HySupply – Exploring the opportunities for a German-Australian supply chain of renewable hydrogen

Building the Australia-Europe supply chain
Ammonia Energy Association
August 24th 2022

Jill Thesen
Senior Project Manager, Federation of German Industries (BDI)

SPONSORED BY THE
Federal Ministry of Education and Research

BDI
The Voice of German Industry

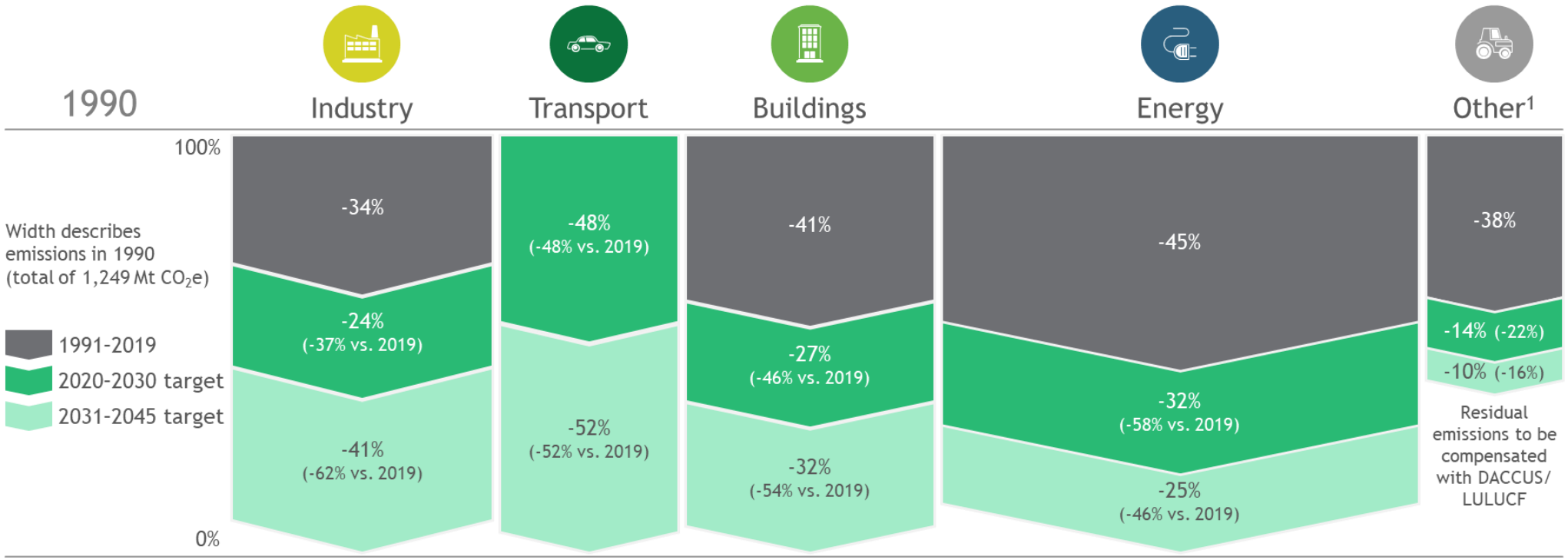
acatech
NATIONAL ACADEMY OF SCIENCE AND ENGINEERING

Germany‘s need for drastic emissions reductions

The Amendment of the Federal Climate Change Act tightens Germany‘s former climate targets and enshrines the goal of greenhouse gas neutrality by 2045. Already by 2030, emissions are to be reduced by 65 percent compared to 1900 levels.

Relative emissions development in Germany by sector 1990—2045

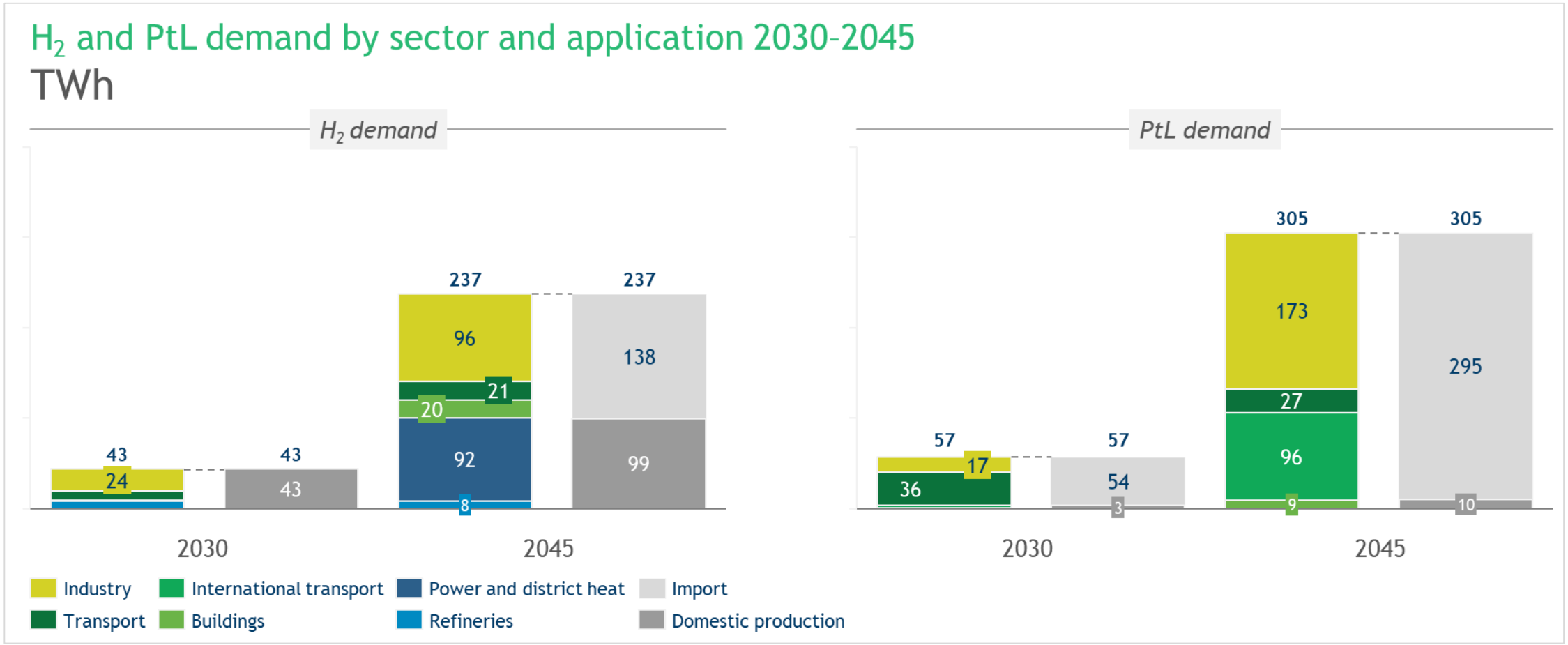
% of 1990 emissions



1. Agriculture, waste management, and other | Note: Transport in 2019 largely stable compared to 1990; bioenergy with carbon capture, utilization, and storage (BECCUS) is displayed as negative emissions in the industrial and energy sector; DACCUS = direct air carbon capture, utilization, and storage; LULUCF = land use, land-use change, and forestry
Source: German Environment Agency (2021); BCG analysis

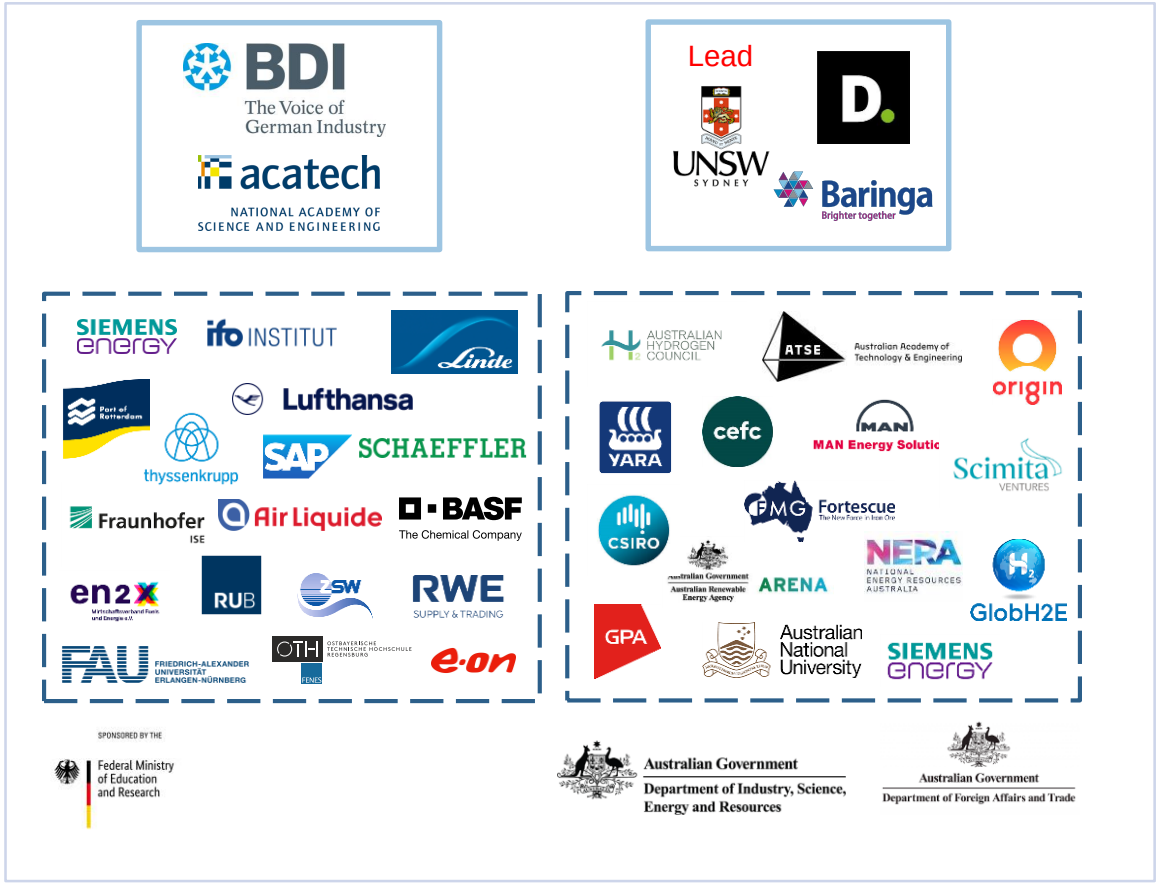
Germany’s appetite for hydrogen (H2) and Power-to-Liquid (PtL)

In German the growing demand for H2 and PtL are mainly driven by the industry, transport, and energy sector. Due to its limited potential for domestic production, Germany will largely depend on imports.



About HySupply

HySupply is the German-Australian feasibility study on the import of renwable hydrogen which was launched in December 2020. The German side is coordinated by acatech and BDI and the Australian consortium is led by the UNSW.



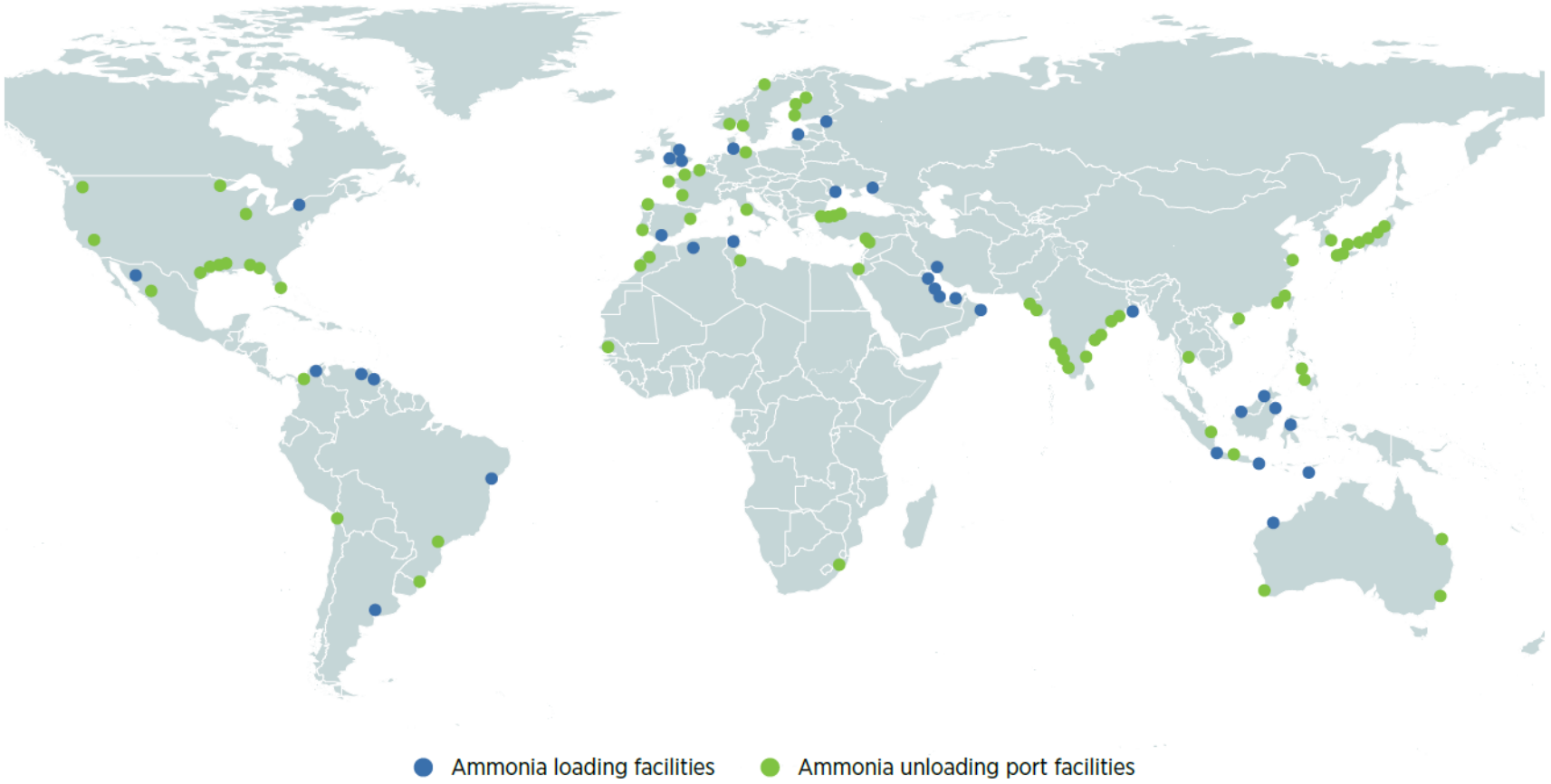
Milestones (selection)

- The **Meta-Analysis** focused on the technological potential and readiness of liquid hydrogen (LH2), liquid organic hydrogen carriers (LOHC), ammonia (NH3), and methanol (MeOH).
- The **State-of-Play Report** had an emphasis on production cost of renewable hydrogen as well as on value chain costs of LH2, LOHC, NH3, MeOH as well as synthetic methane.
- The **HySupply Ministerial Delegation Trip to Australia** aimed to deepen existing cooperation and initiate new cooperation opportunities.
- The study on the **Regulatory framework for a German-Australian hydrogen bridge** analyzed the legal feasibility of importing LH2, LOHC, NH3, MeOH from Australia to Germany.

The case for importing renewable H_2 from Australia in the form of ammonia

Ammonia is a globally traded commodity with a long history in handling and processing as well as an existing regulatory framework for conventional production, storage, and transportation.

FIGURE 2.2. Ports with loading and unloading facilities for ammonia



Disclaimer: This map is provided for illustration purposes only. Boundaries and names shown on this map do not imply the expression of any opinion on the part of IRENA concerning the status of any region, country, territory, city, or area or of its authorities, or concerning the delimitation of frontiers or boundaries. Source: Rodrigue (2020).

Demand side challenges for importing renewable H_2 as ammonia

Although the pathways for conventional ammonia are well established, new challenges arise when ammonia is produced with hydrogen from renewables.

Certifcation of the „renewable property“ of the hydrogen and ammonia is unclear

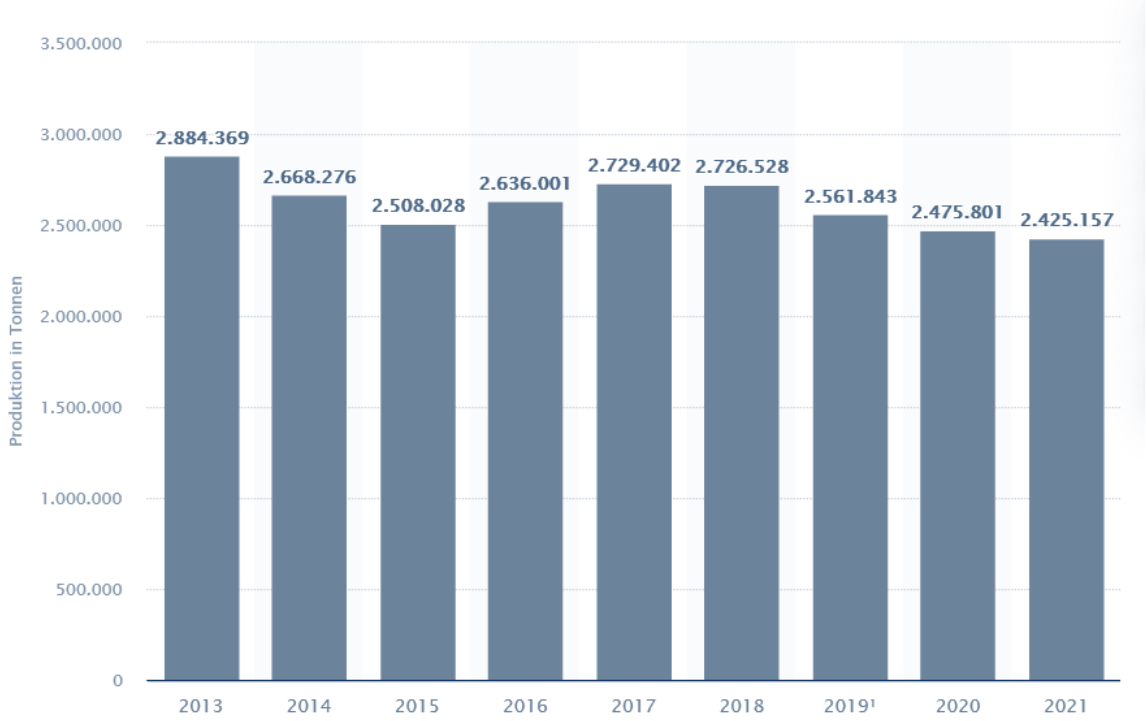
Shipping emissions as long as the use of ammonia as a fuel is not permitted

Bunkering of ammonia may not be permitted depending on respective port byelaws

Pipeline transport is not regulated and may face public resistance

Ammonia cracking has low TRL, high cost and high energy demand and future development is uncertain

Germany produces around 2.6 mtpa of conventional ammonia



© Statista 2022

Enabling the German-Australian hydrogen bridge

The supply chain for hydrogen from Australia to Germany and Europe is a very promising and viable option. To make this become a reality, stakeholders that think and act big, pragmatic and fast are needed.

Thanks for your attention.

Get in touch

For comments or questions refer to Jill Thesen (j.thesen@ifg.bdi.eu)