

# HIF Asia Pacific response to Low Carbon Liquid Fuels consultation

## 1. Introduction

### **HIF Global**

HIF Global (HIF) is the world's leading e-Fuels company, producing low carbon fuels using renewable energy, green hydrogen and recycled CO<sub>2</sub>.

The company aims to produce 150,000 barrels per day of e-Fuels by 2035, capturing over 25 million tons of CO<sub>2</sub> from around 13 projects in strategic locations around the world.

HIF's shareholders include AME, a Chilean Independent Power Producer, which retains majority ownership, institutional investor EIG, Porsche, technology company Baker Hughes, Idemitsu Kosan, Japan's second largest petroleum refiner and Gemstone Investments.

In 2022 HIF's Haru Oni plant in southern Chile entered production and supplies e-Petrol to Porsche in Europe.

HIF has four e-Fuel projects in advanced development – in Texas, Chile, Uruguay and Tasmania.

### **HIF Asia Pacific**

HIF Asia Pacific is a wholly-owned subsidiary of HIF Global and is based in Sydney.

HIF sees Australia as an important production base capable of hosting multiple plants allowing the company to achieve its goals.

HIF Tasmania will make use of the state's green grid to produce hydrogen, via 255MW electrolysis capacity, which will be combined with CO<sub>2</sub> recovered from sustainable plantation biomass to manufacture e-Methanol, which can be used directly in shipping or converted into e-Petrol, e-Diesel or e-SAF.

The project, located 30km south of Burnie in North West Tasmania, was one of only six to be shortlisted for the Hydrogen Headstart program and is anticipated to create up to 200 long-term, permanent jobs.

HIF Tasmania represents a \$2bn investment in the region and is anticipated to produce 300,000 tonnes of e-Methanol per annum when it enters production in 2030.

HIF is actively investigating opportunities to expand its Australian portfolio, focusing on key geographies with the potential to host large-scale projects, with sites in Queensland and Western Australia identified as strong candidates for replication of HIF's gigawatt-scale Matagorda project in Texas.

Key factors underpinning Australia's potential as a production base include access to competitively-priced renewable energy, a skilled local workforce and well-developed industrial infrastructure, as well as supportive Governments at both Federal and State levels.

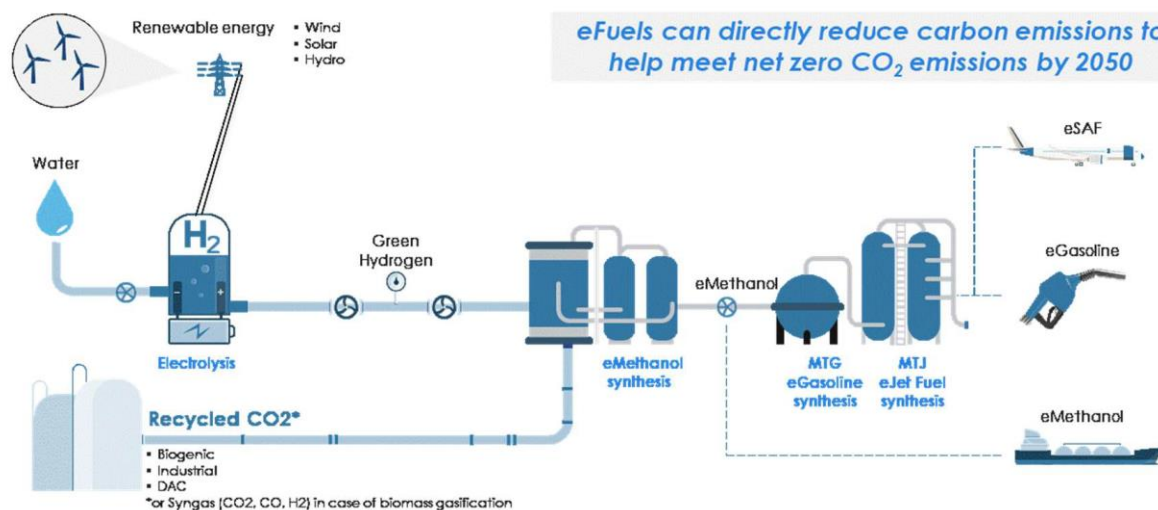
## E-Fuels

E-Fuels are carbon neutral synthetic liquid fuels made from green hydrogen and recycled CO<sub>2</sub>. As they are a synthetic version of a fossil fuel, they are a drop-in fuel that can be used in existing engines and infrastructure and can be either blended with fossil fuel or used as 100% replacement.

In this regard e-Fuels offer three particular advantages as a means of reducing emissions from the transport sector.

- Environmentally friendly (more than 90% GHG emissions reduction compared to fossil-derived equivalent)
- Compatibility with existing engines and infrastructure
- Versatility across sectors and applications

While two main processes exist to manufacture e-Fuels, HIF has specialised in the methanol pathway, preferred for the high level of technology maturity of the process and the flexibility to produce multiple products for multiple markets.



E-Fuels can therefore contribute to decarbonisation in all sectors where conventional fuels are currently used but, as the paper notes they are particularly well suited for in hard (or costly) to abate transport applications such as aviation, shipping, heavy vehicles and defence.

HIF notes that in addition to its emission reduction benefits, a competitive e-Fuels sector operating at scale also offers Australia other critical opportunities through the generation of export income, jobs, regional development and fuel security through local production and fuel supply diversity. E-Fuels can also assist retention of critical downstream manufacturing capability as they can substitute for crude oil in chemical production.

Importantly, e-Fuel production will also pull through new renewable energy and green hydrogen development, not only accelerating the clean energy transition but providing additional economic and social stimulus to regional Australia.

These benefits will grow as the industry's capability and capacity builds.

## 2. Policy principles

HIF is engaged in multiple jurisdictions globally and is a member of many industry organisations around the world. Drawing on this experience and knowledge base we believe the following principles are important foundations when considering new measures or frameworks for the development of the LCLF industry in Australia.

In this regard, policy measures should demonstrate:

- **Environmental integrity**

Environmental integrity is essential to underpin the success and sustainability of the industry, not just to achieve emissions reduction targets but also for consumer acceptance and reputational consideration. This requires LCLF measures to be backed by an open, transparent and robustly tested carbon accounting and tracking methodology.

- **Technology agnosticism**

Technology neutrality is also essential to ensure access to the widest range of decarbonisation options. While market and technology maturity may require some element of bespoke policy support, this should be calibrated so that no individual technology or class is intrinsically favored over another. To the extent possible support should be assessed looking across supply and demand side measures and against policy objectives. Measures should also not inadvertently form a barrier to entry, which can often happen through solely relying on competitive grant structures.

- **Emissions intensity measured on a life cycle basis**

Full life cycle emissions-intensity based measures will properly encourage the development of fuel and upstream low carbon inputs while end-of-pipe or engine efficiency-based measures are inherently less effective and do not promote sustainability across the production chain. For example, policy that is based exclusively on electric vehicles will take longer and be more expensive to secure decarbonisation than policy that also includes the development of LCLF, especially in applications where electrification may be impractical.

- **Efficiency with minimal disruption for consumers or critical transport and energy markets**

Efficient and non-disruptive measures will impose lower economic cost and gain greater consumer acceptance. This suggests that phased transition rather than abrupt change is ideal. Australia as a large and trading nation is critically dependent on its transport sector and on global aviation and shipping markets. We also import most of our vehicle fleet so it is vital that any measures imposed on this sector or fuel producers do not impose a disconnect or high costs along this supply chain.

- **Certainty and bankability for long-lived capital-intensive projects**

Policy certainty for long-lived capital-intensive projects is critical in attracting project financing and offtake. In addition, development of a large scale LCLF industry, including e-Fuels, is a long-term task given the size and maturity of today's industry. This suggests that market based

or regulatory/standards-based measures will have a longer and more sustainable reach in developing an LCLF industry than transitory budget-based measures.

- **Drive continuous improvement in environmental outcomes and production cost/efficiency**

Driving continuous improvement is also critical from a cost and environmental outcomes perspective and measures should inherently reward performance and drive market growth.

- **Promote development of an Australian LCLF industry**

As outlined above, Australia has clear potential to be major player in the global transition to a low emissions future, but this will only be achieved through a wholehearted commitment to developing a domestic industry. For Australia to compete on the world stage, broad incentives are required to establish an industry capable of achieving this potential as well as demand-side policy steps such as a mandate to encourage local decarbonization.

### 3. Consultation questions

#### 3.1 The low carbon liquid fuels opportunity

- **The Government is seeking additional insights into the market, production and cost information.**

HIF considers Australia to be an attractive location for a production base for e-Fuels. This is driven primarily by access to vast renewable energy resources. For grid-connected projects, such as HIF's proposed Tasmania facility, new renewable energy development is underwritten through our need to procure PPAs from new generation, supporting existing Commonwealth and State policy.

For the larger follow-up projects HIF envisages as the second generation of e-Fuel plants in Australia, development of off-grid renewable energy supply may be required. Australia is one of relatively few jurisdictions worldwide with both suitable wind and solar resource and space for gigawatt-scale off-grid generation. Additionally, pursuing an off-grid power supply means low carbon fuel production can be facilitated without competing for electrons being used to transition Australia's energy market towards a renewable future.

Australia also benefits from the traditional mix of factors which attract investment, such as a skilled workforce, stable economic and social environment, existing industrial infrastructure and, in general, business-friendly regulatory frameworks as well as an advantageous geographical location from which to service colossal emerging markets in Asia.

However, this competitive advantage is far from absolute and there is increasing competition from a number of other jurisdictions which benefit from lower labour costs and existing incentive regimes. For example, the effect of stackable subsidy available under the Inflation Reduction Act means that HIF's Matagorda project in Texas is expected to produce e-Methanol at a significantly more competitive price than an unsubsidised HIF Tasmania facility.

HIF Asia Pacific is well-placed to make this observation given HIF's global portfolio, where Australian operations compete for development expenditure with projects in the US, South America and Africa.

The existing market for low carbon liquid fuels is driven by regulation, as noted in the consultation document. While e-Fuels can be used to supply existing low carbon fuel markets such as in Europe or California, these have up to now been supplied with first generation biofuels. These existing regulated low carbon fuel markets, and those now emerging around the world, are expected to grow substantially in the future as the pressure to decarbonise the transport sector intensifies, while the increasing sustainability requirements being placed on biofuel feedstock will create challenges for supply to keep up with increased demand.

E-Fuels provide higher emission reduction potential than biofuels, are easier to scale, and will be economically competitive in the mid/long term. Additionally, e-Fuels offer an alternative to biofuels that are up to twenty times more efficient in land-use and circumvent the food versus fuel debate.

In addition to the SAF requirements referred to in the consultation paper, the International Maritime Organisation (IMO) GHG 2030 strategy contemplates a requirement to use zero or near-zero carbon shipping fuel for 5% of total shipping fuel by 2030 and a 40% average reduction in carbon intensity across international shipping.

Research demonstrates a potential market for e-Methanol equivalent of up to 800 million tonnes/year by 2050, and as much as 40 million tonnes per annum by 2030, with most of this focused on the aviation and shipping sectors.

Without sufficient incentives for production in this country, this international market will be supplied from elsewhere, forcing Australia to rely on imports to support the decarbonisation of our own transport sector, particularly in the hardest-to-abate areas such as aviation and shipping.

The importance of decarbonising Australia's liquid fuels supply is emphasised by the simple fact that liquid fuels represent the largest source of energy use in Australia and account for around 50% of final energy use.

While petrol use is expected to decline to 2035 as electric vehicle use increases, it will likely still be in use at around two-thirds of current levels. However, diesel and jet fuel use will grow strongly over the period overtaking petrol, driven by expansion in freight and air activity. These activities currently represent around 40% of transport sector emissions.

This underlines the need for policy to assist the development of a low carbon liquid fuel industry, particularly e-Fuels, to complement the initiatives in place to encourage the uptake of electric vehicles and enable Australia to begin reducing emissions immediately, notably in hard-to-abate applications which lack electric alternatives.

## 3.2 Options to support an Australian domestic low carbon liquid fuel production

- **The Government is seeking your views on the options for a production incentive scheme:**
- **The Government is seeking your views on the design of production incentives to appropriately incentivise the production of SAF and renewable diesel and different pathways to produce LCLF**

Introduction of production incentives are an essential step in driving domestic decarbonisation via low carbon liquid fuels. As the proponent of one of only six shortlisted projects for the initial round of the Hydrogen Headstart program, HIF notes that both this and the Hydrogen Production Tax Incentive (HPTI) provide a solid platform for developing low carbon liquid fuel production capacity in Australia.

HIF has engaged directly with Treasury on the design of the HPTI and there are a number of features proposed that are especially welcome, such as the inclusion of hydrogen derivatives and the planned non-inclusion of temporality requirements (such as hourly time-matching of hydrogen production with renewable energy generation) which would serve to stifle rather than encourage industry development.

Compared to competitive grant-funding processes, and noting that the first round of the Hydrogen Headstart program will ultimately benefit no more than three projects from a field of 60+ applicants, the HPTI can maximise the development of an industry by supporting all eligible producers rather than a relatively small number of successful projects.

By providing an entirely predictable sum in support, it will also help de-risk long-term investment (10-15 years) to ensure continuous production and due to a relatively straightforward administration, should be capable of rapid implementation.

However, we believe that there is a case for additional transitional support for low carbon liquid production, to help Australian projects win a share of the enormous global market as well as ensure availability of domestic supply. This is particularly important for fuels such as e-SAF, which requires greater additional equipment to produce (than e-Diesel for instance) and therefore incurs greater cost.

A Contract for Difference (CfD) approach would be effective in addressing revenue risk by providing certainty and encouraging offtake contracts in a nascent market while also helping to bridge the gap between initial production cost and offtaker expectations.

Additional advantages to Government include that project, technology and production cost risks remain with the project proponents rather than taxpayers while this approach also allows Government to quantify a level of carbon abatement "premium" in the strike price and to calibrate this as market and price discovery evolves.

Importantly, to allow competition on a level playing field with overseas producers, these incentives should be capable of being combined, as is the case with incentives available under the Inflation Reduction Act for instance.

- **The Government is seeking your views on the following considerations regarding emissions and sustainability criteria**

Any new LCLF production incentives should include emissions intensity thresholds as eligibility criteria. These should be set so they are achievable, realistic and credible. They should also support integration with global fuel markets rather than be set (either too low or high) such that they isolate Australian producers or create barriers to international activity.

HIF is supportive of the Guarantee of Origin scheme and the specific inclusion of LCLFs, as this will enable Australian production to compete internationally, with the caveat above.

While there are many examples of emissions calculation and certification frameworks in operation internationally, it is HIF's view that to avoid unnecessarily burdensome (and industry development limiting) frameworks, all emissions reductions calculations should take a well-to-wake/wheel/tank approach that includes extraction, production, transportation and storage.

Any LCA calculation process that includes the combustion of the fuel must also allow for the displacement of the fossil fuel alternative, similar to the calculation in the California LCFS market. E-Fuels are chemically equivalent to their fossil fuel counterparts and therefore the CO<sub>2</sub> contained in the eMethanol/eSAF/ePetrol/eDiesel is released into the atmosphere when burned in the engine. However, since it is CO<sub>2</sub> that was captured and recycled, it is a CO<sub>2</sub> recycling program that enables fossil fuel to stay in the ground. Compared to the fossil fuel, therefore, it is a CO<sub>2</sub> reduction and must be accounted as such.

Community benefits associated with LCLF production include:

- Significant employment and economic growth

HIF's 250MW electrolyser capacity project in North West Tasmania alone represents an investment of approximately \$2bn, will require a peak construction workforce of in excess of 600 and up to 200 permanent operating roles. With sufficient support an LCLF industry operating around the country, predominantly in regional areas, would be expected to create thousands of new jobs. ARENA's 2021 Australia's Bioenergy Roadmap, which considered biofuel alone, without a contribution from a synthetic fuel industry, estimated as many as 26,200 new jobs and an additional \$10bn of GDP. It also opens strong possibilities for existing workers to transition their skills to an emerging low emissions industry.

- New revenue streams for existing key industries

Supply of feedstocks creates opportunities in the agricultural sector. For example, HIF's Tasmania facility proposes the use of locally-sourced sustainable plantation residue as its source of CO<sub>2</sub>. This effectively transforms the region's abundant plantation residue from an issue to be managed into a source of income.

- Fuel security

Establishing Australia as a significant production base for LCLF greatly lessens exposure to supply chain vulnerabilities and diversifies the domestic fuel mix.

- Public health

Uptake of e-Fuels has considerable public health benefits through underpinning renewable energy development as part of the transition away from fossil fuel generation.

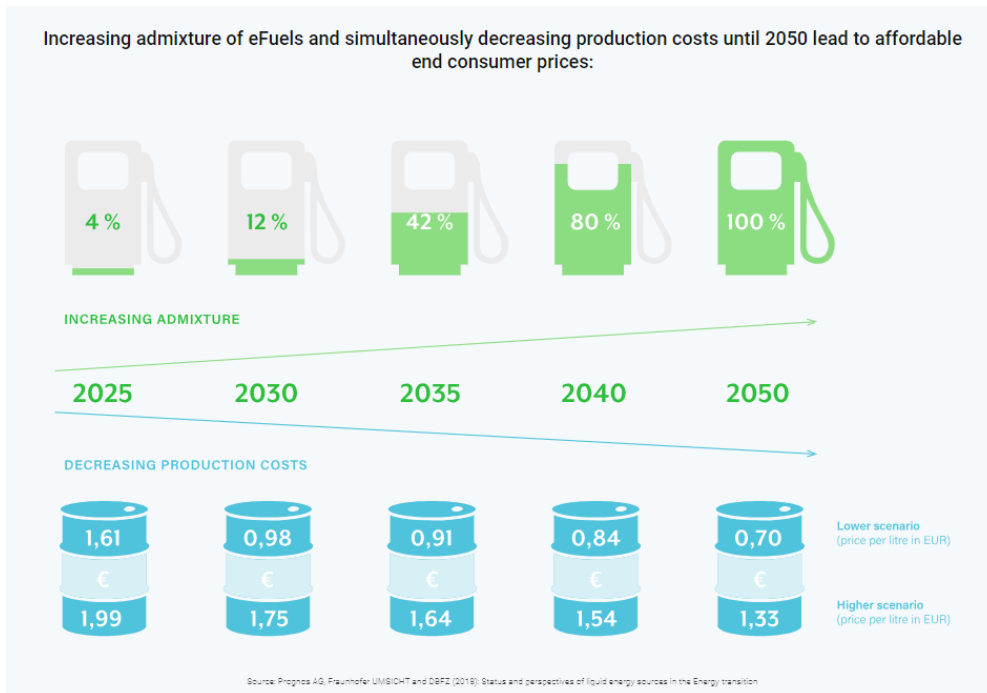
### 3.3 The Government is seeking your views on the design of demand-side mechanisms:

- **What options should the Government consider in its regulatory impact analysis, such as a mandate introduced over time, low carbon fuel standard connected with a trading scheme, a non-binding target or other demand options?**

HIF is strongly supportive of the introduction of a mandate introduced over time to stimulate domestic demand for sustainable sources of fuel. While any demand-side mechanism will not achieve all the Government’s policy objectives without supply-side incentives to encourage domestic production, mandates have been demonstrated to be efficient in increasing uptake without causing significant contention in various jurisdictions around the world.

A mandate delivers certainty for producers, helping to create local supply chains, drives emissions reductions and removes any competitive disadvantage for offtakers, whereas in its absence, voluntary offtake is substantially more unlikely. As with similar systems overseas, the proportion of LCLF introduced into the blend can be increased gradually over time, reducing the impact on consumers as production increases and costs fall.

The EFuel Alliance, based in Europe, estimates that parity between fossil-derived and synthetic e-Petrol can be achieved by 2050.



In designing a mandate, consideration needs to be given to the scope and potential to drive down emissions across the transportation sectors. While many of the existing and similar



regulatory mechanisms cover aviation, both California and British Columbia's Low Carbon Fuel Standards extend to ground transportation. HIF notes that the New Vehicle Efficiency Standards is the government's proxy measure for delivering emission reductions in the passenger and light commercial fleet and while LCLF are not overtly excluded, measuring emissions at the tailpipe only, results in an effective exclusion.

There is no question that without a clear and sustained demand driver the LCLF sector will develop more slowly and less effectively than Australia's net zero goals require so there is scope for the introduction of a mandate covering multiple applications for LCLF to deliver the best results. It is also essential that penalties for non-compliance are incorporated into the design.

HIF also believes that e-Fuels specific sub-mandates are needed in order to ensure this pathway is supported given its earlier stage of development versus biofuels. This will enable e-Fuels to be scaled in the short term so allow significant cost reductions can be achieved in the medium term when they will be required to carry the larger weight of decarbonisation efforts in the hardest-to-abate parts of the transport sector. This path has taken in Europe with the ReFuelEU aviation regulation, which sets a synthetic aviation fuels target of 1.2% in all EU airports from 2030, rising to 35% by 2050.