

## Climate change: Commission dishes the dirt on the importance of soil

*A new report made public by the Commission underlines the crucial role that soils can play in mitigating climate change. Soils contain around twice the amount of carbon in the atmosphere and three times the amount to be found in vegetation. Europe's soils are an enormous carbon reservoir, containing around 75 billion tonnes, and poor management can have serious consequences: a failure to protect Europe's remaining peat bogs, for example, would release the same amount of carbon as an additional 40 million cars on Europe's roads. The report, a synthesis of the best available information on the links between soil and climate change, underlines the need to sequester carbon in soils. The technique is cost competitive and immediately available, requires no new or unproven technologies, and has a mitigation potential comparable to that of any other sector of the economy. In line with the Thematic Strategy for soil protection (see [IP/06/1241](#)), the current trend of soil degradation needs to be reversed, and soil management practices must be improved if a high rate of soil carbon sequestration is to be achieved.*

Environment Commissioner Stavros Dimas said: "Properly managed soils can absorb enormous quantities of carbon from the atmosphere, buying us valuable time to reduce emissions and move towards sustainability. But Europe's soils urgently need better protection, and the answer must be a coordinated solution. I welcome this report, which reinforces the message of the June 2008 Commission conference on Soil and Climate change, and gives a clear indication of the direction we need to take."

### Interrelations between soil and climate change

Europe's soils contain an estimated 73 to 79 billion tonnes of carbon. Almost 50% of this carbon is sequestered in the peat bogs of Sweden, Finland, the United Kingdom and Ireland. Soil plays a huge role in climate change, because even a tiny loss of 0.1% of carbon emitted into the atmosphere from European soils is the equivalent to the carbon emission of 100 million extra cars on our roads – an increase of about half of the existing car fleet. Conversely, at today's prices, an increase in soil carbon of the same small amount would be worth some €200 million.

Land use significantly affects soil carbon stocks. Most soils in Europe are accumulating carbon: soils under grassland and forest act as sinks, sequestering up to 100 million tonnes of carbon per year, although soils under arable land act as net emitters, releasing between 10 and 40 million tonnes of carbon per year. Carbon is lost from soils when grasslands, managed forest lands or native ecosystems are converted to croplands, a process that is slowly reversed when cropland is converted back.

Some of the report's conclusions make for uncomfortable reading. As the world population continues to grow, ever greater areas of grasslands and forests are converted to croplands, and soils that are currently carbon sinks will turn into net emitters. The most effective strategy to prevent global soil carbon loss would be to halt these land conversions – but this may conflict with growing global demand for food.

### **Good peat management is crucial**

The report underlines the importance of protecting soils that are high in carbon. Pristine peatlands covering a surface area of around 310,000 km<sup>2</sup> (an area equivalent to half of France) have now been lost to agriculture, forestry, urbanisation or erosion. More than half of the remaining areas are also being drained, and this could result in potential losses in excess of 30 million tonnes of carbon per year (equivalent to an additional 40 million cars on our roads) from agriculture alone. The most realistic option to maintain and improve soil carbon stocks is to protect these soils, most of which are located in northern Europe.

### **Improvements to agricultural practices needed**

Soil management practices have a considerable impact on carbon stocks. The report underlines how agricultural practices can be improved to minimise carbon losses, at the level of the crop and the crop residues, and by ensuring that soils are protected against water and rain with a permanent vegetation cover, less intrusive ploughing techniques and less machinery. Such practices could sequester between 50 and 100 million tonnes of carbon annually in European soils.

### **More monitoring**

The analysis was hampered by a serious lack of EU-wide data on soil carbon and soil carbon trends. There is therefore an urgent need to improve monitoring of soil carbon stock and trends to ensure that soils play a more prominent role in a future climate change mitigation agreement.

### **Blocked legislation**

The Commission presented a legislative proposal to protect European soils in 2006, with support from the European Parliament, but opposition from five Member States means that the proposal is currently blocked in Council.

### **For more information:**

Report "Review of existing information on the interrelations between soil and climate change": [http://ec.europa.eu/environment/soil/publications\\_en.htm](http://ec.europa.eu/environment/soil/publications_en.htm)

Soil and Climate Change conference (June 2008):  
[http://ec.europa.eu/environment/soil/conf\\_en.htm](http://ec.europa.eu/environment/soil/conf_en.htm)

[MEMO/06/341](#) on the Thematic Strategy for soil protection

Soil web pages on *Europa*: [http://ec.europa.eu/environment/soil/index\\_en.htm](http://ec.europa.eu/environment/soil/index_en.htm)