Hawai‘i Natural Energy Institute Research Highlights

Energy Policy & Analysis

Support to the Institute on Science for Global Policy

OBJECTIVE AND SIGNIFICANCE: The overall objectives of this project were to plan and hold an international Pacific Island hydrogen energy conference in Hawai‘i to identify potential plans for future hydrogen development in the region. HNEI supported the Institute of Science for Global Policy's (ISGP) conference entitled "Global Pathways to Hydrogen Energy Futures – Island Community Priorities" (GPHEF-ICP). This conference focused on specific hydrogen energy issues for private sector, government, and public stakeholders – with its initial efforts centered on the Asia-Pacific region. The findings of the conference identifying Areas of Consensus (AoC) and Actionable Next Steps (ANS) are captured in a publicly available ISGP GPHEF-ICP Report Book.

BACKGROUND: Hawai‘i has introduced policy objectives to decarbonize its energy system. Major challenges include how to expand the introduction of renewable energy sources, while continuing to meet the immediate needs for energy historically derived from fossil fuels. The potential incorporation of hydrogen energy into Hawai‘i's energy system to help meet these challenges requires a comprehensive review and critical assessment examining how to integrate different technological options, economic planning, and policy directions.

ISGP states that its GPHEF-ICP program is designed to conduct this type of critical evaluation by engaging a wide range of stakeholders who are implementing different aspects of the hydrogen technologies in multiple, integrated, in-person conferences. The efforts from this program hope to inform and guide decisions regarding employing and integrating hydrogen energy under various conditions that could help to develop actionable next steps for Hawai‘i.

PROJECT STATUS/RESULTS: In the *initial planning phase* of the conference, ISGP benefited significantly from numerous consultations with and advice from an Informal Advisory Panel (IAP) focused on Hawai‘i interests and activities in hydrogen-based energy. HNEI staff provided considerable program management support services to ISGP by serving as an IAP co-chair and as a planning team member.

During the *interview phase*, the organization of the ISGP GPHEF-ICP conference began with extensive international meetings by ISGP staff (approaching 300) to identify highly credentialed, subject-matter experts and officials in governmental, private sector, public advocacy communities having expertise, experience, and responsibilities for decisions related to energy topics, including hydrogen-based energy. In addition to Hawai‘i team members, these interviews included representatives from islands throughout the Asia-Pacific region as well as from Australia, Japan, the United States, United Arab Emirates, and Association of Southeast Asian Nations (ASEAN) members.

The ISGP-GPHEF-ICP conference team selected a distinguished group of *subject-matter experts* and major stakeholders from governmental, private sector, and public advocacy communities to debate these issues by candidly exchanging views and priorities to be applied toward identifying the AoCs and ANS needed to advance real-world societal decisions. ISGP invitation-only conferences, conducted under the Chatham House Rule (not-for-attribution), provide safe environments in which distinguished subject-matter experts and stakeholders holding diverse, often contradictory, views and priorities can directly and respectfully debate societally significant issues of both domestic and international importance. The individuals invited by the ISGP to participate in these conferences routinely make and/or significantly influence major governmental, private sector, and community decisions.

Nine individuals – seven focused on describing the energy needs and aspirations of 7 Asia-Pacific islands including Hawai‘i, one individual describing the scientific and technological properties of hydrogen as an energy source, and another individual commenting on economic issues from the perspective of the Asian Development Bank – were invited to prepare a concise position paper on their respective perspectives and priorities. The position papers on hydrogen-based energy were each organized around current realities, scientifically and technologically credible opportunities and potential risks, and next steps.

The conference was held virtually over three days on June 21-23, 2022 and spanned fifteen time zones. Structurally, the conference was conducted using an

internet format linking approximately 56 participants representing 30 different countries and locations spread over nine time zones. The ISGP debate/caucus format was modified to have each of the nine position papers debated for forty-five minutes by approximately 56 invited participants following a five minute summary of the position paper by the respective authors. All debates and caucuses were moderated by ISGP staff.

Given the exceptionally diverse time zones involved, participants engaged in the debates and caucuses for different periods of time. Nonetheless, all their contributions were recorded and integrated by the ISGP staff into the conference outcomes. The ISGP staff used recordings of all debates, discussions, and the plenary caucuses to prepare not-for attribution summaries. These recordings were held in the custody of the ISGP before being destroyed. The position papers, commentaries, and the not-for-attribution summaries the AOCs and ANS emerging from the plenary caucus are presented in the conference ISGP Report Book.

The ISGP GPHEF-ICP conference examined the critical decisions needed by individual island communities within vastly different sized archipelagos that have populations ranging from a few thousand to several million. Even with the enormous diversity found in their geographical locations, topologies, populations, demographics, and cultural mores, areas of common interest and similar challenges with respect to current and future energy issues were identified. These overlapping interest and priorities informed candid discussions concerning how hydrogen-based energy might make productive contributions to the immediate and reasonably anticipated energy requirements in island communities and are expected to influence human health, environmental sustainability, economic prosperity, and societal stability worldwide.

The following *position papers* were presented and debated:

#1 "Do We Need Hydrogen for Sustainable & Zero Emissions Energy Conversion?"
#2 "Archipelago Perspectives on Energy, Challenges, Priorities, Opportunities for Hydrogen Energy" (Tuvalu)
#3 "Elimination of Fossil Fuel Imports and Decarbonization of County Assets by Way of Hydrogen Energy" (County of Hawai'i)
#4 "Archipelagos: Perspectives on Energy Challenges, Priorities, and Opportunities for Hydrogen Energy" (Tonga)
#5 "Hydrogen Production in an Island Energy System" (Tasmania)
#6 "Archipelagos: Perspectives on Energy Challenges, Priorities ties for Hydrogen Energy" (Indonesia)
#7 "The Future of Fiji Energy System: Supporting the Transition of Achieving Fiji's SDG7 and NDC Targets by 2030" (Fiji)
#8 "Economic Viability Considerations for Green Hydrogen in New Zealand"
#9 "How Our Ocean Can Save Our Planet"

More information regarding the GPHEF-ICP conference and the Report Book this conference produced are available on ISGP's website at **http://scienceforglobalpolicy.org/conference/island-priorities/**.

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