

A Philosophical Basis for the Centre for Renewable Energy at Dundalk Institute of Technology by L. D. Staudt

Abstract

This paper, originally delivered to a non-Bahá'í audience, discusses the nature of the physical world, the principle of sustainability generally and, in an energy sense, the present energy situation, options for Ireland and the role of the Centre for Renewable Energy at Dundalk Institute of Technology (CREDIT). It concludes by outlining a positive vision for the use of renewable energy in Ireland.

Introduction

The Centre for Renewable Energy at Dundalk Institute of Technology (CREDIT) came into existence in 2002. It is focused on becoming a centre of excellence in renewable energy research, academic programmes and community-related activities. It is the purpose of this paper to establish the basis of CREDIT, to put its activities into a broader context.

This paper will discuss the nature of the physical world, the principle of sustainability generally and, in an energy sense, the present energy situation, options for Ireland and the role of CREDIT.

Life on Earth

The existence of any creation proves the existence of its creator, or to phrase it differently, a creation presupposes a creator. For example, the painting proves the existence of the painter. This principle is graphically illustrated in nature, where what was once a world of molten rock has seemingly organised itself into complex organisms and ecosystems. What was once only the mineral world has progressively added the vegetable kingdom (mineral properties plus the property of growth or life), the animal kingdom (vegetable properties plus consciousness and sense perception) and the human kingdom (animal properties plus the capability of abstract thought and self-contemplation). We also note as a general principle that the creator is superior to the creation. Hence we conclude that there is a Creator that is superior to all of creation, including the human race. The fact that we cannot fully comprehend this 'illimitable superior Spirit'¹ is

natural and right, in the same way that a cat, for instance, has a limited comprehension of human beings.

The great spiritual traditions explain that on this earth, the human race is intended to grow closer to our Creator. We are given a number of ways to do this, including communication (prayer and meditation), learning of the lives and teachings of the Holy Ones (Abraham, Buddha, Krishna, Christ, Muhammad, Bahá'u'lláh and others), and observation of the natural world – God's creation. We can 'know' the artist through the work of art.

We are born from this life into the next, and in this womb-world we are enabled to develop the various qualities that indeed are all we take with us to the next life – such traits as love, honesty and trustworthiness. This earth is indeed a mother earth.

The Principle of Sustainability

Sustainability is defined as 'meeting the needs of the present without compromising the ability of future generations to meet their needs.'² In the context of the discussion above, it is clearly important for society to (a) create the best possible conditions for spiritual development and (b) leave behind an equally beautiful world for generations unborn to make their pilgrimage through this life.

Sustainability is increasingly becoming the touchstone or criterion by which all of our activities are being measured. Although society is at present clearly unsustainable in many respects, its members are taking their first steps down this road, and the very first step is the realisation by all members of the human race of the need for sustainability. Therefore we should feel encouraged to hear this word being used as often as it is.

In an energy sense, sustainability has quite a concrete meaning, and points society in the clear direction of renewable energy. Some years ago renewable energy was not taken as a serious option, and the notion of life after fossil fuels was either not seriously considered or was dominated by an over-optimistic assessment of the possibilities for nuclear fission or fusion. Herman Daly described the energy policy of the past as follows:

Recent growth rates of population and per capita energy use ... are projected up to some arbitrary, round-numbered date. Whatever technologies are required to produce the projected

amount are automatically accepted, along with their social implications, and no thought is given to how long the system can last once the projected levels are attained ...

This approach is unworthy of any organism with a central nervous system, much less a cerebral cortex. To those of us who also have souls it is almost incomprehensible in its inversion of ends and means.³

The implication of the last sentence is that we are failing to realise that our (energy-related) activities must work within a context of knowledge of our earthly purpose, and not simply serve 'market forces'. Indeed, we could say that at present we don't even know the 'ends' our energy activities on earth serve, and we are fairly mindlessly making use of the energy 'means' at our disposal. Knowledge of purpose combined with an increasing appreciation of the wonder and complexity of the natural world will result in the human race 'living lightly' upon the earth. We can take a kindly look at the events of the last century or two to help explain how we find ourselves in this situation.

It is imperative to realise that humanity has rapidly moved from a society that was primarily lived at the local level and in a sustainable manner to one of contemporary excess. In the past, sustainability was not such an important issue, since in general human society did not have the tools or the scale to live unsustainably. With the discoveries of recent times, this is no longer the case. We have moved into a situation where our powers have multiplied, and without much thought we have simply raced forward to use these powers. We are clearly in an 'adolescent' phase, and are only beginning to think about the responsibilities of adulthood as a society. The good news is that we can be confident that adulthood will follow our turbulent adolescence.

There is an intriguing vision of a 'mature' society in the authorised interpretations of the Bahá'í Faith, which embodies the principle of sustainability:

National rivalries, hatreds, and intrigues will cease, and racial animosity and prejudice will be replaced by racial amity, understanding and co-operation. The causes of religious strife will be permanently removed, economic barriers and restrictions will be completely abolished, and

the inordinate distinction between classes will be obliterated. Destitution on the one hand, and gross accumulation of ownership on the other, will disappear. The enormous energy dissipated and wasted on war, whether economic or political, will be consecrated to such ends as will extend the range of human inventions and technical development, to the increase of the productivity of mankind, to the extermination of disease, to the extension of scientific research, to the raising of the standard of physical health, to the sharpening and refinement of the human brain, to the exploitation of the unused and unsuspected resources of the planet, to the prolongation of human life, and to the furtherance of any other agency that can stimulate the intellectual, the moral, and spiritual life of the entire human race.⁴

The quotation goes on to say that such a society will make use of 'all the available sources of energy on the surface of the planet'.

Renewable Energy

Renewable energy is essentially 'all the available sources of energy on the surface of the planet'. The sun's rays impact the earth, resulting in direct heating and photosynthesis. The resulting temperature differences result in the wind, which in turn results in the waves. The tides originate from the moon's gravitational pull on the oceans of the world. All can be used to create useful energy, and all of our energy needs can and will be met from renewables; it is only a question of timing.

A word must be said about our 'needs'. Energy consumption has increased by an order of magnitude over the last half century. Quality of life has not increased by an order of magnitude. With advances in energy efficiency and energy conservation techniques, the entire planet can live very comfortably in an energy sense at a reduced and sustainable level of energy consumption.

The major advantages of renewable energy in Ireland include:

- No pollution or greenhouse gases.
- Available now and forever (secure supply).
- Affordable now and forever (price stability).

- No fuel imports (presently we import 5 billion in fuel annually) can be manufactured locally.
- More jobs.
- No generation equipment currently made in Ireland.

Ireland at present imports 86% of its fuel. We are totally exposed to volatile oil and gas markets. Only 2% of our total energy needs come from renewable sources. This is made up almost entirely of our hydro and wind electricity generation, which supply 5% of our electricity.

Ireland is blessed with a very large renewable energy supply. An estimate of the potential for wind energy alone is given in an ESB International study where it is pointed out: 'wind power could generate around 345TWh/y or around 19 times the current electricity production of the ESB system'.⁵ This report did not consider offshore wind potential, which is also huge. The report also indicates very impressive potential for biomass and wave power.

The cost of wind power has declined rapidly since the beginning of its commercial development in the early 1980s. The cost of electricity from the wind is now the same as fossil-fuel 'brown' electricity. The concrete proof of this statement is that, without grant support of any kind, the company, Airtricity, is now selling 100% green electricity to its 16,000 commercial customers at 10% less than ESB. When carbon taxes or green certificates (or both) are in place, thereby giving value to pollution, wind turbines at lower wind-speed sites in Ireland will also become viable. It is now possible to supply Irish electricity needs, now and forever, in a sustainable way, with almost no increase in electricity prices.

Wave power, biomass (energy crops) and solar power will also make significant contributions to our energy future, and will prove economic when the true cost of fossil fuels (including pollution, etc.) is included in fossil fuel pricing.

There is historical precedent for a relatively rapid change in the energy supply industry. The report, 'State of the World', points out:

The closing decades of the nineteenth century were a fertile period in the history of technology, as inventors applied novel scientific advances to a range of new devices. The

incandescent light bulb, electric dynamo, and internal combustion engine were invented in the late 1800s but had relatively little effect on industry or daily life as the century ended. As they came into widespread use in later decades, however, it became clear in retrospect that the technological foundation for the transition was largely in place by 1900.⁶

Very few in the late 1800s could have predicted the massive change in the energy economy, primarily one moving from coal to oil. However, the technology for the change was essentially available at that time and was only subsequently used on a large scale.

It is clear that another interesting transition is about to occur in this century, using technology developed at the end of the last century.

This transition is beginning already, although few understand that it is both possible and inevitable. For example, Germany had 8,754MW (megawatts) of wind power installed at the end of 2001, having installed about 2,700MW during the year. By way of comparison, 5,000MW of conventional 'brown' generation plant currently supplies the nation's electricity demand. Given that the transition to renewables is well underway elsewhere, a great leap of imagination is not required to see this happening in Ireland. When this possibility was put forward by the present author in the 1980s, there were far fewer people willing to accept the idea!

The Role of CREDIT

The Centre for Renewable Energy at Dundalk Institute of Technology has a clear vision that this transition to renewable energy is imminent, and it is the role of CREDIT to help speed this transition in Ireland. Given our abundance of renewable energy sources, it is envisaged that we will be net exporters of clean, green energy, and that we will be experts in this area. It would be an absurdity for us not to be, and it is a huge opportunity for the Irish nation.

CREDIT will have three primary areas of renewable energy activity to be gradually developed over the coming years: research, academic programmes, and community involvement. The research programmes will make use of the considerable talent and

experience of DkIT staff and graduate students. Academic programmes will respond to the need to educate students to be prepared for the increase in employment in the renewable energy area, and DkIT is well positioned to develop such programmes. CREDIT will also encourage renewable energy activities in the Dundalk area through tours of demonstration facilities, consultancy with local industry, renewable energy publications, etc.

Conclusion

A philosophical basis for the Centre for Renewable Energy at Dundalk Institute of Technology has been presented. Our primary function as human beings on this beautiful planet is spiritual development. We need to optimise the conditions of society such that we can develop in the womb of mother earth, and advance civilisation sustainably such that future generations can also develop.

A small but important part of this society will be a sustainable energy system, which will be based on renewable energy. It is quite evident that we are at the beginning of a major transition from fossil fuels to renewable energy – a transition that will take place at an increasing pace and will be near completion by the end of this century. This transition is necessary, possible and inevitable.

CREDIT will facilitate the transition through research, academic programmes and community activities.

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References

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2. *World Commission on Environment and Development, Our Common Future*, (Oxford University Press, 1987) p. 8.
3. H. Daly, *On Thinking About Future Energy Requirements* (Louisiana State University, 1976).
4. Shoghi Effendi, *The World Order of Bahá'u'lláh* (Bahá'í Publishing Trust, 1938), p. 204.
5. ESB International and ETSU, *Total Renewable Energy Resource in Ireland*, 1997.
6. Brown, Flavin et al, *State of the World* (W.W. Norton and Company, 1999).