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Online submission via consultation hub

Australia's possible association with Horizon Europe: request for information

The Heavy Industry Low-carbon Transition Cooperative Research Centre (HILT CRC) was established in November 2021 to support the decarbonisation of the iron/steel, alumina, and cement/lime sectors. Since commencing operations, HILT CRC has co-developed a groundbreaking research program to accelerate the development and de-risking of emerging technologies with strong potential to accelerate industrial decarbonisation, and also address non-technological barriers and enablers to heavy industry decarbonisation. This work is undertaken in collaboration with over 65 partners from industry (including heavy industry, end users and technology providers), government, academia and non-governmental organisations. One aspect of HILT CRC's ongoing mission is to pave the way for a prosperous, net-zero Australian heavy industry sector by providing high-quality, evidence-based information for decision-makers.

Of particular relevance to advancing international research collaboration, is Australia's co-leadership, with Austria, of the Net-Zero Industries Mission (NIM) through HILT CRC and the Austrian Institute of Technology (AIT). The NIM seeks to facilitate knowledge sharing for high Technology Readiness Level (TRL) technologies to ensure that, by 2030, a suite of proven technical solutions is available to facilitate the decarbonisation of heavy industries globally by 2050. Other NIM members include Canada, China, the European Commission, Finland, Germany, Republic of Korea, United Kingdom and the United States.

HILT CRC is therefore well placed, and welcomes the opportunity, to provide feedback on the government's consideration of a possible association with Horizon Europe, the EU's €95.5 billion ($170 billion AUD) flagship research and innovation program.

The need for international collaboration

HILT CRC seeks to enable Australia to capitalise on our coincident renewable energy and mineral resources to position the nation as a global leader in the supply of value-added green metals through our collaborative research activities. As the government's recent Treasury modelling highlights, securing Australia's competitive advantage in green exports, including green metals, has the potential to add a further $68 billion to the economy in 2050 compared to its baseline scenario – a dividend for Australia that cannot be achieved without strategic research and development, together with international collaboration.

A consistent message from HILT CRC's partners is the high value they place on the collaborative ecosystem that we have established, and that they seek to leverage this to accelerate and de-risk the low-carbon transition. At HILT CRC's annual conference in Perth this year, attended by more than 250 people from 85 organisations across 15 countries, a key theme emerged:

- Collaboration is helping industry partners improve their knowledge transfer and accelerate translation from concept to implementation.

Actions identified at the conference to enhance international collaboration included:

- Building partnerships with international research programs for technology benchmarking and co-development.
- Supporting bilateral projects that align Australian R&D and infrastructure with global demand for low-emission products.

Another relevant theme of the conference was accelerating demonstration and upscaling, supporting industry to take priority technologies to pilot or first-of-a-kind projects.

The key proposed action for HILT CRC to address this was to facilitate a decarbonisation demonstration ecosystem, which brokers co-investment, co-location and knowledge sharing.

Facilitating a faster, cost-effective and lower risk transition

HILT CRC views Australia's potential association with Horizon Europe as providing as an important opportunity that is well aligned with its priorities and targets, described above.

An association with Horizon Europe will enable Australian research and industrial sectors to access more facilities, more quickly and cost-effectively, than will be possible by working alone. Accessing research capabilities via Horizon Europe, complemented by strategically targeted research investments locally, will be critical to reaching Australia's targets of increased competitiveness in the emerging global green metals markets and in broader industrial decarbonisation.

Based upon HILT CRC's experience, access to European facilities through a Horizon Europe partnership model will be more cost-effective for short-term campaigns than current arrangements – our preliminary estimates indicate savings can be approximately $20 million (AUD) per pilot-scale program over a seven-year period, depending on the scope of the collaboration.

The Horizon Europe option also provides faster access to a greater range of facilities than is realistic or cost effective to establish with new research facilities in the same

timeline, owing to the many years needed for planning, establishment and training. Nevertheless, local facilities are still needed, because of the challenge of getting sufficient access to international facilities, which are heavily booked and utilised. That is, the timely access to international research facilities and the progressive development of local ones are both critical priorities for Australia's industry, which must compete globally with other markets that are transforming at faster pace than Australia's.

Some examples of European research facilities of interest to HILT CRC, include:

- SWERIM – a research institute that is a world leader in green steel with a wide range of pilot plant facilities in Sweden.
- SINTEF – a global leader in green metals, including both iron/steel and alumina, together with critical minerals research with an extensive network of laboratories across Norway.
- CRM Group – a research organisation in Belgium that specialises in flexible electric smelting and other green iron/steel technologies.
- Fraunhofer ISC Center for High Temperature Materials and Design HTL – a research organisation with pilot facilities in high-temperature processing, including in iron and steel including electrowinning and hydrogen-direct reduced iron (H2-DRI), in Germany.
- Darmstadt Technical University – pilot-scale gasification facilities in Germany.
- German Aerospace Center (DLR) – a wide range of pilot-scale facilities in CO_2 capture and re-use, including for the production of sustainable aviation fuels.
- RINA-CSM – pilot-scale research facilities for hydrogen-fuelled steel production (Italy).
- Sumitomo SHI/FW – pilot and small commercial facilities in gasification, CCUS and alternative fuels (Finland).
- SALTX Technology – a pilot-scale facility for flash calcination of alumina and cement/lime (Sweden).

HILT CRC does not have any specific views on a particular implementation model for association with Horizon Europe, other than it should be flexible and resourced adequately to consider applications on a timely basis to enable Australia to leverage the value of Horizon Europe research capability.

We also wish to stress that an Australian association with Horizon Europe does not obviate the need for Australia to also invest more in establishing additional complementary local research facilities in heavy industry decarbonisation areas of greatest priority, particularly relating to our unique mineral resources. Such facilities are crucial to expanding national global leadership in the processing of, and value-adding to, our resources. In addition to being the most cost-effective approach for long-term programs, they are also crucial to continue to strengthen the service

industries that underpin the resource sector, by facilitating easier access to, and upskilling of, the local workforce needed to support Australia's transition to producing green, high value products.

An Australian association with Horizon Europe would also support the establishment of a global R&D network focussed on heavy industry decarbonisation, which is an initiative that HILT CRC is co-leading via NIM, with AIT and others, and hence reinforce Australia's leadership in green metals.

I look forward to continued engagement and discussion.

If the Government would like to discuss any elements further, I can be contacted via ceo@hiltcrc.com.au.

Kind regards,

Jenny Selway
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HILT CRC