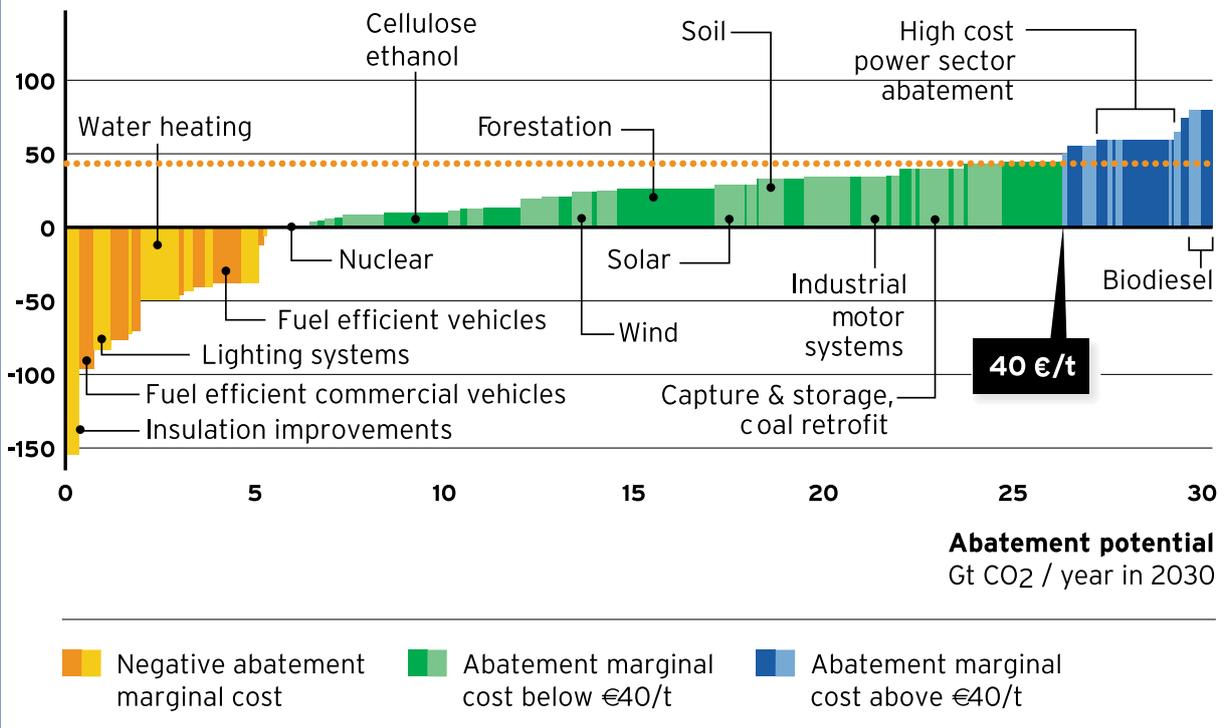


Figure 1. Cost comparisons for reducing emissions.

time, the effects on the power of international competition must be reasonable and acceptable for all parties concerned. According to the calculations we have made, this is fully possible but, of course, makes major demands on the ability of the international community to co-operate. Unless the world's leaders manage to handle the challenge in time by steering the markets in the right direction, the cost of the damage caused will increase and significantly more draconian measures will in time become necessary.

In the long term, there is a threat that the ultimate instrument of politics, armed conflict, will have to be used.

The challenge is also one of an economic and security policy nature. It is on this foundation that the give and take to build up global understanding must

be based. The foundation must consist of a common acceptance of responsibility and joint commitment. The mapping that has been made of potential measures shows clearly that it is not possible to meet the threats

on the climate through measures in certain regions or sectors. The entire global economy must be transformed.

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Background

A report entitled "Curbing Climate Change – an outline of a framework leading to a low carbon emitting society" that was published by Vattenfall in 2006, analyses developments during the period up until 2100. Unless vigorous measures are taken in global consensus, the emissions will increase dramatically, to levels far above those at which the effects can be handled in a reasonable way.

In co-operation with McKinsey, Vattenfall has analysed the possibilities of reducing greenhouse gases globally up until 2030. We have focussed on identifying concrete measures. The analysis covers the entire world economy. The results, which are available at www.vattenfall.com/climatemap, are striking. There are major opportunities for real emission restrictions in relation to the development that is likely to take place if no efforts are made.