

Tidal power on the Severn

The official Severn Tidal Power Feasibility Study was launched last year.¹ Its aim is to enable government to decide whether it could support a tidal power scheme in the Severn Estuary, and if so on what terms. Last January, the Study produced its Phase One Consultation report. In response, the Royal Society of Arts and the British Science Association (with a number of other partners and supporters) mounted forums in Bristol² and in Cardiff for members of the public to debate the issues. Outcomes were submitted to the Department for Energy and Climate Change Consultation and will inform Phase 2 of the Study.

Here, **Eric Albone**, **Bob Foster** and **Kay Powell** bring us up to date.

Hard to choose

Eric Albone sets the scene

How do we balance the need for secure energy with the costs to the environment? The answers depend on values and this is why public engagement is so important. In considering tidal power from the Severn, there are questions about the impact of any scheme on wildlife; changed use of the estuary; siltation and flood protection; the regional economy; the pluses; the minuses; the risks. And always, of course: 'Could money be better spent in other ways?'

Renewable energy for the taking

Severn tidal power could make a definite contribution to meeting the nation's targets for attaining secure renewable energy and CO₂ reduction. Fourteen metres in range, the twice-daily tides are some of the largest in the world. The Atlantic Ocean funnels into the Severn Estuary, constituting a predictable, untapped, renewable and secure resource.

According to the Department of Energy and Climate Change, Severn tidal power could account for up to 4.8 per cent of the UK's electricity, with a resultant annual reduction in CO₂ emissions of over 7m tonnes. This compares with the UK's 2006 CO₂ emissions of 69.5m tonnes, and would represent a 1.3 per cent contribution to the government's goal of reducing CO₂ levels to 159m tonnes by 2050.

Many options

There are many options. Some, like the barrages, would use established technology. Some, unproven as yet, would use the tidal stream; for example, tidal reefs and tidal fences. Each has its pros and cons, and of course there is the option of doing nothing. The bigger the intervention, the bigger the rewards but the bigger the costs. The government's current feasibility study started with ten options, and after a year's sifting this was narrowed to five for public consultation, although nothing has been completely ruled out.

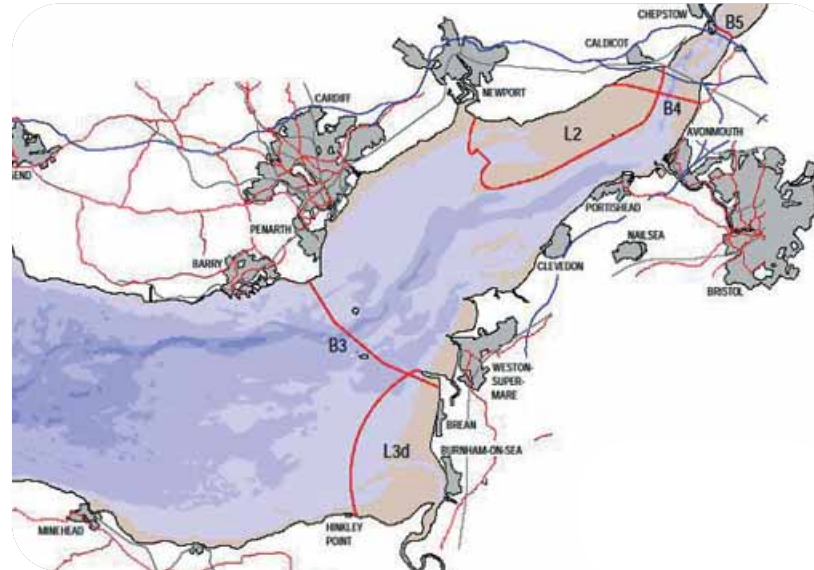
The short-listed five comprise three different barrages and two lagoons. The largest barrage (B3 on the map)

would stretch across the estuary 16 miles from Weston to Cardiff. The other two, (B4 and B5) much shorter and producing much less energy, would be further up the estuary close to the Severn Bridge. The lagoons (L2 and L3d) would be very large, resembling barrages but not spanning the estuary. They would have less impact on fish and port traffic (a major concern for a Cardiff-Weston barrage) but would also cause considerable loss of intertidal habitat.

Both barrages and lagoons would impound water as the tide comes in and generate hydroelectricity by releasing it through turbines at low tide. Lagoons are a bit of a step into the dark as none has yet been constructed anywhere. There are concerns about silting, and of course they require much longer wall construction than a barrage (itself no mean task) which goes straight across the estuary. Tidal stream options are not among the short-listed five.



Dr Eric Albone is Chair, British Science Association Bristol & Bath Branch and RSA Wales & Western Region
 eric.albone@clifton-scientific.org



Participants' opinions

Bob Foster found enthusiasm and scepticism

Most people at the two public meetings said yes, harness power from the estuary somehow. Taking the Cardiff and Bristol forums together, 80 per cent of participants thought that Severn tidal energy should be harnessed, 6 per cent believed it should not, and 14 per cent were undecided. But how to harness it?

Of those that wanted to, few favoured the lagoon option, with the others split between a 'traditional' coast-to-coast barrage and various alternatives such as tidal reefs, tidal streams and other new technologies. These latter were not shortlisted in the consultation report because of lack of information on their effectiveness, although they appeared to be promisingly cost-effective and less damaging to the environment.

A common opinion was that, although Severn Estuary energy should be utilised in some way, we should look at this in the context of other energy resources such as nuclear, solar, wind and wave power, and energy conservation measures.

Common opinions

Some of the most common points made were that the Feasibility Study short-list of options was too limited; there should be much more investigation of emerging technology even at the cost of delay in implementation. Many also asked whether time and money would be better spent researching the newer technologies such as tidal fence/reef which, potentially, look more cost-effective and less environmentally damaging. There was a feeling that the plans were based on short-term goals at the expense of adaptability and flexibility.

Value for money

Others argued that the projected construction cost of a Cardiff-to-Weston barrage (£20 billion) could be spent more effectively and flexibly elsewhere, such as on nuclear power, energy conservation and research into new energy generation technologies. What, they asked, if the new technologies that are being developed make the barrage relatively uneconomical?

The impact of a major barrage is difficult to predict, but is sure to be extensive and irreversible. How could a coast-to-coast barrage hope to satisfy EU law on the conservation of habitats? Can we afford to take such a risk?

Public scepticism

There was much scepticism about the effectiveness of the consultation. Participants felt that decisions would be made by the politicians in the light of current urgent national and global needs, rather than as part of a long-term logical energy policy. And what happens if there's a change in government? Won't this be a political decision at the end of the day?



Bob Foster is a maths and science tutor and organises science cafes in Bristol
bobfostertuition@googlegmail.com

Part of the solution

Kay Powell hopes for more engagement

Could this sort of public engagement be the new politics? Could it even prove to be a means of improving outcomes? The UK government is aiming for public engagement much earlier in planning issues at all levels, but has not yet solved the conundrum of how to do it in relation to national policy or major infrastructure.

The Welsh Assembly Government, as a devolved administration, has shown that it can bring government nearer to people by involving them in shaping emerging policy – for example their Spatial Plan has been developed following extensive public engagement.

More than the web

The UK and Welsh Assembly governments talk to key stakeholders on both sides of the estuary, but rely heavily on web-based consultation to reach members of the public. In the absence of government-sponsored public meetings on their recent consultation, these events could become exemplars of how to engage people more actively. Government needs to be encouraged to involve the public more effectively as the technical studies of options for the Severn progress.

The Saturday morning Bristol event comprised pithy, informative presentations from a variety of perspectives, followed by facilitated groups and a plenary report-back and discussion. The evening event in Cardiff attracted a larger turnout and the presentations led directly into a plenary question and answer session. Both were written up and sent into the government as a response to their consultation. In the process, the events demonstrated that independent facilitation can help to improve awareness and understanding.

Constructive conclusions

It may not be possible to reach complete agreement, but we are more likely to do so if we share accessible, non-technical information on what is known and what remains uncertain, so that we can have a better informed dialogue. The two consultation events on tidal power in the Severn Estuary showed the ability of members of the public to grasp complex issues and come to constructive conclusions. Engaging the public before decisions are made should be seen as part of the solution, not part of the problem.

1 See <http://tinyurl.com/ox3l3r>

2 Copies of the Public Forum Reports are available on http://www.uwe.ac.uk/ishe/events/renewable_energy_severn.shtml



Kay Powell is a professional planner and member of the RSA
powellks@tiscali.co.uk