



Reliance

Industries Limited

Certification and Standardization of Clean Hydrogen

Frank Wouters - SVP New Energy



Flow

- Reliance
- Certification of clean hydrogen
- The factor time



Reliance- a diversified impactful conglomerate

B2B Businesses

Oil to Chemicals

- World's largest and most integrated oil-to-chemical (O2C) complex
- Integrated C2 complex – world's largest ROGC and LLDPE, LDPE, MEG plants

Oil and Gas

- Leading Indian private sector operator with presence in deep-water and unconventional assets

B2C Businesses

Reliance Retail

- India's largest retailer by reach, scale, revenue and profits
- One of world's fastest growing retailers

Jio Platforms

- India's largest and most advanced digital services company with customer base of ~421 mm users, per-capita usage of 18.4 GB per month

New Energy

- Building one of the most advanced end-to-end new energy ecosystem with focus on solar, hydrogen and energy storage



Reliance: Selected relevant memberships



AMMONIA ENERGY
ASSOCIATION



MENA Hydrogen Alliance
An initiative of Dii Desert Energy



Hydrogen Council





Carbon emissions associated with green hydrogen production

- A major driver for the uptake of hydrogen as an energy carrier is emission reduction
- Many countries are considering the various colours of hydrogen
- Most scenarios predict a substantial global trade flow of hydrogen and hydrogen derivatives, mostly driven by cost differences
- For hydrogen to become a globally traded commodity, clarity on the carbon content is required: we need standards and certificates



Current landscape



AMMONIA ENERGY
ASSOCIATION

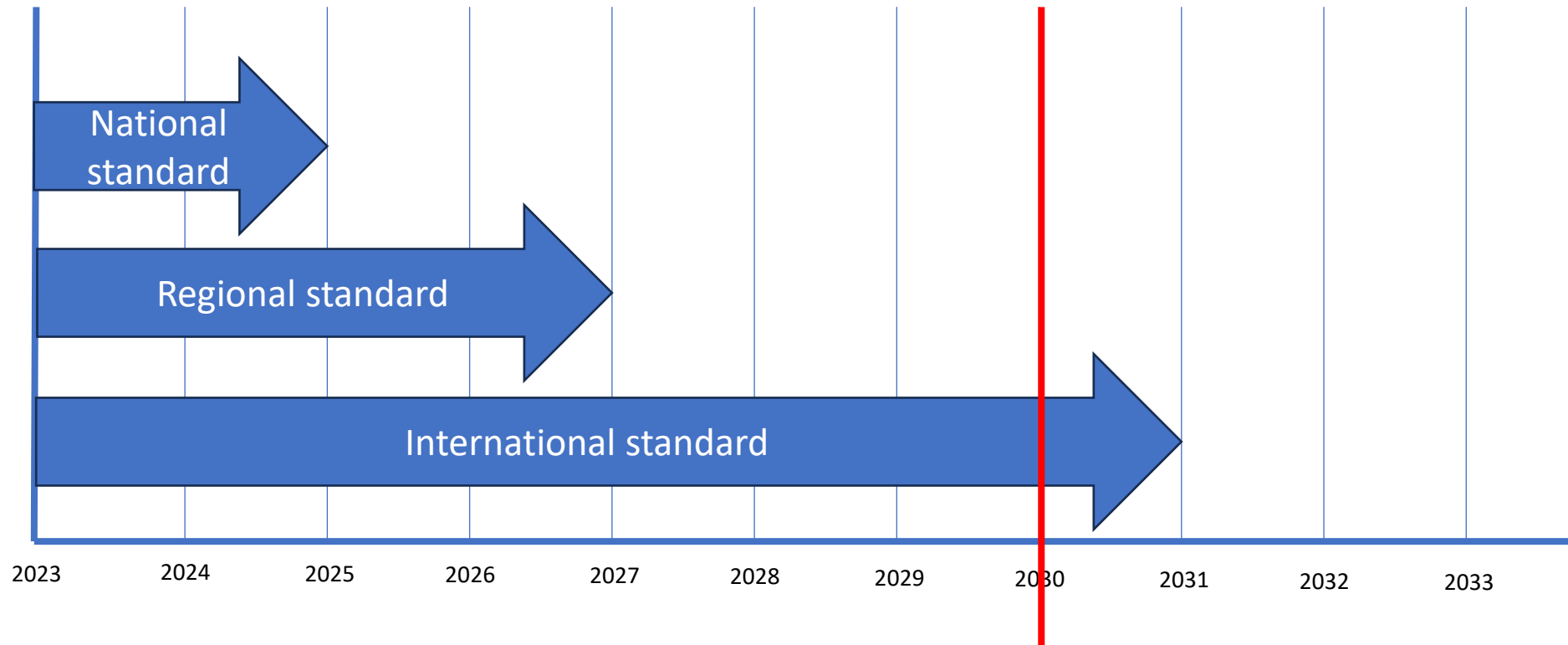
List of schemes included in the analysis

Deconstruction of international certification frameworks, regulations & guidelines

EU Legislation						Americas					
Red II: Article 19 (GOs)	RED II: Article 25, 27 and 30 (RFNBOS)	Carbon Border Adjustment Mechanism (CBAM) (EU ETS)	EU Taxonomy	ReFuel EU Aviation	Fuel EU Maritime	Low Carbon Fuel Standard LCFS	US Clean Hydrogen Standard	45V PTC	45V ITC	The Fertilizers Institute (TFI)	Canada Clean Fuel Standard
EU Private & Voluntary Scheme						UK					
Fertilizers Europe	CertifHy (GOs)	CertifHy (RFNBOS)	TÜV Süd SCMS70	TÜVRheinland	International Sustainability and Carbon Certification (ISCC+)	Roundtable on Sustainable Biomaterials (RSB)	France Funding Ordinance No. 2021-167	Renewable Transport Fuel Obligation	UK Low Carbon Hydrogen Certification Scheme	UK Low Carbon Hydrogen Standard (LCHS)	UK Business Energy Industrial Strategy (BEIS)
Asia & Oceania											
Korean H2 Standard	Chinese Clean Hydrogen Standard (CCHS)	Japanese Organization for Metals & Energy Security (JOGMEC)	Clean Fuel Ammonia Association (CFAA)	Australian GO Scheme	Australia Zero Carbon Certification Scheme (Smart Energy Council)	India Renewable Consumption Obligation					
Global											
ISO/TC 197 - Hydrogen technologies	International Maritime Organization (IMO)	Climate Bonds Hydrogen	Climate Bonds Ammonia	H2Global	Green Hydrogen Organization (GH2)	Open Hydrogen Initiative (OHI)	Bureau Veritas	World Business Council of Sustainable Development			



The factor time: how long it takes to agree on a standard



By 2030, Europe's target for clean hydrogen is 20MMT, of which 10MMT is to be imported