The green economy and Africa

In his role as chairman of the African Hydrogen Partnership, Ian N Fraser refutes ongoing attacks on the green-economy and its viability. Instead, he argues the positive case for adopting green hydrogen as an ideal energy carrier for realising a successful transition to a carbon neutral planet powered from renewable energy sources.

There have been several articles published recently that attack the burgeoning green energy economy. The tone and trajectory of these articles is reminiscent of those published during the 'fight back' by the tobacco industry in the seventies: when the seriously destructive effects of smoking became ever more apparent. Numerous articles were published which claimed that the medically demonstrated adverse effects of smoking were either untrue or exaggerated. It transpired that this was largely promoted and financed by the tobacco lobby.

It is also interesting to note that these anti-green energy missives make little or no attempt to propose an alternative way forward, other than to imply that we should stay with our present destructive habit of burning of fossil fuels. In the case of an article by the founder of the Copenhagen Consensus, Bjorn Lomborg, Africa was included in a list of countries that cannot afford the cost of green energy.

The argument presented tends to be based on two issues. On one hand, a totally spurious claim is made that green energy will be destructively expensive. Even if this were true, which demonstrably, it is not, he seems to be arguing that we should carry on blithely to destruction: because it is too expensive to stop.

It also makes no sense to quote exaggerated numbers and attach these to green energies, without balancing this against the immense economic advantages that green energy will achieve. Using Africa as an example, the continent will benefit greatly from the economic benefits of generating, using and exporting green energy instead of importing fossil fuels at immense cost, both financial and environmental. In fact, Africa has the renewable resources to become a net exporter of energy.

In a recent article the benefits of green energy are brushed aside, using the argument that while energy from the sun and wind may come out of the sky, the machinery to turn them into energy does not; and that the required machinery requires mining, manufacture and transport. Well yes. And the same is true of present energy sources and industries. The cost of the geological research, plus the tapping, processing and refining of fossil fuels is enormous and will become more so as resources dwindle.

However, once the hydrogen economy is ubiquitous, the energy to mine materials and to manufacture, provide and transport the support equipment will all also come from renewables, via the green hydrogen economy. It should be noted that virtually none of these materials will be consumed and almost all will be recyclable.

Nel Hydrogen Electrolysers delivers containerised Proton PEM® electrolysers to produce green hydrogen at refuelling stations sites for heavy-duty hydrogen trucks. Source: Nel Hydrogen Electrolyser.

Another objection is raised based on the totally incorrect assumption that the green economy will depend on energy storage in chemical batteries. There seems to be an impression that the green economy will be based on battery storage of energy to provide power when the sun is not shining or the wind not blowing. This is certainly not the case. Yes, there is a rather inexplicable obsession with battery powered vehicles. This will be largely self-limiting for several reasons, not the least being the fact that batteries deteriorate fairly quickly over their life span, eventually requiring expensive replacement – a fact that is either denied or brushed aside by the battery lobby. In addition, apart from being useful for smaller local city run-around vehicles, batteries will never be able to provide viable power for heavy transport vehicles such as heavy goods vehicles, aeroplanes and ships. Worst of all, once batteries reach the end of their useful life, we end up with masses of toxic un-recyclable chemicals.

The future is green hydrogen. This energy carrier can be generated anywhere, including in Europe. And when the sun or wind energy is not available, it can be augmented by green hydrogen that is generated in, and exported from, areas such as Africa, which has vast open spaces and abundant free energy in the form of sunlight and wind. The benefit to places such as Europe is that a fair amount of the energy required can indeed be generated locally by wind and sun, and the gaps in these energy resources can be filled by hydrogen delivered by tanker or pipeline from Africa.

Is this a problem? Well, at present virtually all energy in the form of fossil fuel is imported from the Middle East or elsewhere. So the hydrogen economy represents a net gain for Europe, as it will only be importing a portion of its energy requirements. There is, in fact, already a pipeline project under way to deliver hydrogen from Morocco to Europe.

And at what cost? It is reliably projected that within the next few years, as the economies of scale become apparent, the cost of green hydrogen for motor vehicle fuel, delivered at the dispenser, will be lower per energy unit than petrol or diesel.

The repeated claims that the green economy will be massively expensive are simply wrong. The technologies required to capture wind and sunlight, to generate hydrogen and then convert it into energy are all readily available and entirely re-cyclable. If we just consider the green economy in Africa, the continent will rapidly become one hundred percent independent of imported fossil fuels, saving the African economies billions in foreign exchange. As a further bonus, Africa will be able to export to Europe and other countries the large volumes of excess hydrogen generated, earning valuable foreign exchange revenues in the process.

Far from being destructively expensive, we cannot afford not to convert to the green hydrogen economy.

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There are also issues raised around habitat loss from solar and wind installations. Yes, some areas will be covered by solar panels, with very little effect on habitat, either flora or fauna. Wind generators are not the prettiest objects on the landscape but neither are the oil wells, refineries and such associated with fossil fuel. And, with the reduction in noxious and greenhouse gases in the atmosphere, there will still be a clear net gain for our planet.

Hydrogen is the future. This is recognised by the fact that virtually every motor manufacturer is already producing or developing hydrogen powered vehicles that have the performance and range equivalent to petrol or diesel vehicles. And a hydrogen powered vehicle can be refuelled in a couple of minutes; unlike the couple of hours required by a battery vehicle after a trip of only a few hundred km.

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African Hydrogen Partnership: AHP

African Hydrogen Partnership (AHP) is a non-profit Africa wide trade association registered in Mauritius. Dedicated to promoting green hydrogen and fuel cell technology in Africa, the AHP strives to create new investment opportunities and jobs in Africa by supporting the development of hydrogen and green economies, improving energy security and air quality, and reducing carbon dioxide emissions and global warming.

The guiding principles of the AHP Charter suggest that member companies:

- Support and strive to achieve the climate targets of the Paris Agreement as well as the UN Sustainability Goals.
- Promote green hydrogen as a clean, renewable and sustainable energy carrier and feedstock to achieve the transition to net zero emission societies.
- Recognise that hydrogen can be produced in many ways and that there are different carbon free/neutral hydrogen production pathways in order to enable a zero-emission society.
- Cooperate in the transition of energy generation, transportation, consumption and sector coupling to hydrogen, fuel cell and related technologies as well as the promotion of a strong African hydrogen industry incorporating these systems and technologies.
- Promote fair business practice and provide the necessary support to facilitate the establishment of African hydrogen value chains.

The AHP strives to accelerate the deployment of green hydrogen by aligning general industry, the renewable industry and the financial community and to communicate and share their views with the public, governments and administrative bodies. ❑