

RESPONSES TO “REACTIONS TO THE TREC PROPOSAL” BY DAVE ELLIOTT

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Reactions to the TREC proposal

Dave Elliott

The TREC scheme sounds wonderful and if it worked it would clearly have major implications for reducing emissions: see the graph right. But is it feasible?

Certainly it's useful to have the EU renewable potential analysed in such positive terms. But what about imported power from CSP? That's pretty daunting. What are the problems? Firstly, there are the obvious practical issues to do with running CSP in deserts- sand storms would cut output.

Such plants have been in operation in deserts for 15 years—no problems with sand storms. If one is expected, the mirrors are turned "face down", so the sand blast does no harm. During a sandstorm fossil fuel burners can deliver heat to the steam generator. So called "hybrid operation", may be for 2-5% per year.

TREC say that the plants could store solar heat in water tanks for a while, but of course that would add to the cost.

No, no one can store heat above 100°C in water. Heat is stored at 400 - 500°C in molten salt. Adding heat storage to the collectors adds to the annual operating hours of the full plant. In the end, power plants with heat storage produce electricity cheaper than in day light mode only.

TREC also seems very optimistic about overall costs falling- but CSP is a fairly well established technology- e.g there have been units in use in the USA for decades and so major improvements may be less likely, although of course technological breakthroughs are always possible.

No, this is a misunderstanding. Collector production costs do not come down because a collector is in operation. Costs come down when new ones are built—which has not happened in the period between 1992 and 2006. Cost reduction is evaluated from demonstrated industrial learning curves.

There is also the potential local environmental impact of CSP on fragile desert ecologies,

Which one? please, be more specific. The so called albedo problems can be exactly avoided by proper design.

and the environmental and social implications of installing giant HVDC links across Europe.

No form of renewable energy is without impact. CSP has very low impacts, relatively, much lower than PV.

Burying them underground would be very expensive. The HVDC grid would also present major terrorist targets- the chance the cripple whole regions. TREC say that there could be some duplication of links in a web-like network, which would be proof against interruption, but of course that would add a lot to the cost.

There is always redundancy required—because even without terrorist there are technical failures—actually much more often than attacks. The whole system is calculated for 25% reserve capacity! Further, terrorists could easily cut down power lines within Europe. That would not be any more difficult.

Moreover, do we really want the EUs energy still to be imported on large scale -swopping oil for solar? Is that reliable, or even ethical? TREC say that some of the power would be used locally not least for desalination. Fair enough. And there could be some political and social benefits form a new interaction with N Africa- as long as it wasn't exploitative. But the whole project seems to assume a degree of political and economic integration that is, sadly, a long way off.

Yes, there were times where Germany did not buy energy from France, not such a long time ago. Now we do, and vice versa. Is your logic of "home made" not also good for cars or computers? They could be manufactured in each town of more than 100,000 people easily. Should car and chip factories now be decentralized, or should we only buy British or European?

Airtricity's Supergrid idea for the North sea in proving quite hard enough to sell to the EU and its constituents countries- who are at present busily arguing about whether a single EU energy market can really work, when much of the capacity is owned by a few giant companies.

This is a question of political regulations, by which such a danger easily could be avoided. But it happens already inside single nations—we don't need international grids to get into that problem.

'Unbundling' is the buzz word at present, so it may be a while before anyone can really consider how giant new pan EU-and-wider schemes can be put together. On the more positive side, it is true that energy losses can be relatively low with HVDC cables (TREC say 3% /1000km), and in theory you can bury them, to reduce the visual impact- but a large extra cost. But it still seems rather a long way off.

There are already contracts for the first trans-mediterranean power cables.

And finally, why go to all the expense of reconcentrating solar energy and then having to transmit it long distances when it is naturally distributed to every place on earth? Maybe not as much, in terms of intensity, everywhere

as we might like, but still enough to be usable for on-the-spot heating & electricity production.

Try a solar cooker—I did. It is not very practical! Why should we not cooperate with our neighbours on energy, if they can do it better?

At some point, TREC's long distance transmission ideas may be worth exploring, if not for the EUMENA area then elsewhere in the world. And there have also been even more ambitious ideas for global level power integration—then you can always get power from the sun from the sunlit hemisphere! However, nice though it might be to hope for regional and even global solidarity being forged by mega projects like this, for the moment, sadly, it seems unlikely that politically we are up to it. But that's not to say we shouldn't try—although it's not clear if CSP is the right technology.

It definitely is not the only one, but it is working, and has intrinsic storage capacity.