

## **Air Liquide's vision for a Norwegian Hydrogen Strategy**

Air Liquide is an international group with over 50 years of experience in hydrogen technologies and supplies gas to customers in more than 80 countries. The hydrogen strategy of Air Liquide is to produce, transport, and build the infrastructure (Hydrogen Refueling Station - HRS) for the end users within the transport and industry sectors. As an example, in Norway Air Liquide has provided the first generation hydrogen station for buses in Rosenholm (2011). Today Air Liquide has delivered over 100 HRS globally, owns and operated over 40 large hydrogen production plants and over 1850 km of hydrogen pipelines, as well as several hydrogen liquefaction plants with clients in applications such as heavy industry, the space industry or nano-technologies. Air Liquide recently invested 150m\$ in a new liquefaction plant in California, to provide liquid hydrogen for the mobility sector in the US west-coast.

We are co-founder and co-chair of the Hydrogen Council, an international CEO-level advisory body providing a high-level vision for:

- the essential role of hydrogen for an energy transition
- the plan to deliver this ambition worldwide
- the challenges to overcome for large scale deployment

Norway has the potential to become a leader in zero-emission mobility for ships, buses, trucks and cars, it is a leader in the innovation and development of clean energy solutions. Due to its energy mix, including its hydro and wind power, Norway can become a significant player in the production and distribution of low carbon hydrogen. Segments that are the most adapted for early deployment of hydrogen applications in Norway are the heavy duty transports, like trucks and maritime applications.

Hydrogen plays a systemic role in the energy transition and will be unavoidable in the future energy mix to decarbonise end-use markets distributed across regions, we believe that the government should continue develop zero emission policies, in particular in the transport sector, where targets are:

- 50% of new light duty vehicle sales to be zero-emission by 2025, and 100% by 2030.
- 75% of new long distance buses and 50% of new heavy duty vehicle to be zero-emission by 2030.
- 40% of the near-shipping to be low or zero-emission by 2030.
- 100% of the road ferries, and express boats to be zero-emission by 2030.

To reach those targets, we believe that the government should set up support schemes adapted to each sector to mitigate investment and market risks - such as ramp-up - in the market initiation phase to enable a rapid uptake of hydrogen mobility.

Beyond R&D, it is now crucial to develop mass market for zero-emission mobility in order to build volumes and decrease costs.