GREEN NEDERLANDS

My Energy Change Paper

This paper aims to expose an idea of a sustainable building that implements different sources of sustainable electricity for hydrogen production. The basic idea is built without setting too many limits in thinking of solutions. By combining and using past, recent, and future technologies, the project could obtain concrete results. The Netherlands and, in particular, North Nederland have already been identified as the capital of the hydrogen valleys. Still, despite this, we can and must further expand this concentration by trying to reach the maximum speed that our technologies allow us to achieve. The potential for geothermal production in the Netherlands would allow electricity production, and a two-stage process by coupling with electrolysis methods will allow hydrogen production.

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Every high-rise public and private building (i.e., Groningen Forum) could be equipped with high-efficiency micro -electrifiers, a mini-geothermal system, a micro-hydroelectric plant, solar panels and hydrogen storage and refuelling systems. Mini geothermal plants could be built for public and residential buildings that could be used to produce hydrogen.

The hydrogen produced would be used for mobility (mainly public transport) or converted into electricity and placed on the national grid. The liquid hydrogen would then be stored on-site in small tanks or placed on the pipeline network to be transported over long distances to geological storage centres (aquifers, salt caves, depleted hydrocarbon wells). The heat generated by the micro electrolysers should be stored using the geothermal stinks also as heat pumps. In this way, it would also have an independent heat tank for the winter and fresh air for the summer. A rainwater tank would be placed on the top of the buildings. The water would be dropped at high speed from the maximum height to the ground inside pipelines. The fall of water would go to power a turbine that would produce electricity and hydrogen in the second step. The water would rise by consuming the energy surplus stored in batteries from the geothermal system (at night) and the photovoltaic panels (during the day). In this way, any high-rise building could produce hydrogen, electricity and heat sustainably in every city. In the future, instead of using water inside the geothermal plant, the CO_2 captured in the town could be stored. Or using the brine of thermal waters, these could be sent to the lithium extraction plants located in the suburbs. The brine of the thermal waters contains a lot of dissolved valuable lithium for the production of batteries. The lithium-deprived water would be sent back to the building it came from to be re-introduced into the geothermal well with a continuous cycle. A percentage of the proceeds from a surplus of hydrogen produced and sold could go to the R&D sector of hydrogen infrastructure and nuclear fusion.

CONSIDERATIONS

Each cost could be incentivized and financed by a substantial investment involving multinationals, governments, and private citizens.

After sustaining the initial investment, it would only be a matter of waiting and working. The costs are lowered with the increase in hydrogen diffusion and the proceeds obtained from its implementation. The basis of this concept is very similar to that needed to move an object. In the beginning, it is necessary to use a much greater force to overcome the friction that opposes our effort, but subsequently, the effort to be applied is reduced. Once you have overcome the top of the hill, there is the descent, and the action is minimal. It will be vital to coordinate each activity in the best possible way by exploiting each company from the most minor and most local to the most giant multinational, avoiding carrying out projects that are disconnected from each other or in which small companies cannot enter. Furthermore, new jobs could be created to encourage economic growth and train new professional figures.