BioReGen (**Bio**mass, **Re**mediation, re-**Gen**eration): Reusing brownfield sites for renewable energy crops. Project LIFE05 ENV/UK/000128

Dr R. A. Lord (r.lord@tees.ac.uk). Bioremediation Programme Manager, Clean Environment Management Centre (CLEMANCE), Innovation Centre, School of Science & Technology, University of Teesside, Middlesbrough, TS1 3BA. U.K. Tel:- +44(0)1642 342408, Office +44(0)1642 384418, Mobile +44 (0)773 263 9491

The **BioReGen** project will reuse brownfield sites to grow biomass energy crops, restore damaged land, and generate heat and power from renewable energy sources. This concept applied to contaminated land will achieve cost-effective remediation without the need to resort to energy-intensive processed-based remediation or other practices that merely relocate and contain pollution and which will pose a challenge for future generations, such as excavation and removal. This industrial scale pilot project will demonstrate the commercial feasibility of this innovative approach on a variety of contaminated sites and will assess any potential detrimental effects of this approach.

The BioReGen project is an innovative and integrated scheme of work that includes 6 tasks, each led by 1 of 4 project partners. The North East Community Forests Development Company will establish, maintain, harvest and prepare as fuel, various biomass energy crops on ten 1 hectare plots of derelict brownfield or partially restored contaminated land. These sites will require extensive additional preparation work compared to conventional agricultural sites. After spring planting the energy crops require two growing seasons to establish productive growth, necessitating a four-year programme of work.

Sites will be chosen on the basis of desk study and screening tests by the Clean Environment Management Centre (School of Sciences, University of Teesside) to represent similar significant areas across EU coalfield and heavy industrial regions. The University will also establish baseline soil and groundwater contamination for each site, monitor soil fertility, test for contamination of the above - and below-ground plant parts, the dried fuel, bottom ash and air pollution control residues, and compare soil and groundwater contamination after use for biomass.

C.J. Day Associates will conduct firing tests on the biomass fuel produced by full scale demonstration planting. They will compare productivity and combustion practicality for the different biomass species tested and the common types of contamination. This will allow critical issues such as fuel contamination, air pollution control measures, and ash contamination disposal or recycling options to be addressed on a scale appropriate for commercial exploitation.

Mass-energy studies will predict commercial applications for combined heat and power generation based on local biomass crops. The New and Renewable Energy Centre (NaREC) will develop a model of electrical grid connection for power generation and distribution, against which data from the test-firings can be compared. A detailed cost-benefit analysis will evaluate the economic, environmental and social impacts of the activity and the feasibility of commercial exploitation. The University of Teesside as applicant and beneficiary will take overall responsibility for organizing, administering and reporting on the project, together with Europe-wide dissemination and the creation of an SME to carry the venture forward after project completion.