Economic Development Committee **EDC 05-02(p6)**

Date: **6 March 2002**
Time: **14.00 – 17.30**
Venue: **Committee Room 1, National Assembly for Wales, Cardiff Bay**
Title: **Target for renewables**

Purpose of paper

1. To provide a basis for a discussion on the target for renewable energy production in Wales that the Committee should recommend in its report.

Background

2. The Committee is aware of the UK target under the Renewables Obligation to generate 10% of electricity from renewables sources by 2010 and the proposal in the PIU report "The Energy Review" for this to increase to 20% by 2020.

3. The Welsh Assembly Government has in "Plan for Wales 2001" set a target to generate 10% of electricity production in Wales from clean energy sources. This includes energy generated from clean-coal technologies

4. EDC Members discussed on 13 Feb the way in which a target for Wales might be set and agreed that it was not appropriate to do this in terms of a percentage of total generating capacity in Wales. This is because energy supply operates at a UK level and a renewables target based on a percentage would be arbitrarily influenced by the closure or construction of a generating plant. Members agreed that it was more appropriate to consider a target in terms of the level of output over a year.

5. Members also discussed a proposal to set a target for 2010 of 4TWh for electricity and 2TWh for heat. It was also suggested these should double by 2020.

6. The attached Table 1 shows current output in terms of capacity and electricity production over a year for different categories of renewable resource. It also shows how these might rise under 4 different scenarios reflecting different levels of development. 3 of these reflect forecasts made by AEA Technology, the 4th a scenario proposed at the recent workshop in Newport. Fuller details of these are given in Annex A.

7. Current electricity output is roughly 0.88 TWh. The simplest scenario leads to output of 1.70 TWh by 2010; the most extreme to 4.53 TWh. The others give values in between and the Committee will need to consider which assumptions it considers most realistic to pursue.

8. It is possible to look at these in different ways, but to set this in context, the 4TWh figure discussed at the last meeting would require a range of developments along the line something like:

- 3 large (150MW) off shore wind farms;
- one new on-shore large wind farm (extra 50MW - individual wind turbines can now be up to 2MW in size);
- dramatic increase in small and medium size on-shore wind farms (currently 42MW and something over 200MW needed)
- two large and 6 smaller biomass CHP schemes (total 80MW);
- two large CHP plants fuelled by municipal waste (15 MW);
- about 15 CHP plants fuelled by landfill gas (20MW);
- about 30 new small scale hydro plants (15 MW);
- one small tidal barrage (Conway) (30MW);
- one tidal stream operating (5MW)

Comparison with current production

9. Notwithstanding the difficulties in setting targets relative to generating capacity, the Committee will wish to note that current electricity production in the UK is 381 TWh p.a. and, pro rata to population, Wales' 'share' of a 10% UK renewables target would amount to around 1.9 TWh. Electricity production within Wales itself is currently 33.5 TWh p.a. on which basis 10% from renewables would amount to a substantially higher figure of 3.35 TWh.

Action

10. The Committee is invited to consider the level of target it might recommend for electricity generated from renewables in Wales by 2010.

Committee Secretariat
February 2002

Table 1 Forecast outputs from renewable sources under different scenarios

Capacity (MW)	Current production	AEAT scenario	1GW target (Newport workshop)

		‘Business as usual’	Accelerated Development	Green Future	
Total wind	153	308.4	514.0	1023.8	700
Total biomass/waste	14	60.2	77.7	152.7	100
Hydro	160	165.0	172.0	180.0	180
Other	0	0.9	2.0	42.4	20
Total (MW)	**327**	**534.5**	**765.7**	**1,398.9**	**1,000**
Electricity production (TWh)					
Total wind	0.40	0.81	1.35	2.69	1.84
Total biomass/waste	0.12	0.53	0.68	1.34	0.88
Hydro	0.35	0.36	0.38	0.39	0.39
Other	0	0.00	0.01	0.11	0.05
Total TWh(e)	**0.88**	**1.70**	**2.41**	**4.53**	**3.16**
Potential heat TWh(th)	**0.25**	**1.05**	**1.36**	**2.68**	**1.75**

Annex A

<u>Definitions of scenarios considered</u>

Extracted from papers provided by AEA Technologies

Lower End of Target Range "Business As Usual" – 1.70 TWh

- This represents overall a moderately ambitious deployment. For some technology areas (e.g. landfill gas) it continues the current trends within Wales, and so could be partly classified as "Business as Usual". For other technologies (particularly offshore wind, biomass and PV) it represents a major increase from the current minimal Welsh uptake;
- In reaching the deployment implied by this target figure, a number of existing technical, economic or infrastructural barriers to some technologies are assumed to be overcome or at least addressed to some extent;
- Onshore wind schemes are deployed at levels representing approximately a doubling of the current installed capacity. Schemes are typically somewhat smaller (fewer turbines per scheme) than hitherto, but there is a significant increase in typical output per turbine;
- An offshore wind energy scheme is deployed;

- Relatively few biomass schemes appear, with existing barriers to deployment persisting through the decade;
- Deployment of PV and other solar technologies continues to grow, but only at a moderate rate in the absence of economic or other kinds of support incentives.

Upper End of Target Range "Green Future" – 4.53 TWh

- This represents a very ambitious level of deployment across Wales, with all of the major technologies contributing strongly to the overall target;
- In reaching this level of deployment, it is assumed that most (if not all) of the various existing technical, economic or infrastructural barriers to deployment of some technologies are overcome, ameliorated and/or addressed;
- Wind energy, biomass and PV all increase their contributions significantly within this scenario but waste adds little extra to deployment levels;
- Four offshore wind farms are constructed around the coast of Wales;
- Substantial growth of short rotation coppice resources helps to "unlock" barriers to exploitation of the existing woodland resource. More wood combustion schemes appear. Significant numbers of "woodheat" schemes appear;
- Large amounts of onshore wind power are deployed. A range of scheme sizes is deployed. Installed capacity increases by a factor of around four from present levels;
- Deployment of PV expands dramatically in housing, commercial and "motorway" sectors. This expansion is achieved through major economic and infrastructural initiatives (e.g. closer and consistent links between Local Authority building control and planning regimes);
- Solar water heating installations across Wales increase ten-fold;
- There is major deployment of micro CHP, made possible by the lifting of regulatory barriers to uptake and supported by an incentive programme;
- A prototype tidal current device is successfully deployed. A tidal barrage scheme appears on the Conwy.

Middle Target Range "Accelerated Development"- 2.41TWh

Note for EDC. AEA tell us they did not formally define this ‘mid range’ category at the time of doing this work, but they since have told us that essentially it reflects:

- an ambitious level of deployment. All technologies contribute to the implied target;
- Barriers to deployment are tackled, but some persist or take longer than the available time to overcome;
- Onshore wind schemes are deployed at levels which represent an approximate tripling of the current installed capacity;
- Two offshore wind farms are constructed around the coast of Wales;
- An increase in biomass schemes occurs but barriers still persist to the wider deployment of short rotation coppice;
- Deployment of PV increases greatly, but only a moderate acceleration is achieved, primarily due to take-up by enlightened developers rather than through - say - the Building Regulations;

- Solar water heating installations across Wales increase 3-fold;
- Gas-fired micro-CHP is deployed in large numbers.