A worldwide expansion of relatively cheap shale oil could put investment in renewable energy and global emissions targets under threat, as well as posing other environmental risks.

The shale oil industry is still in its infancy, but has the potential to reach up to 12 per cent of global production, potentially pushing down oil prices by as much as $50 per barrel by 2035, according to a new report by consultancy firm PwC.

Lower oil prices are more likely to extend production rather than simply increase it, but this could make alternative low carbon technologies less attractive, Jonathan Grant, director of sustainability and climate change at PwC, told BusinessGreen.

However, the report also notes that cheaper oil could displace production from higher cost and more environmentally sensitive areas such as the Arctic and Canadian tar sands, while tax windfalls could provide finance for carbon capture and storage and other low carbon technologies.

It adds that global GDP could receive a $2.7tr boost by 2035 with a 25 per cent to 40 per cent cut in global oil prices resulting from shale oil production. Under this scenario, UK GDP would receive a 3.3 per cent boost in 2035, China would see a three per cent GDP increase, US GDP would rise 4.7 per cent, and India's would climb by up to 7.3 per cent.

But Grant acknowledged any related reduction in renewable energy investments and an expected increase in mobility arising from the availability of lower cost oil is likely to increase total carbon emissions in the long term and potentially impair future economic growth.

"We're talking about a substantial increase in reserves ... that is likely to lead to a greater carbon stock in the atmosphere in the long term," Grant said. "We might get an economic high over the next few decades, but it could well worsen the lows."

In the US, shale oil production has risen from 111,000 barrels per day in 2004 to 553,000 barrels a day in 2011, equivalent to an annual growth rate of around 26 per cent. In the rest of the world the industry remains in its early stages, although China, Australia, Mexico, Argentina, Russia, and New Zealand are all exploring the potential for shale oil development.

A Department of Energy and Climate Change (DECC) spokesman said there is no estimate of potential reserves in the UK and to date there have been no explorations, adding the energy source is "not on the horizon" for the country at the moment.

Even so, green campaigners have come out strongly against exploiting any potential shale oil reserves.

Supporters of shale gas argue that the fuel source can deliver net carbon savings by replacing coal, but shale oil remains significantly more carbon intensive raising concerns that the availablility of a new cheaper source of oil will only lead to higher overall emissions.

"Digging up and burning new reserves of fossil fuels can only exacerbate the huge negative impact on the global economy of climate change," said Doug Parr, chief scientist at Greenpeace, in an emailed statement.

"Any short term price gains for consumers will ultimately be dwarfed by the impact of rising temperatures on every aspect of economic life."

Tony Bosworth, energy campaigner at Friends of the Earth, similarly warned of the environmental problems increasing fracking could cause, adding that governments should instead focus investment on green technologies.

"We've already got more than enough fossil fuels - more than we can afford to burn if we want to avoid catastrophic climate change," he toldBusinessGreen. "The UK has a huge renewable resource and if we want [to meet climate targets] we should be investing in those."

However, Grant warned advocates of leaving fossil fuel reserves in the ground were "not going to win that argument" given world leaders focus on economic growth.

"The use of fracking is obviously controversial because of the environmental and community impact and this would have to be carefully regulated, which may in turn have implications for the viability of extracting the resource," Grant said.

"[But] the experience with shale gas is that when we gain access to more fossil fuel reserves we try to extract them."