Business Day

Clean power is key to the future

The answer to our energy needs may be closer than we think, writes Frank Fisher.

LIKE the famous drunk searching for keys under the streetlight, our governments and oppositions persist in flailing around among 19th century energy strategies. Meanwhile, all around just beyond the light are endless solutions all technically available today. To be visible to governments and business, however, a new set of "market priorities" — the light of venture capital — is required.

Were such new images of sustainability available to governments, here is a 21st century list of energy opportunities in order of their capacity to deliver. It is complemented by a comment on the apparent promise of nuclear:

1. Conservation mining

This is our deepest, cheapest and cleanest energy mine. It supplies energy as if the environment mattered by finding opportunities not to use it! The first level in this mine involves dissolving or reversing perverse incentives to reducing energy use! Here are some examples:

■Remove the incentives to use and to sell more energy. At present, large users still pay less per joule and energy retailers grow by selling more joules rather than selling more energy services such as conservation!

■Replace public transport tickets (which generate more expense than income) with an annual levy;

■Replace travel expense reimbursement schemes that pay upwards of a dollar per kilometre for using a large vehicle, half a dollar for using a small one, nothing for a bicycle and nothing for travel on a periodical public transport ticket;

■Climb out of the DODO urban transport trap by ride-sharing, using a combination of bicycles and trains, taxis etc not to mention changing where one lives. (DODO = Driver Only, Driver Owned cars. A driver-only car uses less than 1 per cent of the energy in its petrol to move its driver. The necessity to own one to access it forces its use for all purposes and strips us of considerable disposable income);

■Create incentives to benefit energy-conserving maintenance and refit by using energy entrepreneurs who provide energy audit and conservation services.

Once we have sorted and restructured the many ways by which we are urged to use more rather than less energy, we can turn to finding ways of living and doing things that don't involve much energy: cricket instead of car racing; fresh local foods rather than processed

imported foods; local holidays at the beach, in the cool of the mountains or even … local to our vibrant and interesting cities.

2. Efficiency innovations Doing what we do now but with less energy, for example:

■Become a vegetarian or at least eat locally grown foods;

■Heat water with the sun rather than with electricity or gas;

■In winter, put on clothes rather than the space heater and; of course,

■Install fluorescent lighting in place of incandescents.

Here, too, will be social innovations such as doing things communally in the heat of summer and cold of winter. Here the communal aspect implies "outsourcing" the air-conditioning or the heating to the community provider such as the sports or arts complex, which thereby does the task more efficiently than were we to demand it be done for each one of us separately.

3. "New" energies Electricity:

■Wind, the most efficient of today's accessible conversions;

■Solar (photovoltaic, i.e. direct solar conversion or conversion via heated substances such as water as in conventional thermal power stations i.e. the sun replaces burning coal);

■Geothermal;

■Other sources — and there are many. It is worth noting that there's no shortage of accessible energy sources available for conversion to electricity, only a shortage of biospheric capacity to make such conversions (which, as we now recognise, has already been overshot)!

Fuels:

Highly problematic. So-called new fuels such as biodiesel, ethanol and hydrogen are neither actually primary fuels. Both are converted from either living materials or water/ methane, etc at great energy cost. Moreover, they compete with other uses of biomass such as food, driving its price up. The energy intensity of these fuels does not end there. Storage and handling are energy intensive (hydrogen gas seeps through the walls of its containers and is dangerous) not to mention the matter of distribution, which involves creating a totally new network of outlets.

A word now, on that essentially 20th century power source, the atom, in comparison with its erstwhile 19th century friend, coal. First, nuclear power is not green, it is not "non-polluting", and is certainly not greenhouse-gas-free.

Nuclear power stations have to be built, maintained, decommissioned and their radioactive parts handled and stored, safely, for thousands of years.

Many characteristics of nuclear power are shared with coal. The consequences of the vast bulk of coal is replaced, in the case of nuclear power, by the vast temporal legacy of its wastes. The dangers associated with coal mining and burning are, in terms of real deaths and injuries, far worse than nuclear, partly because they happen relatively slowly, "by stealth" as it were. They are, as with the common motor car, a "devil we know" killing small numbers continuously,

rather than by, potentially, a single vast mishap.

Moreover, coal especially, is responsible for the slow and largely obscured generation of extensive maiming though injury and disease of its associated populations. The obscuring occurs in part because definitions of morbidity are either not understood at all or at best are only poorly understood by the public at large, for example, long latency periods and the statistical basis of occurrence of the diseases associated with it such as cancers. They are ignored in the same way as we ignore the potential for damage of the huge timespans for nuclear waste control: we simply don't have adequate metaphors with which to grasp either consequence.

Beyond these largely well-known consequences of the thermal power stations are their less well-known environmental demands for water, ecological, geological and climatological dislocation. In the case of water, we are talking about water for cooling, the dispersal of "waste" heat equivalent to twice the energy shipped out as electricity, which when dumped into airsheds around power stations causes local and global climate changes. Local ecosystems are extensively damaged, especially around the respective mines and power stations by earth and water movements and a range of polluting gases and particulates. Geological changes are made through mining, redistribution of mass ("overburden"), site drainage and water course (aquifer) changes.

These consequences are rarely "made good" and were this even possible, would require so much energy to perform as to completely remove both sources of electricity from any rational consideration.

The fact that the French, Swedes and Japanese have managed to live on nuclear power for so long only says something about the poverty of energy accounting processes. It is no different to that indulged in by Victorians who have lived, oblivious, for so long from the foulest of coals. All four simply mortgage the future of the planet, for which none are formally accountable — yet! The fact that these socially well-organised societies have managed to live with such technologies, relatively safely for so long, says a lot about the level of uncritical social coherence we are capable of.

Wind and solar farmers, by contrast, are just not in the same league. The ecological impacts per megawatt hour generated from these sources, are tiny in comparison with thermal sources. In terms of aesthetics, their effects on the planet can be almost totally obliterated once their working lives are over. By that time, hopefully, efficiency improvements and conservation mining will be so much parts of our energy pictures as to make renewables coupled with advanced energy storage systems the new base-load providers.

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