Decarbonisation Pathways – Green Hydrogen

Carbon-cutting actions are bringing to the fore hydrogen’s versatility as an energy carrier in the battle to combat the global climate emergency. The potential role of hydrogen technologies in a decarbonised world is long recognised. However, wide-scale success in implementing suitable hydrogen technologies has been plagued by cycles of high hopes followed by disappointments. As the energy transition accelerates, an alignment of environmental urgency, political influence coupled with techno-economic solutions may finally lead to realistic applications across sectors.

The prospects that lie in the hydrogen space offer The NGC Group an opportunity to seek new markets and products aligned towards a nascent growth area – decarbonised petrochemicals – which can be a powerful platform upon which we build a sustainable Group and national future.

Why Hydrogen?

Hydrogen is a clean fuel whose sole by-product when burned is water. It can be produced from fossil fuels such as natural gas or coal through thermal processes, or from renewable sources such as solar and wind power.

Green hydrogen

Source: Gasunie

For Trinidad and Tobago (T&T), there is an obvious opportunity to produce hydrogen and utilise it as feedstock in the country’s well-established petrochemical sector, displacing grey hydrogen production. Beyond the industrial sector, hydrogen would provide a possible pathway towards clean mobility as the transportation sector shifts from gasoline towards electric driving, both with batteries and fuel cells powered by hydrogen. Further afield, establishment of a regional industrial cluster is expected to be kickstarted from a hydrogen production complex that would complement Caribbean decarbonisation efforts and bring much needed economies of scale.

Planning for a Hydrogen Economy

A modular, purely green hydrogen pilot facility can provide valuable insight for developing a green hydrogen economy. A pilot would offer proof of concept concerning the application of renewable energy (RE) technology for hydrogen production in the local context. A pilot project would facilitate:

- The expansion of a T&T-based facility would in turn assist with the formation of a regional cluster. Hubs and clusters can link production, industrial demand, consumer demand, storage, usage, and trading workforce in a small, centralised, focused area.

Our Work Ahead

With support from the Ministry of Energy and Energy Industries (MEE) and the Ministry of Planning and Development (MPD), National Energy secured funding from the Inter-American Development Bank (IDB) under an IDB-executed non-reimbursable Technical Cooperation Program of the Green Hydrogen Market in Latin America and Caribbean (LAC) Countries. This funding will be used to gain an understanding of the economic parameters for producing green hydrogen locally through the conduct of feasibility studies in 2021, as well as developing a strategy to create a low carbon energy industry using clean hydrogen.

Securing Our Future

As a state-owned enterprise, National Energy actively supports the country’s pursuit of a hydrogen economy, through the establishment of a pilot green hydrogen facility, and facilitation of other hydrogen research and development projects. With the right partnerships, investment and policy frameworks, this fuel of the future would launch Trinidad and Tobago into a position of leadership in the global clean energy space, and in alignment with the United Nations Sustainable Development Goals.

For Small Island Developing States, there is much to lose should global decarbonisation efforts fail. It is therefore essential that collaborative and meaningful actions be taken to stay on the 1.5°C climate-safe pathway of the 2015 Paris Agreement. With natural gas identified as a critical transition fuel, T&T is uniquely positioned to not only maintain the shift to natural gas from other fossils but also simultaneously accelerate the country’s progress toward low-carbon alternatives. Additionally, efficient use of energy, carbon capture and storage, and renewable energy will be critical elements of development on this path. Notwithstanding, and even more important will be the integration required with education, services, communities and other stakeholders to build the new culture of awareness that is required to enable this transformation. Future articles will explore these topics in more detail as we create the roadmap towards a future that would endure for many generations.