Think solar not nuclear for the energy of the future, say UK scientists

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Solar panel installation programmes in Japan and Germany should be replicated in Britain, say researchers

Solar rather than nuclear energy should be the UK government's priority in planning future energy production, according to scientists writing this week in the journal *Nature Materials*.

Challenging advocates of the nuclear option, researchers from Imperial College London argue in their Commentary article that photovoltaics, the direct conversion of sunlight to electricity, could match and exceed the nuclear industry's current output before any new reactor could begin operating.

The UK currently generates 12 gigawatts of electricity from nuclear power stations, around one sixth of the country's total electricity output.

This is the same amount of electricity that it is predicted Germany will generate through photovoltaics by 2012 if it continues to expand its solar energy programme at its present rate.

The researchers write that the UK, which has a similar sunshine profile to Germany, could produce 12 gigawatts of solar electricity by 2023 if production is expanded by 40% per year, less than the world increase of 57% in 2004.

However, in contrast to other developed countries, the UK has recently halted its programme of solar panel installation on 3,500 rooftops halfway through. This compares to the completed installation of 70,000 installations in Japan and 100,000 in Germany. Lead author Professor Keith Barnham of Imperial College London says:

"The UK is clearly taking a very different decision to its industrial competitors and, I believe, a less sensible one. The sun is our largest sustainable energy source and the technology needed to tap into it is very simple. As research continues, this will become an increasingly cheap and efficient way of meeting our energy needs."

One obstacle to the development of a competitive solar energy industry in the UK, according to the article, is a pro-nuclear bias within its scientific and government establishments. Pointing out that the UK Research Councils spent seven times more in 2004-2005 on nuclear fusion research and development than it did on photovoltaic research, Professor Barnham says:

"Fusion is still perhaps 40 years away from being effectively developed and in any case is likely to produce electricity at one quarter the electrical power density which the solar cells that we are working on are already producing in London. It's absurd that these funding bodies are putting huge amounts of money into something that may not deliver

rather than supporting something that already does."

The next generation of photovoltaic cells, known as quantum well cells, now under development convert direct sunlight and can track the sun to keep light focussed on the cell. Early testing suggests that these concentrated systems could produce twice as much electricity per unit area as the conventional systems now in use. Professor Barnham adds:

"These new cells are highly efficient and are based on technologies similar to those used for the amplifiers in mobile phones, so the ability to manufacture them on a large scale is already in place. This is the kind of technology the UK should be investing in if we are serious about producing pollution-free energy."

Source: Imperial College London