



## Exploring Innovation in Action: Power to the People – Freeplay Energy

Trevor Baylis was quite a swimmer in his youth, representing Britain at the age of 15. So it wasn't entirely surprising that he ended up working for a swimming-pool firm in Surrey before setting up his own company.

He continued his swimming passion – working as a part-time TV stuntman doing underwater feats – but also followed an interest in inventing things. One of the projects he began work on in 1991 was to have widespread impact despite – or rather because of – being a 'low tech' solution to a massive problem.

Having seen a documentary about AIDS in Africa he began to see the underlying need for something which could help communication. Much of the AIDS problem lies in the lack of awareness and knowledge across often isolated rural communities – people don't know about causes or prevention of this devastating disease. And this reflects a deeper problem – of *communication*. Experts estimate that fewer than 20% of the world's population have access to a telephone, while even fewer have a regular supply of electricity, much less television or Internet access. Very low literacy levels exclude most people from reading newspapers and other print media.

Radio is an obvious solution to the problem – but how can radio work when the receivers need power and in many places mains electricity is simply non-existent? An alternative is battery power – but batteries are equally problematic – even if they were of good quality and freely available via village stores people couldn't afford to buy them regularly. In countries where US\$1 a day is the standard wage, batteries can cost from a day's to a week's salary. The HIV/AIDS pandemic also means that household incomes are under increased pressure as earners become too ill to work while greater expenditure goes towards healthcare, leaving nothing for batteries.

What was needed was a radio which ran on some different source of electricity. In thinking about the problem Baylis remembered the old-fashioned telephones of pre-war days which had wind-up handles to generate power. He began experimenting, linking together odd items such as a hand brace, an electric motor and a small radio. He found that the brace turning the motor would act as a generator that would supply sufficient electricity to power the radio. By adding a clockwork mechanism he found that a spring could be wound up – and as it unwound the radio would play. This first working prototype ran for 14 minutes on a 2-minute wind. Trevor had invented a clockwork (wind-up) radio! As a potential solution to the communication problem the idea had real merit. The trouble was that, like thousands of entrepreneurs before him, Trevor couldn't convince others of this. He spent nearly 4 years approaching major radio manufacturers like Philips and Marconi but to no avail. But luck often plays a significant part in the innovation story – and this was no exception. The idea came to the attention of some TV researchers and the product was featured in 1994 on a BBC TV programme, *Tomorrow's World*, which showcased interesting and exciting new inventions.

Among those who saw it and whose interest was taken by the wind-up radio were a corporate finance expert, Christopher Staines, and a South African entrepreneur, Rory Stear. They bought the rights from Baylis and received a UK government grant to help develop the product further, including the addition of solar panel options. In South Africa, the details of the invention were featured in a new broadcast and heard by Hylton Appelbaum, head of an organization called the Liberty Life Foundation, who saw the potential. Even in relatively



rich South Africa, half the homes have no electricity, and elsewhere in Africa the problem is even more severe.

Liberty Life is a body set up by a major South African insurance company, and Anita and Gordon Roddick, the socially conscious owners of the Body Shop. Part of the work of the Foundation is in providing access to employment for the disabled and a third of the company's factory workers are blind, deaf, in wheelchairs or mentally ill. Through Applebaum, Liberty Life provided the US\$1.5 million in venture capital that founded the company. Baygen Power Industries (from *Baylis Generator*) was set up by Staines and Stear in 1995, in Cape Town; 60% of the shares were held by a group of organizations for the disabled, a condition of Liberty's support. Technical development was provided by the Bristol University Electronics Engineering Department. Shortly thereafter production of the radio began in Cape Town by BayGen Products PTY South Africa.

It came on the market at the beginning of 1996 and one year later around 160 000 units had been sold.

Much of the early production was purchased by aid charities working in Rwanda and other African countries where relief efforts were underway.

This was not a glamorous product – as a *New York Times* article described it,

*"It is no threat to a Sony Walkman. It weighs six pounds, it's built like an overstuffed lunch box, and it has a tinny speaker. But its wholesale price is only \$40 and it gets AM, FM, and shortwave, meaning it can pick up the British Broadcasting Corporation or the Voice of America, so a circle of mud huts can zip back into the Information Age with a twist of the wrist."*  
(Donald G. McNeil Jr., *New York Times News Service*, 1996)

The impact was significant. In 1996 another BBC TV programme, *QED*, featured the radio and at one point showed footage of Baylis, Staines and Stear together with Nelson Mandela who commented that this was a 'fantastic product that can provide an opportunity for those people who have been despised by society'.

Although appearing basic and low-tech, there is a surprising amount of invention in the product. Baylis filed no less than 13 patents covering the mainspring and gears that drive a little dynamo. The spring mechanism is not a simple clockwork but is more closely related to the kind used in rewinding auto seat belts. A double-spool mechanism keeps its tension constant, which is crucial, and the gearing is sophisticated.

Baygen continued to develop products around the energy needs of developing countries including wind-up torches and small generators. The company renamed itself in 1999 as the Freeplay Energy Group and have taken the original concepts into a wide range of new product areas.

Although founded on strong social entrepreneurship principles the business has grown through expanding markets in both developing and advanced economies. At an early stage in their life they realized that dependence on government, international and charitable aid providers posed problems in terms of business sustainability and in 1997, following investment by the US General Electric Company, they began diversifying into commercial markets, modifying the product designs to suit this shift. One of the casualties in this shift has been the Cape Town factory – after five years manufacturing was outsourced to plants in China where labour costs are lower.



The company is now commercially successful, having sold over 3 million units of their basic radio models, and has raised an additional US\$45 million in capital. Product development has embraced a wider range of power options including solar cells, and an increasing range of applications including torches and lighting, small-scale generators and mobile-phone chargers. Emphasis remains on replacing battery and fixed-line power applications with rechargeable or self-generating approaches – an approach which, given increasing concerns about sustainability in the advanced industrial economies, is opening new possibilities for market growth.

Typical of their current products is the Lifeline radio, a multi-band, self-powered radio,

*“designed specifically for providing dependable access to information across a broad range of humanitarian projects. The radio does not require batteries or mains electricity and can be used practically anywhere. Engineered to operate in the harshest of rural conditions, it is rugged, robust and easy to operate. It offers excellent FM/AM/SW reception and runs on wind-up energy and solar power. Fully charged, it can play for up to 24 hours. The Lifeline radio was field-tested in various developing countries as part of an extensive research and development programme to identify and create a radio that truly meets the requirements of these unique and diverse applications”*

The declared mission of Freeplay Energy plc is ‘To make energy available to everybody all of the time’, and it continues to do this through product development and strategic alliances with partners that bring compatible technology and market leadership.

On their website they set out their social entrepreneurship goals:

*“We are committed to balancing the imperatives of both profit and social justice, by providing excellent returns to our shareholders and stakeholders, whilst maintaining complete integrity and contributing to the personal fulfilment of our employees, the communities in which we operate, and beneficiaries of our products.”*

All of Freeplay’s business practices are shaped by our Six Core Ideologies:

- *Results Orientated* – Delivering on promises to shareholders and partners.
- *Leading-edge* – On the edge of technology and business practice.
- *Proactive* – Showing leadership and taking the initiative wherever possible.
- *Empowering* – Seeking to enable all our stakeholders to achieve their goals.
- *Responsible* – Being responsible towards our employees, the environment and the communities we touch.
- *A Friend and Partner* – Taking a positive attitude to developing partnerships and friendships based on trust.

In 1998 the Freeplay Foundation was established as an extension of the Group’s commitment to empowerment and development. The Foundation operates as an independent organization with its own board of trustees but it still receives an annual grant from the Freeplay Energy Group with which it shares some managerial and administration resources. The balance of funding is raised from various donors and used to support a wide range of development and implementation projects. Working primarily in Africa, the Freeplay Foundation promotes access to radio broadcasting in rural and remote areas through alternative energy solutions. It seeks ‘to advance economic progress, promote community development and help eradicate disease, famine and conflict’. It does this by continuing the original wind-up radio mission – supporting or initiating projects that



harness appropriate and alternative energy solutions that deliver information and education through radio broadcasting.

The Foundation facilitates access to specialists who can provide the four components vital to the sustainable success of any radio communication initiative:

- *Software* – quality radio programming directed at a targeted audience.
- *Hardware* – radios that allow sustainable listening access to all groups.
- *Structured distribution* – a planned and coordinated distribution of radios, in consultation with communities.
- *Project-monitoring and evaluation* – measuring effectiveness against set objectives.

### Using the Products

The scope for application is wide since it meets the basic human need for communication and enables a wide range of information, education and community-building activities. Some examples from the radio side of the business include:

- A project (funded by various development agencies) using communication satellites and FM radio technology to communicate weather, agricultural and health information to nomadic communities and villages across Africa. The pilot is built on a model in the village of Bankilare, outside Niger's capital, Niamey, and combines a WorldSpace satellite receiver, a laptop, Freeplay radios, a transmitter, solar panels and other equipment. Information is downloaded from the Internet via a satellite connection. It is then rebroadcast via a community FM radio station powered by solar energy. Villagers, nomads and farmers living in remote and poorly served areas receive broadcasts on Freeplay radios. The aim of this project is to provide timely information on the weather, with implications for crop-planting and livestock care, availability of water, market prices for crops, associated diseases, health and disaster mitigation. This is just as important for the nomad as for the farmer. As stated by a nomad: 'I do not depend on the rain that falls on my head, but on streams running from the hills when they flood. So just tell me when it will rain in that distant land and I will know what to do'.
- In Madagascar the Ministries of Communication and Health, working with various aid agencies, developed a radio drama series for women's listening clubs in Madagascar. Wind-up radios, funded by Rotary, were distributed to clubs who provided regular feedback on the programmes. The series is aimed at improving health education, family planning and AIDS prevention. Similarly in Ethiopia people living in remote communities in Ethiopia's Harar Province are tuning in twice weekly to a radio serial drama aimed at creating awareness and prevention of HIV/AIDS – a project funded by the Centres for Disease Control and Prevention.
- According to the Zambian Ministry of Education (MOE) 800 000 Zambian children are unable to attend school. They cannot afford it, are orphans, live too far to walk to school or are girls who are kept at home. The attrition rate of teachers poses another problem – 2 teachers are dying of AIDS for every one who is trained. The MOE, together with the Educational Broadcasting Services, is using interactive radio instruction to help fill the educational void. Each morning thousands of primary school learners listen to the lively English and maths programme, *Learning at Taonga Market*, on the radio. To assist with the lesson, adult mentors from the community are trained to use radio as a teaching aid. The Peace Corps in Zambia



purchased Freeplay radios for their volunteers to distribute. These volunteers are trained in the mentoring process and then train community mentors, enabling the programme to reach deep rural areas. In addition, Rotary UK is helping to raise funds to bring more radios to community schools.

- In early 2000, hundreds of thousands of Mozambicans were displaced by catastrophic flooding. One of the items that people lost were radios – often the only access to information. Various donor agencies including the Freeplay Foundation distributed over 7000 radios and a daily programme called *Ndhambi* was created in the local language, Shangani. *Ndhambi* covered information on health, sanitation, hygiene, the location of landmines, obtaining lost ID documents and title deeds, governance, tracing and contacting lost family members, as well as agricultural assistance, all of which were of great importance during the post-flood period. During the crisis in Kosovo in 1999, DFID and the ICRC purchased over 40 000 Freeplay radios to distribute to refugees on the move and in camps in Albania and Montenegro. Here they played a part in helping to find missing relatives and to inform of the location of landmines, contaminated water supplies and booby-trapped villages.

### Case Study Questions

1. How could you reconcile the social agenda – make radios freely available – with the commercial challenges of running a business? What problems do you think Freeplay face in trying to sustain the business?
2. Jennifer Peters has an idea for water treatment which could help provide clean drinking water to millions of people in Africa. Using ideas from the Freeplay story, what advice would you give her to help her take this forward? And what should she watch out for?
3. Do you think it's easier or harder to create a sustainable business venture with a social entrepreneurship idea? Why?