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Interim statement on sustainability research being conducted on potential biomass fuel supply and demand for Forth Energy

SISTech has been commissioned by Forth Energy to carry out a lifecycle carbon assessment of four biomass renewable energy plants being proposed in Dundee, Grangemouth, Rosyth and Leith. Initial results for the Dundee Renewable Energy Plant (REP) have found that the plant would save 89-91% of the carbon emissions caused by equivalent electricity generation using coal, even when the carbon emissions associated with production and shipping of the biomass fuel is taken into account. Central to this saving is the sourcing of a sustainable, secure supply of biomass fuels. Since increased demand from biomass energy applications across the UK is likely to put a strain on the market for indigenously sourced wood fibre, it will be necessary to consider the availability of biomass fuel in a global context.[1] It is expected that imported materials will initially make up 80% - 90% of the biomass used by the plants. It is thus crucial that the global availability of biomass is comprehensively addressed.

To this end, SISTech is investigating the potential global supply and demand of biomass to get a more complete picture of the feasibility of sourcing adequate stocks. There is a significant body of evidence that has attempted to quantify the potential stocks of biomass fuels. This has brought about a divergent set of conclusions. Whilst some studies have suggested the possibility of future shortages in fuel supply, there has also been research that has anticipated scenarios where biomass fuel supply will exceed biomass demand, in part due to competition from alternative renewable energy sources.[2,3] It seems likely that demand for wood fibre in the UK will exceed supply in the future, perhaps as soon as 2012[1], so it is central to Forth Energy's plans that adequate sustainable supplies of biomass fuel be sourced from overseas.

Forecasts have suggested that that the energy produced by biomass across the EU will reach between 200 and 360 TWh annually by 2020.[4,5] Forth Energy's plans are for four plants with a combined electrical capacity of 500MW which are expected to produce around 3.72 TWh of electricity annually. Assuming a fairly homogenous level of efficiency across EU plants this indicates that the Forth Energy REPs will produce between 1% and 1.86% of the electricity produced from biomass across the EU. On a global scale, the International Energy Agency's Reference Scenario projects that 860TWh of electricity will be produced from biomass annually by 2030.[6] Therefore, the Forth Energy plants would represent less than 0.5% of the global demand for biomass for electricity production. It is reasonable to assert then, that the impact of the Forth Energy REPs on global demand will be small.

These relatively small percentages indicate that the presence of the plants proposed by Forth Energy is unlikely to distort the demand for biomass fuel in Europe or further afield. The pertinent question, then, is

1 John Clegg Consulting Ltd. (2010). *Wood fibre availability and demand in Britain 2007 to 2025*.
2 Dornburg, V., Vuuren, D. v., Ven, G. v. d., Langeveld, H., Meeusen, M., Banse, M., et al. (2010). Bioenergy revisited: Key factors in global potentials of bioenergy. *Energy & Environmental Science, 3*(3), 258-267.
3 IPCC. (2007). *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group III to the Fourth Assessment*.
4 Capros, P., Mantzos, L., Papandreou, V., & Tasios, N. (2008). *Model-based Analysis of the 2008 EU Policy Package on Climate Change and Renewables*.
5 EURELECTRIC. (2010). *Sustainability Criteria for Solid &Gaseous Biomass: In reaction to EC COM(2010)11 final*.
6 International Energy Agency (IEA). (2008). *World Energy Outlook 2008*. Paris: OECD/IEA.

whether there are global supplies of biomass stocks to meet global demand. The three potential barriers to meeting this demand in a sustainable fashion are the use of timber for non-fuel purposes, the impact of energy crops on food supply, and the adequate replenishing of forest used for fuel purposes. The ongoing SISTech study aims to address these concerns.

To do this, SISTech are analysing five potential sources of biomass in order to ascertain their ability to supply the required stocks. This is being done on a region-by-region basis: the subjects are the EU (with particular focus on Scandinavia and Eastern Europe, and additional consideration of Norway), US, Canada, South America and Russia. This analysis will build on the substantial body of research that has been done in these areas, and the intention is to provide an estimate of the potential supply through a synthesis of existing national level data and literature. They will also consider the potential vulnerabilities and insecurities in sourcing biomass fuel from these areas by consulting industry literature in each of the subject areas.

In order for the project to deliver the projected carbon savings it is, of course, necessary to ensure that the fuel sources are sustainable. Forth Energy has stated its commitment to ensuring that all forest derived sources are certified by suitable, internationally accepted sustainability certification systems.[7] SISTech is also aware of recent calls for a pan-European certification standard, from the Union of the Electricity Industry, EURELECTRIC, for example[4]. To ensure that sustainability concerns are adequately addressed, SISTech's analysis of fuel supplies will also investigate the potential availability of certified fuels and the progress of such standards across the EU and further afield.

7 Forth Energy. (2010). *Sustainability Statement for the Dundee Renewable Energy Plant*