

The Role of SMEs and the Entrepreneur in the Energy Sector

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Introduction

The supply of electricity has long been regarded as a public service. Power production has in many countries, until very recently, largely been the concern of the state, rather than the private sector. The power sector was typified by dependence on a few large power stations, often remote from demand, necessitating a huge investment in national distribution grids. According to the organisation British Biogen (www.britishbiogen.co.uk), “under public ownership national electricity monopolies could rely on captive to finance huge capital expenditure programmes with project schedules measured in decades and little concern for return on investment”. The role for small companies, if any, was limited principally to supply of components, systems and instrumentation. Two factors have begun to change this: deregulation of the electricity industry and increased interest in, and acceptability of, renewable energy production which tends to be more suited to smaller production units.

Large state-owned power companies still operate, particularly in developing countries but there has been a declining role of the state in power generation in many countries since liberalisation of power markets, starting around the early 1990s. During this process, power stations, largely fossil, nuclear or hydro powered, have been sold off to independent power producers and licences granted to distribution companies to sell to industrial users and consumers.

We have now entered an era of fast changing energy markets as new automated energy technologies and liberalised energy markets create the opportunity for widespread application of efficient, local generation of heat and power. The signing of the Kyoto Protocol has focussed government thinking on how they can meet their commitments to reducing carbon emissions. Power generation from biomass now has a lot of champions. Bio-energy production can generate as and when required with a high degree of reliability. Bio-energy projects are relatively small-scale, usually supplying electricity to distribution networks, below the regional connection to the national grid.

Increasing SME involvement

The small and medium-sized enterprise (SME¹) sector is a large-scale user of electricity in most countries. This is not surprising as SMEs comprise around 90% of economic activity in most economies. SMEs are widely involved, indeed they are often the largest drivers, in developing and producing energy technologies. This

¹ What are SMEs? Quantitative definitions refer to the number of employees; turnover and balance sheet total. The European Commission definition is:

	Small enterprises	Medium enterprises
Employees:	50	250
Annual Turnover	€m 7	€m40
Balance sheet:	€m 5	€m27

A variety of qualitative definitions also exist. A common element is the strong linkage between enterprise and owner. In order to compete successfully with larger players, SMEs often have evolved distinctive competences such as close relationships with customers; continuous innovation; a narrow market focus or niche strategies that allow them to specialise and excel in their fields, and selected and motivated employees (Recklies, 2001).

includes equipment and instrumentation for conventional energy generation as well as the technology for clean power production such as boilers, stoves, wood pellet technology, photovoltaic and wind technology and so forth. Increasingly SMEs are becoming active in power generation in Europe and the USA.

As well as the rise in the number of SMEs involved in energy production, increasingly in the UK there is a new type of organisation becoming involved in the renewable sector – ‘not-for-profit’ independent agencies which provide information, promote and deliver renewable energy projects. These agencies often establish a wholly-owned subsidiary/trading SME to earn money from a related activity such as producing or trading in woodfuel.

It is estimated by the International Atomic Energy Authority that there are still 1.6 billion people in developing countries, mostly in rural areas, who live without electricity. Some four out of five people in rural areas in South Asia and Sub-Saharan Africa live without electricity. The cost of extending the electric grid to remote and low-density rural areas is prohibitive, amounting to seven times the cost of providing electricity in an urban area (FAO, 2005). The policy options are either subsidising capital costs for rural grid electrification or developing off-grid solutions, both of which are highly expensive. However, the impact that lack of access to energy has on economic development and the lives of poor people is increasingly recognised (Saghir, 2005).

New forms of energy production that can provide stand-alone power, operated by small and medium-sized enterprises, may bring down this cost. There is increasing recognition of the need for small rather than big power stations to meet power demands in particular locations e.g. in remote areas and on islands (Lacey, 2004). Renewable energy sources also lend themselves to smaller power stations, under 10mWe. Small-scale power generation offers environmentally-sound ways to produce energy for local use from locally-available materials. Interestingly, we are seeing opportunities for environmentalists to do business rather than businesses “doing environmentalism”.

In this paper we examine some of the factors necessary for encouraging greater participation by entrepreneurs and their SMEs. The paper draws largely on the situation emerging in the UK and draws parallels with Sri Lanka, as well as presenting example from other developing countries. The reason for looking to the United Kingdom, rather than to other European countries more advanced in the use of biomass energy is that there are greater similarities between the UK and Sri Lanka, so that what is currently occurring in the UK may be of interest to Sri Lanka. Both countries are islands, with some densely populated areas and some remote, under populated areas; both are net energy importers; the forestry sector in both countries is small and not a major contributor to the national economy. The United Kingdom has belatedly woken up to the need for it to diversify its electricity generation base away from fossil fuels and into renewable energies and the policy environment and concomitant assistance is becoming much more supportive to energy entrepreneurs. It is acknowledged that in European countries where bio-energy is a significant sector, such as in Finland, SMEs dominate in its production and in the whole supply chain from planting and provision of biomass fuel to operation of small power stations and distribution to customers.

The findings of this paper are based on a review of the literature and company websites. It appears from this exercise that there is limited literature available on experience of SMEs involved in power generation and distribution. This is a relatively new opportunity and few research papers link energy services with SMEs. The main documentation regarding consideration of biomass energy from an energy-policy perspective is contained in a few policy papers, SME company promotional material and project memoranda. Mention is made of developing new energy businesses but there is little linkage to the involvement of SMEs apart from limited conference papers and recommendations.

Exploring opportunities for wider involvement of SMEs

In considering opportunities for SME involvement, there is a need to question the “large-sale mindset” of days of state monopoly control and operation to see if “small can be feasible and profitable”. There is also an urgent need to address the credibility factor of renewable, particularly biomass, energy production. These issues are being addressed by this conference. What we seek to do here, is to see what role there is for SMEs and how they and their entrepreneur owners are becoming part of this process as well as highlight some key factors likely to limit their involvement.

SMEs are likely to be an important component of renewable energy because of their nature. They tend to be started by young entrepreneurs and capitalise on their creativity and energy, as well, perhaps, as their environmental convictions – see box 2 below. SMEs tend to be more flexible than large corporations because they have limited overheads, less dependence on shareholders and can adjust quickly to consumer demands.

Box 1. Ecotricity – an environmental SME

Ecotricity, a company with 40 employees, is the oldest independent power supplier in the UK. The company was started in 1995 by a young environmental entrepreneur who was keen to change the way electricity is produced. Ecotricity installs wind turbines to generate green electricity. Ecotricity's success has been underpinned by a 'not for dividends' attitude to business and by investing all of its profits in new wind turbines.

Ecotricity is building more new wind energy sources than any other green electricity company - a £7 million investment in the last year alone. During its ten years in business, Ecotricity has entered into partnerships to help internationally-recognised ethical brands convert to green energy: The Body Shop, the Co-operative Bank, Sainsbury's supermarkets and the ethical bank, Triodos. Ecotricity is also endorsed by the World Wildlife Fund and the Soil Association. It is also working with Ford UK at its car plant in UK Dagenham to provide Ecotricity turbines.

Ecotricity's business ethos is not just about the environment; it also covers its commitment to customer service for its 7,000 customers. All customer enquiries are dealt with in-house rather than through a call centre and its customer service record is well-regarded. The company also promises to match the tariffs of local, fossil-fuel based, electricity suppliers even though their production costs are likely to be lower.

Source: www.ecotricity.co.uk

Key issues relating to increasing investment in and uptake of renewable energies commonly mentioned in the available literature include:

1. Addressing the credibility factor and removing barriers to the uptake of biomass technologies. A significant barrier to the use of renewable energy is the difficulties faced in becoming aware of, and getting enough information on renewable energy and particularly biomass as a fuel for energy production. Current information is largely geared toward gas, oil, coal and electricity. A common perception in many countries is that wood and agricultural wastes cannot be effectively utilised to produce heat (other than in simple domestic stoves) and power. This energy source is therefore not considered as a serious option or alternative by government planners, energy agencies even though local entrepreneurs may be prepared to invest.

2. Ensuring local involvement in the design and delivery of energy services (Saghir, 2005). There is an opportunity for much greater involvement of local communities in biomass energy because the supply chain depends on many different stakeholders. This includes farmers growing the energy crop to employees of SMEs dealing with customers. The use of local resources implies that much of the expenditure on energy expenditure is retained locally as well as being recirculated within the local/regional economy (Dormac and Richards, 2003).

3. Lack of adequate infrastructure in rural areas for providing energy services. There is the need to conceive the entire energy infrastructure network, develop new energy businesses and ensure that the business model is economically sustainable and financially replicable.

4. Need to open up energy markets. While power generation and distribution are entirely within the hands of the public sector, there is little incentive to open up the market to competition. This, combined with the credibility factor will make it very difficult for SMEs to enter the market.

5. Women should not be forgotten or excluded. There is increasing awareness of the role that women play in micro-enterprises promoting renewable energy use (SEFI, 2004). “Decentralised energy systems hold greater opportunity for women’s involvement when compared to conventional energy delivery mechanisms ... Decentralisation pushes decision making to the local level where women are far more likely to be involved, often simply due to proximity” (Smith, 2000). In a project in Central America described by Smith (op.cit.) women have the opportunity to participate as micro-entrepreneurs for solar-based electrification.

6. Lack of services and capital which limits the numbers of SMEs involved
Other recent fora have talked about SMEs being the key to delivery of clean energy in developing countries. The Sustainable Energy Finance Workshop in Bonn in 2004 highlighted key issues such as lack of services and capital which limits the numbers involved. It concluded that international financial institutions and donors, local financial institutions, and government agencies need to work together to establish resources and innovations adapted to the financing needs of energy SMEs. Its two recommendations in this area were noteworthy.

“Recommendation 1 – Financial innovations are needed to provide entrepreneurs with access to risk capital and to fill the widening gap between traditional debt and equity now available in the market.

“Recommendation 2 – Government agencies and donors must recognise that energy SME development requires their long-term commitment to build local SME capacity and specialised service and capital providers.”

(SEFI, 2004)

Capital availability is still considered the main constraint to the development of the renewables market. A growing number of renewable finance companies and venture capital firms are getting involved in supporting the sector in the UK. They see an opportunity for providing the entrepreneurship in the sector with the risk capital needed to fund the next stage of development.

So far, in the UK, only wind power is considered commercially viable. The high price of renewables compared to the cost of fossil fuels remains a general constraint when price comparisons are based on direct cost analysis, despite increasing oil prices, (FAO, 2005). However, collateral benefits of bioenergy, if properly internalised, can offset the price difference with fossil fuels. Given the right support, private capital is considered to continue to be attracted to the sector. Government support for research and development will be needed to encourage the next generation of technologies.

In the UK, the government’s key policy regulation introduced in 2002, the Renewable Obligation, offers strong financial incentives for all licensed electricity suppliers to secure a specified and an incrementally increasing portion of their energy from renewable sources (Charles, 2005) in order to meet its targets for the proportion of energy generation from renewables. This government support is worth about £1bn a year. This is likely to spur on investment in renewables. Generators of renewable energy are also entitled to receive Renewables Obligation Certificates (ROCs) for every unit of energy generated. These can be traded separately to energy itself, on the open market. Producers of renewable energy are also exempt from the UK’s Climate Change Levy - a tax on energy use in industry.

In developing countries (non-Annex 1 countries of the Kyoto Protocol) carbon trading may offer an extra inducement and financial incentive for renewable energy producers.

In the EU power generating companies are the biggest producers of carbon and are likely to be net buyers of carbon emissions allowances. Many SMEs are expected to have surplus allowances but they have little expertise in carbon commerce. A broker-dealer service has recently been launched in the UK, and planned to spread to other EU countries, to buy and sell carbon allowances, provide risk management, carbon finance and advisory services to SMEs.

In developing and transition countries there is likely to be a need for donor finance to assist the introduction and uptake of renewable energies. Box 2 overleaf gives an example from Moldova.

Box 2. Renewable energy from agricultural waste - overcoming the credibility barrier

In Moldova, where heat supply is a national priority, there is little experience of using efficient biomass technology and there is a very significant ‘credibility barrier’ to overcome. It is hoped that once it has been demonstrated that biomass fuel works on a communal scale, plant size can be increased to include larger district heating units and industrial applications, 5MW_{th} and above. Biomass is now appearing on the development “radar” in Moldova. The main objective of a World Bank-supported project, with 30% funding from the GEF, is to overcome barriers to the uptake of biomass technologies by providing examples of best practice, in the form of demonstration plants, in the use of biomass-fuelled energy systems as a viable alternative to gas, oil and coal and as a sustainable means of addressing the energy supply problems facing rural communities and agro-enterprises.

Demonstration systems will be of a size, scale and cost appropriate for wide replication in rural areas. These will be supported by access to information, technical support and a fund to cover the incremental capital cost in installation of biomass-fuelled systems. The main barrier to the use of renewable energy from agricultural wastes is that it is difficult for decision makers to obtain material on biomass as a commercial fuel. Current available information is geared toward gas, oil, coal and electricity.

There is a common perception in Moldova that agricultural wastes cannot be effectively utilized to produce heat other than in simple domestic stoves. This energy source is therefore not considered as a serious option. Information and a commercial infrastructure for the marketing of efficient technologies are key constraints to the use of renewable energy. Preliminary energy audits have highlighted that the higher capital cost of biomass technology can be offset by the significantly lower annual fuel cost of biomass, obtained from local sources – agricultural lands surrounding rural villages. However, the technology and fuel cycle and the economic viability have to be proven so that biomass-fuelled heating systems will become a rational economic decision. A further objective is to assist in establishment of a biomass supply chain. Growers would contribute their own land, labor and machinery, but receive a grant from the project to motivate and compensate for the new market start-up risks, to transform biomass agricultural wastes, often lost, into a sustainable market product and a suitable thermal energy raw material.

Source: World Bank

The 22nd ASEAN Energy Meeting in June 2004 also endorsed the need for more private investment and private sector participation in renewable energy. ASEAN would like to aim to get 10% of its energy from smaller power stations. However, it acknowledges the need to control costs, ideally via lower cost replication and standardisation leading to lots of small power stations established by SMEs (Lacey, 2003).

The UK has seen the establishment of a number of advisory schemes and organisations, which provide advice and support, for which some grant funding is available. These organisations may also establish an SME which acts as a trading body. In the case of biomass energy, organisations provide technical expertise and may be able to assist with sourcing funding for both the supply and use of wood. Such organisations offers training programmes, demonstrations and presentations to a wide range of groups including local government, businesses and community organisations.

Further benefits from promoting SME involvement in renewable energy production

A number of observers (Saghir, 2005; Dormac and Richards, 2003) highlight the impact that increased bio-energy based production could have on improved economic delivery and poverty alleviation, especially in rural areas. Benefits particularly focus on the increased employment generation that bioenergy can bring, including opportunities for skilled employment, in areas such as engineering, IT, forestry since it can attract investment in new business opportunities for small- and medium-sized enterprises. Compared to fossil fuel-based power generation bioenergy creates jobs in bio-fuel production, preparation, transportation, trade and use and generates incomes and employment for the people living in and around the areas where it is based.

Bioelectricity production is said to have the highest employment-creation potential among renewable energy options. It can create several times the number of direct jobs than electricity production using conventional energy sources, and with lower investment cost per job generated (FAO, 2005). Most of these jobs are likely to be generated by SMEs. In the UK over 700 companies are involved in renewable research, from research bodies and consultants to manufacturers and developers and the majority of these are SMEs.

SMEs as biomass suppliers

Farmers are also SMEs (or micro-enterprises) and farms are important/potential source of biomass energy for renewable energy generation. In the UK funding schemes for SMEs includes the Energy Crops Scheme – grants for establishment of two energy crops and to aid the establishment of producer groups for short rotation coppice. Farmers and land managers with at least 3 ha and whose land falls within a reasonable radius from the end user are eligible (generally 10 miles for small installations, 25 miles for large installations). Applicants need to demonstrate that they have or will have an energy end-use for the crops. This could be a biomass power station or a community energy scheme using heat or combined heat and power (CHP) technology. Energy crops can also be grown for own use, e.g. to heat a home or business

The Woodland Grant and Farm Woodland Premium Schemes encouraging planting of new woodland and maintenance of existing woodland, for provision of biomass for renewable energy production.

Conclusions

SMEs have a long history of involvement in technology research and development in engineering and energy. They are now increasingly getting involved in renewable energy production. Biomass-fuelled power generation, both on and off-grid, offers opportunities for micro and SMEs to be involved all along the supply chain.

Growing global interest in renewable energy due to liberalisation of energy production and markets and the implementation of the Kytoto Protocol plus the need to improve access to electricity for over 1 billion people offers a great opportunity for the involvement of many SMEs.

There are still, however, many obstacles and issues that need to be addressed before this vision can become a reality.

The main stumbling block to the widespread use of renewables is the high cost, exacerbated by under priced fossil fuels. This may begin to change as a result of carbon levies.

Private finance is starting to be attracted by the renewables sector, as new government policies and support are sending encouraging signals. In developing countries donor support is likely to be needed to augment funding for pilot projects, education and research and development.

Perhaps the biggest issue to be addressed is how to overcome the credibility barrier. The lack of understanding of policy makers of the role that renewables and biomass in particular is likely to be a source of frustration to SMEs and entrepreneurs who have already had the vision and wish to pursue it.

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www.nrel.gov/docs/fy01osti/28995.pdf

Useful UK websites

Renewable Power Association - www.r-p-a.org.uk

(trade association of companies involved in the UK renewable energy industry, particularly involved in political lobbying to create an environment conducive to Renewable Energy development. Maintains a comprehensive database of renewable energy projects).

British Biogen - www.britishbiogen.co.uk

(trade association of the UK bioenergy industry whose mission is "to promote and coordinate the commercial development of biomass as a renewable fuel resource for energy production).

Department of Trade and Industry energy website - www.dti.gov.uk/energy

(The DTI's Energy Group deals with a wide range of energy related matters, from its production or generation to its eventual supply to the customer.

Thames Valley Energy - www.tvenergy.org

(a one stop shop for all matters relating to the understanding, promotion and delivery of renewable energy projects. A not-for-profit independent regional renewable energy agency, established in 2001).