

Science for Environment Policy

Climate policies also deliver cleaner air and enhanced energy security

Integrating climate change policies with pollution control and energy security measures can deliver improved air quality, better public health and diversified energy supplies, and at a lower total energy cost than many previous studies have indicated, according to recent research.

Often, energy policies do not consider the substantial co-benefits that can be achieved by integrating energy strategies with other policy areas. The authors of this study argue that integrated solutions for energy security, [climate change](#) mitigation, [air pollution](#) reduction and [health](#) improvements can deliver real savings for countries and regions developing sustainable energy systems.

To explore how the deployment of measures to mitigate climate change by 2030 could deliver co-benefits, this study used an integrated assessment model of the global energy system to develop a series of possible future energy systems. These scenarios were based on numerous combinations of strong, intermediate and weak policy measures to achieve climate change, energy security and air pollution objectives, according to the priorities placed on each of these issues by decision makers. The impact of current and planned pollution control legislation to 2030 was compared with what would happen if those policies were made more stringent.

Total energy costs of the individual scenarios varied considerably depending on the changes that would need to be made to meet future energy system targets and the stringency of those targets. For example, if stringent policies were set across the board for climate change, energy security, air pollution and health objectives, total energy costs would range from 3.0 to 3.8% of global GDP. This compares to about 2.1% of GDP in the case of no significant policy changes, no new climate or energy security policies and full implementation of planned air quality legislation.

The study reveals that implementing near-term, strong pollution policy measures to control emissions would lead to significant reductions in air pollution and health-related impacts, even without the intervention of climate policies, although they would be unlikely to significantly reduce greenhouse gas (GHG) emissions. However, implementing early initiatives to mitigate climate change (i.e. introducing low-carbon technologies and encouraging energy efficiency) would significantly reduce GHG emissions. As a consequence, the related health impacts could be reduced by up to 23 million DALYs (disability adjusted life years) in 2030, a 65% reduction compared to a case where no climate policies were introduced and planned pollution controls were implemented.

Some air pollutants may have a cooling effect on the climate, so there could be a trade-off between reducing pollutants and curbing rising global temperatures. Furthermore, although strong climate change policies could lead to increased spending, on developing renewable energy, for example, this could be partly offset by a reduction in the cost of air pollution control equipment. Overall savings could amount to US\$100-500 billion (€75.22-376.11 billion) a year to 2030, i.e. up to almost half the level of today's investments into the global energy system.

Enhanced benefits for energy security are also gained when climate policies are enacted earlier. Climate change initiatives that improve energy efficiency and focus on regionally sourced renewables will lead to fewer imports of fuel, making countries less reliant on foreign supplies. At the same time, decarbonisation measures, particularly the switch to renewables, will result in a more diverse energy mix and improve the resilience of the energy system of a country or region. The study suggests that early spending on climate policies could save up to US\$130 billion (€97.78 billion) a year by 2030 that would have otherwise had to have been invested in measures to achieve energy security.



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