Glasgow signposts our need to scale hydrogen

By Dr. Fiona Simon on Dec 01, 2021

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Glasgow may not be the first place to spring to mind when you think about Great Britain's renowned tourist attractions, but it manages to draw two million visitors a year.

What was once a dominant hub for chemical and textile production and shipbuilding has diversified to become something of a cultural magnet.

The metamorphosis that took Glasgow to be regarded as home to institutions like Kelvingrove Art Gallery and Museum, the Royal Scottish National Orchestra, Scottish Ballet and Scottish Opera mirrors a step-change that the world needs to make.

Change is never easy and the analogy wasn't lost on me when I represented the Australian Hydrogen Council at this year's COP26.

More than 39,000 people flocked to Scotland's most populous city.

The public speech-making by world leaders that made it into media was only part of what went on.

Networking, exchanging ideas and learning the details, first-hand, of how other countries are making the change was invaluable.

The enthusiasm of other groups in attendance was not only inspiring, but illustrative of the mood for co-operation.

The future of hydrogen was a dominant topic.

Most people were in furious agreement that in the long term all hydrogen production must be green.

Until we get to scale, however, it's not really a matter of green versus blue.

Right now, it's all about ensuring we are creating a sustainable industry where hydrogen is the best decarbonisation solution, with the lowest emissions for a given use.

As the Australian Hydrogen Council points out in its recent white paper, the hydrogen supply chain has many moving parts, with economic and engineering decisions to be made about large scale investments at multiple points.

We are buoyed by the enthusiasm of many in Australian political life for hydrogen as the catalyst for significant change, but we still need to see more detail about how we get there.

Putting in place the right policy and regulatory settings is vital so that we make the best use of existing assets and understand the impact on consumer prices.

One of the key recommendations of our white paper is that the Australian Government must establish a body to develop an evidence-based approach to planning and coordinating the transition to net zero – including the development of hydrogen infrastructure – and reporting progress.

We suggested an initial annual budget of A$10m would be required.

This needs to be a well-resourced and appropriately powered authority to support all tiers of government – and vital critical private sector investment – being on the same page.

Common to all discussions on hydrogen in Glasgow – and, it seems, elsewhere – was the question of scale and how we get there.

We need unity on what scale means and not just in terms of local projects and hubs.

Local projects are important to setting up our capability and maintaining jobs but we also need to set up global markets.

Australia's proximity to Asia means we are well placed to be a world leader in energy exports, but the (rather large) take-out from COP26 is that we need to Think Big.

Let's flesh that out.

Assuming long-term clean hydrogen is green, Australia's electricity generation capacity will have to ramp up immensely.

On top of the renewable electricity required to replace coal from domestic electricity generation and to electrify light transport, we need new generation capacity if we are to be a serious hydrogen exporter.

Special Adviser to the Australian Government on Low Emissions, Dr. Alan Finkel, says that if we are to export as much hydrogen by energy value as the LNG we exported in the year to June 2020, we will need about eight times the total electricity that was generated in Australia in 2019-22.

Dr. Finkel says that if we used solar for that energy, we would need around 75 times Australia's installed 2019 solar capacity.

Adding other export capabilities, such as a new green steel industry, will increase our renewable electricity requirements by orders of magnitude.

As well as sourcing markets, there are issues that need to be resolved, such as how we store and transport hydrogen.

Hydrogen exports will need to be transported by ship, and this natural constraint on volume and weight means that we need to consider a range of options for the most efficient form.

Current discussions focus on hydrogen being shipped in a liquid form or via a chemical carrier such as ammonia, but there are also options to transport it as a compressed gas or as a metal hydride.

This brings up questions about how international ports can prepare, and what they might be preparing for. This is where a national government body with the data, and supporting international relationships, would be very helpful to inform major decisions.

About the author

Dr. Fiona Simon is CEO of the Australian Hydrogen Council.