

APEC POLICY GUIDANCE TO DEVELOP AND IMPLEMENT CLEAN AND LOW-CARBON HYDROGEN POLICY FRAMEWORKS IN THE ASIA-PACIFIC

1. Introduction

Clean and low-carbon hydrogen is being recognized as one of the key energy vectors that contributes to efforts to clean energy transition and climate change mitigation. Clean and low-carbon hydrogen clearly stands out as a prominent tool to decarbonize a range of economic activities.

The APEC Region is at the forefront of the hydrogen industry's expansion, customizing strategies, roadmaps, and regulations to fit the specific requirements of each economy. Economies are promoting clean and low-carbon hydrogen and its derivatives such as ammonia, e-fuels and e-methane, as a cross-cutting energy vector through new policies, supporting the deployment of multiple projects in the region. Therefore, APEC assumes a leading role in the hydrogen industry's growth due to high consumer/producer concentration and numerous projects planned in the region.

However, the clean and low-carbon hydrogen industry is still in its early stages. Therefore, it will require specific industrial policies. Also, coordination among regulators, standards bodies, and industries in further developing a common approach and understanding towards clean and low-carbon hydrogen will be critical.

There is a growing global interest in expanding clean and low-carbon hydrogen's role in the energy transition. We note that the current policy framework does not sufficiently facilitate support for the adoption of clean and low-carbon hydrogen in most APEC economies. Moreover, in many cases public investments in both production and end uses have been insufficient and fragmented.

In this line, APEC supports the development and implementation of clean and low-carbon hydrogen frameworks, and its derivatives in the Asia-Pacific through this APEC Policy Guidance (the Policy Guidance) that provides orientation on key areas and actions to facilitate knowledge, technological and policy exchanges among member economies, while supporting innovative, inclusive and sustainable growth. It builds on previous APEC's work and initiatives related to the development of clean and low-carbon hydrogen.

The overarching objective of the Policy Guidance is to support the commitment “to adopt renewable energy and other environmentally sound technologies, as part of sustainable energy transitions that reduce our dependence on fossil fuels”¹, while working together to support energy resilience, access, and security in the region, in consistency with the APEC Putrajaya Vision 2040 and the Aotearoa Plan of Action.

2. The Policy Guidance

APEC economies have recognized the importance of clean and low-carbon hydrogen, including its derivatives, in reducing greenhouse gas emissions, decarbonizing economic activities and propelling energy transitions across sectors, in particular in hard-to-abate sectors.

¹ 2021 APEC Leaders Declaration

For APEC economies, “hydrogen has become a key alternative energy vector to decarbonize various sectors such as transportation, chemicals, power, etc. While the transition to clean hydrogen is underway, it is not yet competitive enough to be scaled up and is facing many challenges such as cost reduction, transport and storage option availability, and safety concerns”².

In this context, APEC economies acknowledge that it is a timely opportunity to address the development of clean and low-carbon hydrogen, including its derivatives, in the Asia-Pacific region in a concerted manner, concomitant to the work that is being carried out in other cross regional and global bodies and as a contribution to achieve a meaningful and practical energy transition.

This Policy Guidance is a living document that will advise APEC working groups on potential areas of cooperation to further promote the coherent development of a clean and low-carbon hydrogen ecosystem in the region.

3. Key areas

Acknowledging the variety of economic and social circumstances across APEC economies while recognizing the cross-cutting nature of clean and low-carbon hydrogen in supporting energy transition, APEC economies will concentrate, but not limit, their work on the following key areas, in line with different domestic circumstances:

3.1 Standards and certification

- Definitions
- Interoperability
- Emissions accounting
- Safety

3.2 Value Chain

- Sustainable market growth
- Supply chains
- Infrastructure

3.3 Research and innovation

- Capacity building
- Skills development
- Technology development, deployment and voluntary transfer on mutually agreed terms

3.4 Finance and investment

- Financing schemes
- De-risking environments
- Collaboration with international institutions
- Clean and low-carbon projects related to hydrogen and its derivatives

3.5. Public and social awareness

² Assessing Existing and Planned Hydrogen Infrastructure to Facilitate Widespread hydrogen Use in the APEC Region-Final Report, page 8. Energy Working Group. October 2023.

- Engagement with relevant stakeholders
- Access to and use of natural resources (land, water)
- Affordability of clean and low-carbon hydrogen and its derivatives

4. Starting points

For the purpose of implementing the Policy Guidance, the following starting points should be taken into account:

4.1 Focus of the Policy Guidance

The Policy Guidance will be focused in promoting clean and low-carbon hydrogen based on the carbon intensity and lifecycle emissions.

4.2 Alignment with APEC's energy targets

In everything that is pertinent, the implementation of the policy guidance will support the achievement of the APEC energy goals for doubling renewable energy from 2010 levels by 2030 and reducing energy intensity 45 percent from 2005 levels by 2035.

4.3 Coherence

The promotion of coherence and cooperation of regulatory approaches affecting the development of clean and low-carbon hydrogen will be supported, in order to promote mutual understanding and strengthen cooperation in approaches to regulation, including international and technical standards, while respecting each economy's choice of policies which are consistent with domestic circumstances and legal obligations.

4.4 Inclusiveness

The Policy Guidance will support as necessary APEC's work of integrating all sectors of society and relevant stakeholders in all our efforts to achieve a clean, sustainable, affordable, inclusive and just energy transition and a quality economic growth. Local environmental impacts, including energy and water supply, and social factors like job creation, and community involvement should be considered.

4.5 Strategic actions

Each economy should encourage the design of plans outlining the integration of hydrogen into the energy mix and should be based on the optimal use of its resources and without affecting its energy security, for instance with policies and measures for production capacity, infrastructure, and market integration. These plans should include intermediate and long-term policies and measures for reducing carbon emissions, increasing energy security, and fostering economic growth. Promoting clean and low-carbon hydrogen derivatives and funding related projects is also important to increase hydrogen demand.

APEC economies will respectively work with relevant stakeholders to identify and prioritize hydrogen projects based on their own policies and priorities that can be implemented in the short term in the industry while emphasizing the importance of public-private partnerships in driving innovation and investment in the hydrogen sector.

A dedicated platform to facilitate collaboration between APEC governments, industry stakeholders, research institutions, and financial entities to accelerate the development of clean and low-carbon hydrogen will be created, in collaboration with the Asia Pacific Energy

Research Centre (APEREC), the APEC Sustainable Energy Center (APSEC), and the Energy Working Group's expert bodies, to promote contributions and collaborative efforts through research, technology development, deployment and voluntary transfer on mutually agreed terms, and strategic initiatives that can enhance the development and implementation of clean and low-carbon hydrogen projects in the Asia-Pacific region, taking into account the key areas outlined by this policy guidance.

4.6 Cross fora and cross regional collaboration

The implementation of the Policy Guidance will promote APEC's cross fora collaboration, with the Energy Working Group as the main APEC body to harmonize this collaboration in order to avoid duplication or unnecessary overlaps. Similarly, the Energy Working Group will be in charge to coordinate collaboration with other regional and global organizations that are also working in the development of clean and low-carbon hydrogen.

5. Implementation

The implementation of the policy guidance will build on previous and ongoing work and progress achieved so far in different regions and organizations. It will add to the implementation of international and cross-regional commitments that are consistent to the objectives of this instrument.

The Energy Working Group will have the overall responsibility for monitoring and evaluating progress on the implementation and development of this Policy Guidance, including the above-mentioned Key Areas, in close collaboration with relevant fora and sub fora. The Energy Working Group will report periodically to APEC Energy Ministers and to Senior Officials within the Steering Committee on ECOTECH and to APEC Energy Ministers on progress and seek further guidance, given the evolving nature of the clean and low-carbon hydrogen ecosystem.

The Expert Group on Clean Fossil Fuel Energy (EGCFE) together with the Expert Group on New and Renewable Energy Technologies (EGNRET) will have the responsibility for the implementation of the Policy Guidance at the technical level and based on the key areas and elements already identified in this framework. For this purpose, both expert groups will decide on the best way to operationalize the implementation and follow up of this Policy Guidance.

ANNEXES

[ANNEX A: Mapping of APEC local hydrogen roadmaps, strategies, market instruments and financing tools.](#)

[ANNEX B: Table of current APEC projects related to clean and low-carbon hydrogen.](#)

[ANNEX C: List of current APEC collaboration with regional and global organizations.](#)