

Emerging Technologies in the Gas Industry

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THE 2023 NATIONAL OCCUPATIONAL HEALTH AND SAFETY



employment & labour

Department:
Employment and Labour
REPUBLIC OF SOUTH AFRICA

SAQCC GAS[®]

South African Qualification and Certification Committee

Content:

- ✓ Who is SAQCC Gas
- ✓ Gas Compliance
- ✓ Electronic Certificate of Conformity
- ✓ Electronic Practitioner ID Card
- ✓ CNG
- ✓ LNG
- ✓ BIOGAS
- ✓ HYDROGEN

Who is SAQCC Gas?

South African Qualification and Certification Committee for Gas

SAQCC Gas is mandated by the Department of Employment and Labour (DEL) to register competent Gas Practitioners in terms of the Occupational Health and Safety Act, 1993 and the Pressure Equipment Regulation 17.

It's mainly a registration body where competent gas practitioners are registered according to their qualifications and skills level for various gasses available.



SAQCC Gas is formed by the four member associations:



LPGSA - Liquefied Petroleum Gas Association of South Africa



SAGA - Southern African Gas Association



SACGA - Southern Africa Compressed Gases Association



SARACCA - South African Refrigeration & Air Conditioning Contractors Association

Legislation



Occupational Safety and Hazards Act, "1993
– Act No. 85 of 1993"

Pressure Equipment Regulations 2009 PER

Regulation 17



Electronic Certificate of Conformity (CoC)

**The App was launched on the 1st
March 2021**



Certificate of Conformity (CoC)

On completion of the installation, repair, modification and/or maintenance of a gas appliance, system, or air conditioner/refrigeration unit, a Certificate of Conformity (CoC) must be issued by the Gas Practitioner.

The CoC is valid for as long as no work has been done on the existing gas system since the original CoC was issued. If any work has been done post the original CoC, a new CoC is issued which supersedes the previous one.

Note: Certificate of Conformity (CoC) is now issued digital



Why Digital Certificate of Conformity (CoC)

We need to follow new technology

Reduce cost of issuing CoCs

Reduce impact on environment and reducing carbon footprint

Reduce administration cost for industry

Reduce illegal and invalid CoC being issued

Record keeping for history and incident reporting

Easy access to information by all stakeholders



Electronic Practitioner Card

Authorised Gas Practitioner

Initials Surname

IDNo:

Reg No. 00

Exp date: DD/MM/YYYY


Employer:

Skills

See reverse side of the card for scope of work

Picture

SAQCC Gas

 **labour**
Department:
Labour
REPUBLIC OF SOUTH AFRICA

The holder of this card is authorised to carry out work as:

This authorization is issued in terms of the Occupational Health and Safety Act (Act 85 of 1993).

If this card is found please post to: SAQCC Gas, P.O. Box 78755, Sandton, 2146.
To verify any information on this card go to: www.saqccgas.co.za
or phone (011) 285 - 0038

Visit: www.saqccgas.co.za

You can search by:

Province

SAQCC Gas Registration Number

Surname

Town & Suburb or Company

SAQCC Gas license



Emerging Technologies in Gas Industry

❖ LNG:

Liquid Natural Gas (liquid form)
98% methane
Colour and odourless
Cooled and stored below -162 °C

❖ CNG:

Compressed Natural Gas
Lighter than air
85-95% methane
Colourless with odour
Compressed 200-250 bar of pressure

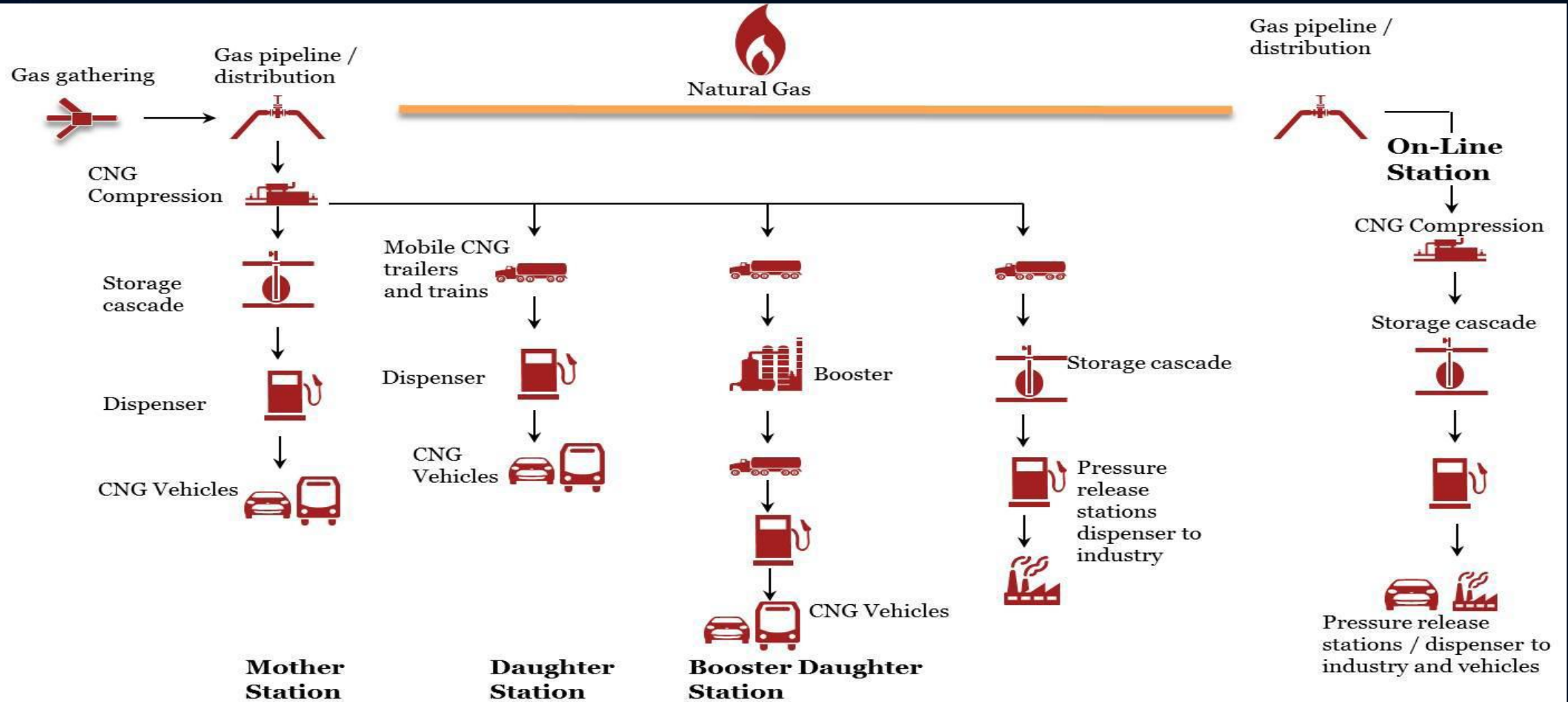
❖ BIOGAS:

Produced from Biomass
30 – 65% Methane
Produced at below 1 bar pressure
Colourless with natural odour
Lighter than air

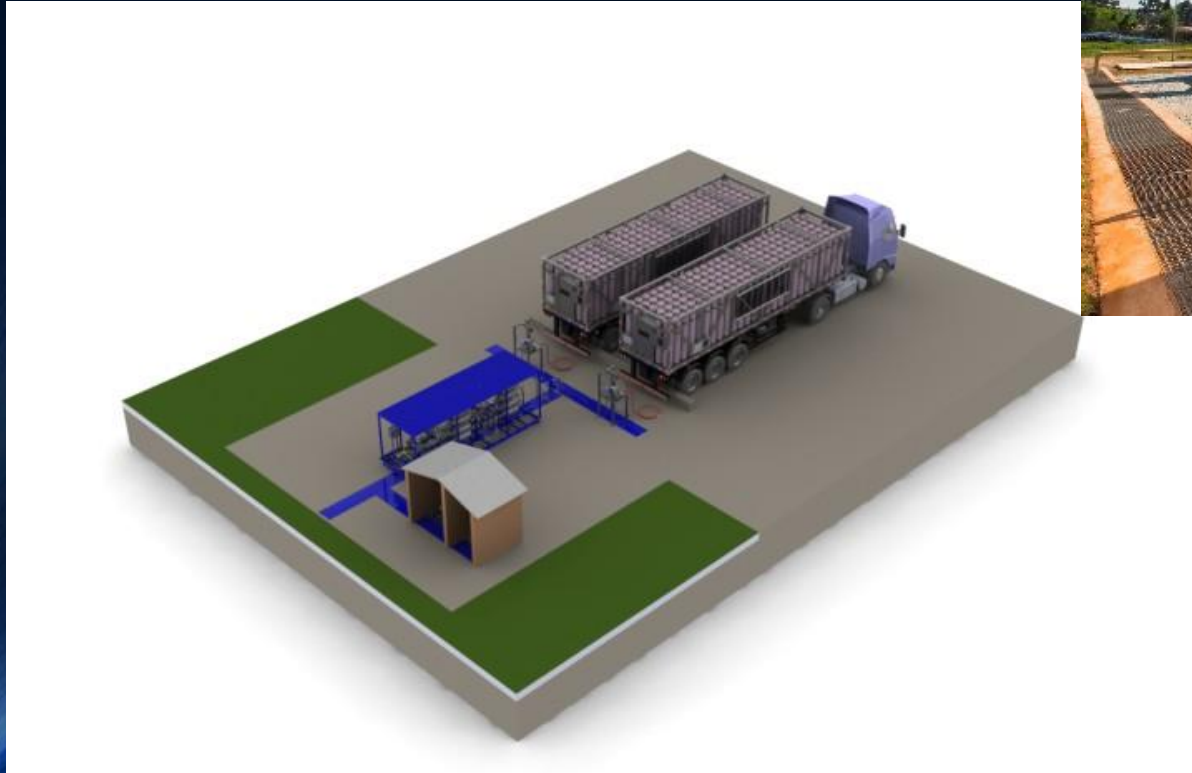
❖ HYDROGEN H₂:

Hydrogen Gas
Mostly used for fuel cell
Compressed to 600 bar
Lighter than air

CNG Value Chain



CNG Industrial Daughter Station



Dual Fuel CNG

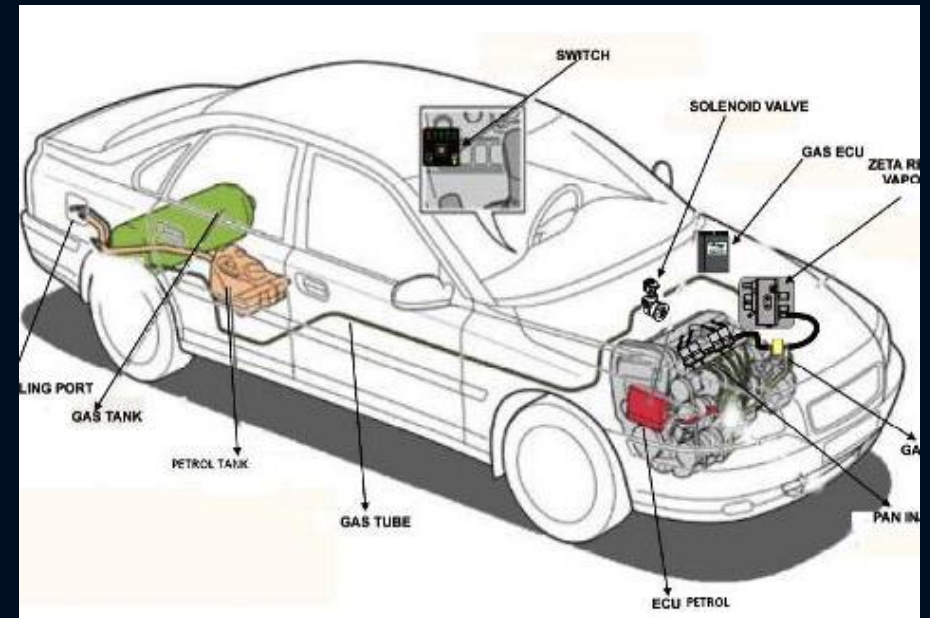


Dedicated CNG

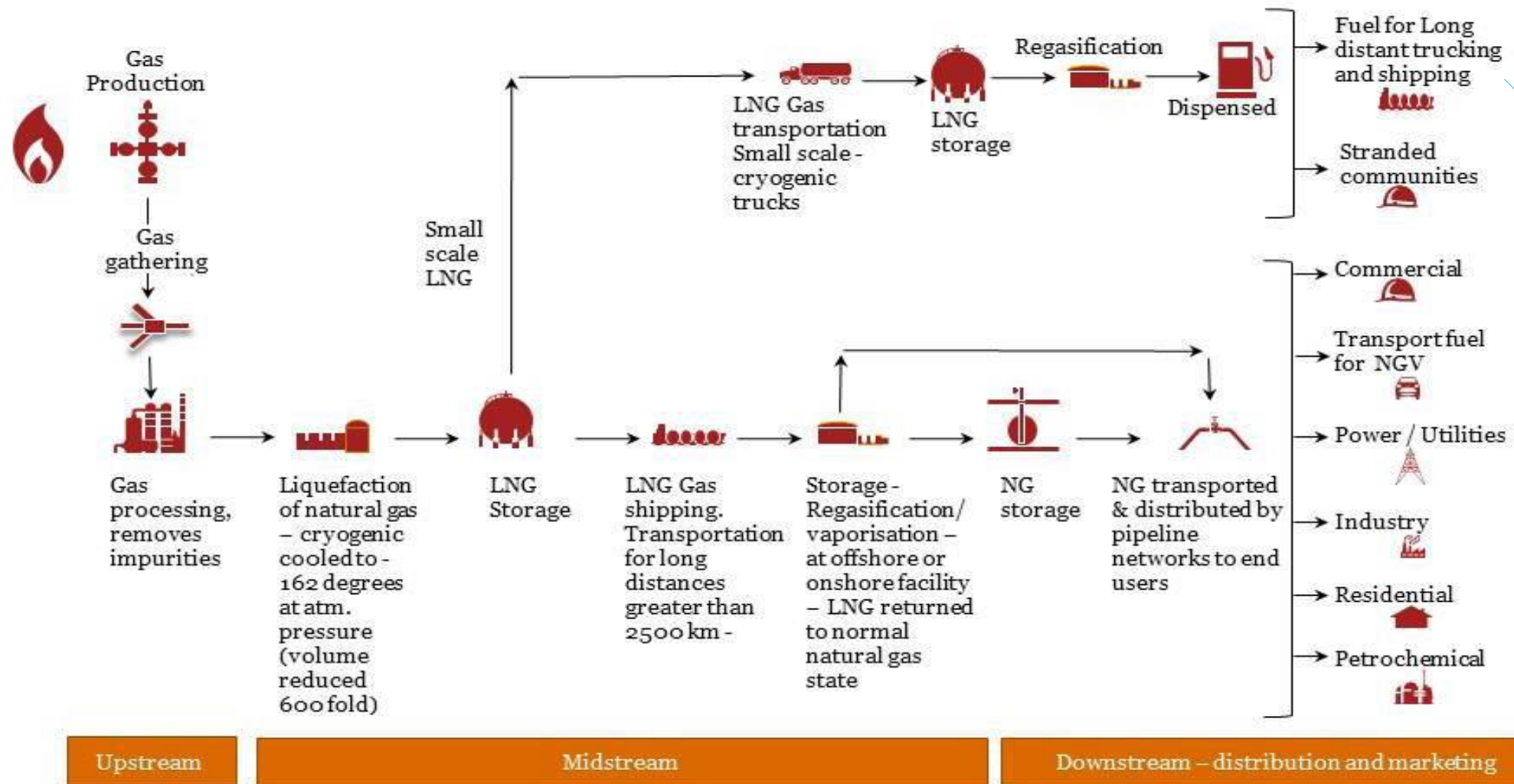


LPG AND CNG CAR COVERSIONS

- **LPG** for vehicles is called **Autogas**.
- **CNG** for vehicles is called **NGV (Natural Gas Vehicle)**.
- Comprises of a kit that is installed (by a professionally trained installer) onto your vehicle, therefore creating a **bi-fuel vehicle**.
- Allows the driver to **safely switch between** petrol & gas, even while driving.
- Once your vehicle undergoes an gas conversion, you will start to **save costs** straight away on your fuel bill, up to **50%**.
- Cost recovery of the conversion over a **short period**.
- While LPG and CNG is a much **cleaner fuel**, there is less wear & tear, therefore engine life will be prolonged.
- LPG and CNG is also **100% lead-free**, produces fewer emissions & causes less oil-contamination.



LNG Value Chain



LNG Transport Modes



LNG Industrial Use



LNG and LCNG fuelling stations

Filling of LNG and CNG Vehicles



Inland CBM and LNG



Biogas In South Africa



Source: PEETS UJ and Versobio

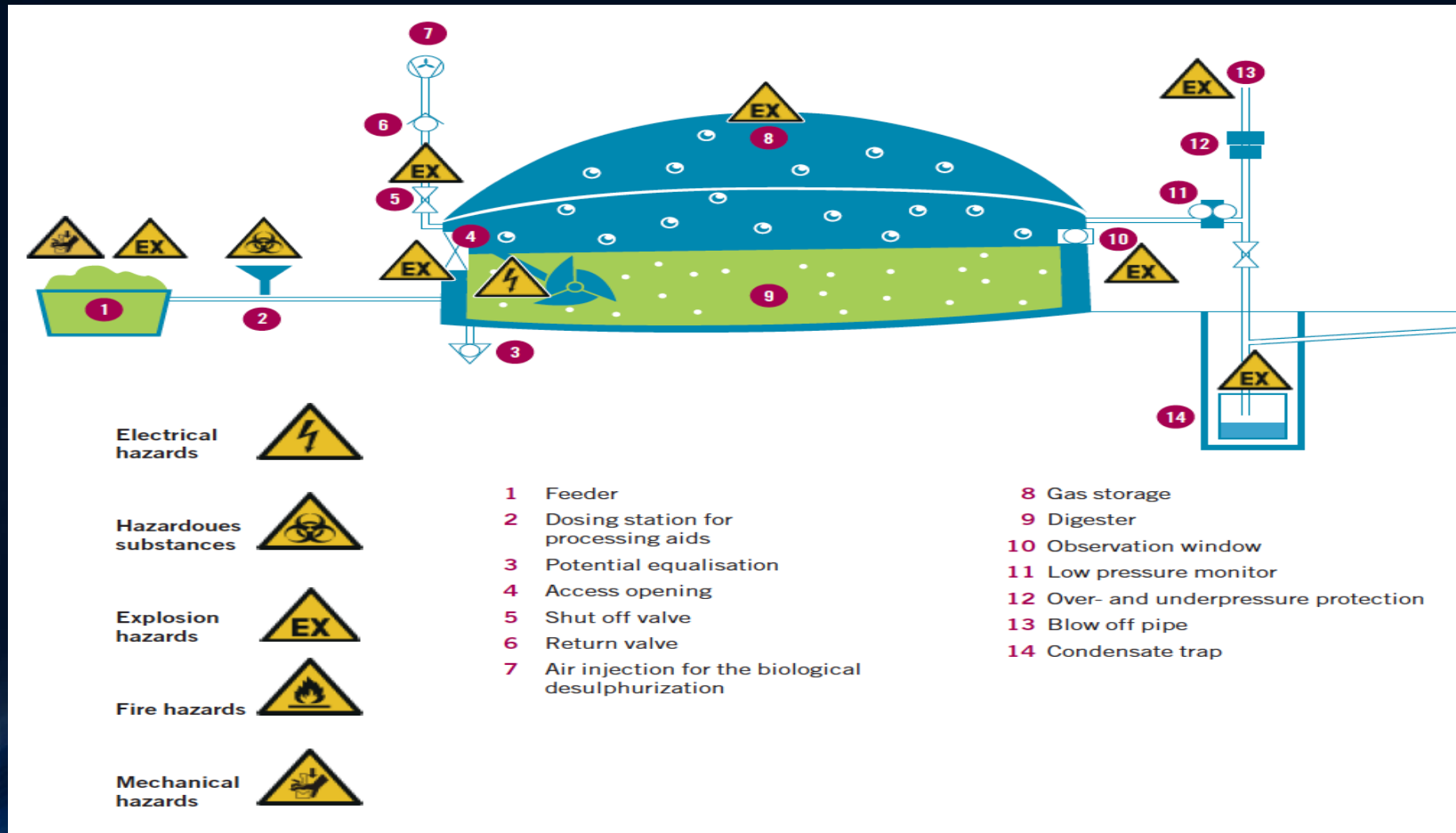
SCENARIOS

1. Small biogas for own use (cooking & light)
2. Medium plant using on site feedstock and own use electricity
3. Large plant using regional feedstock and wheeling electricity



Source: GIZ 2016

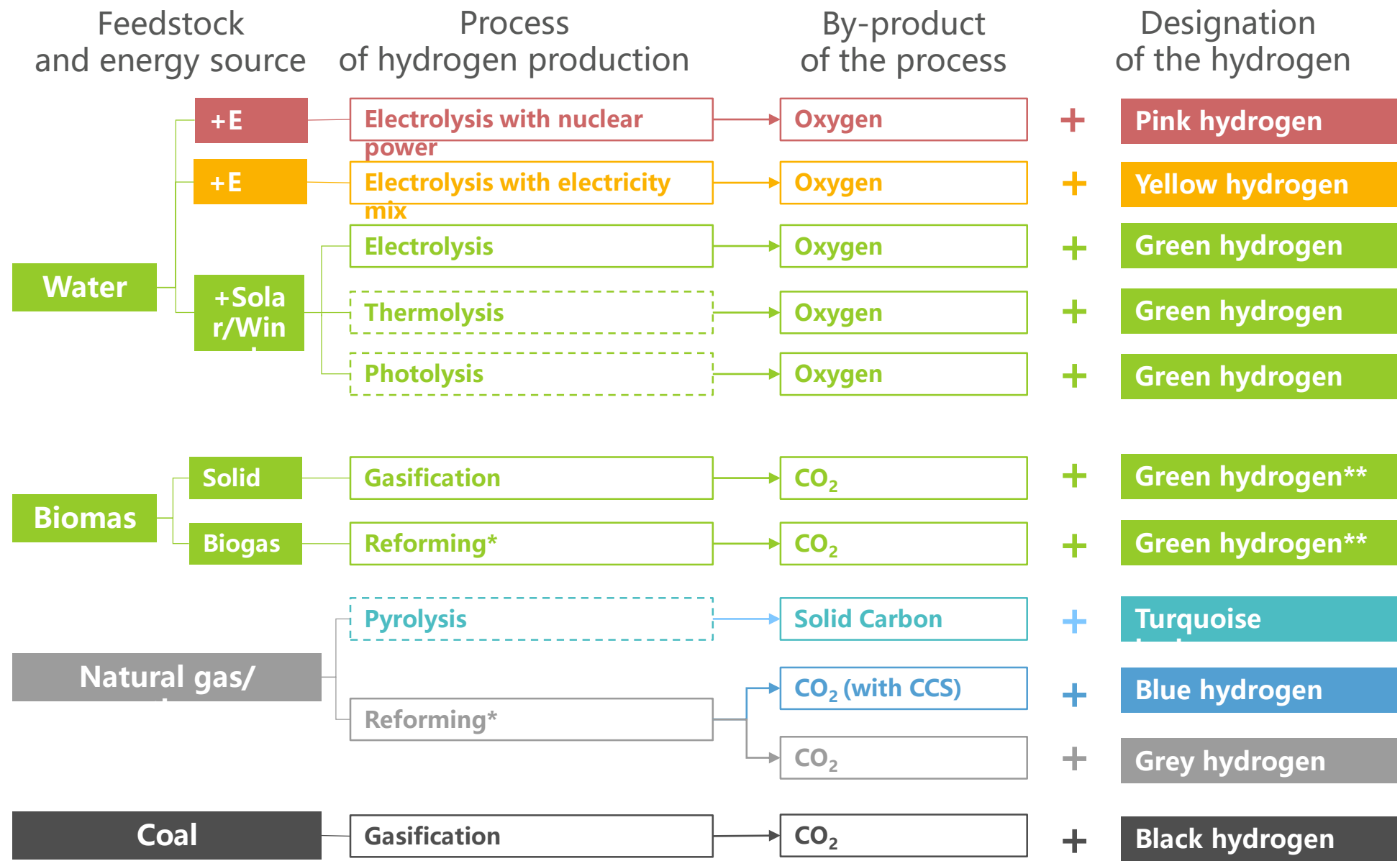
Basic Biogas Plant Hazards



GREEN HYDROGEN

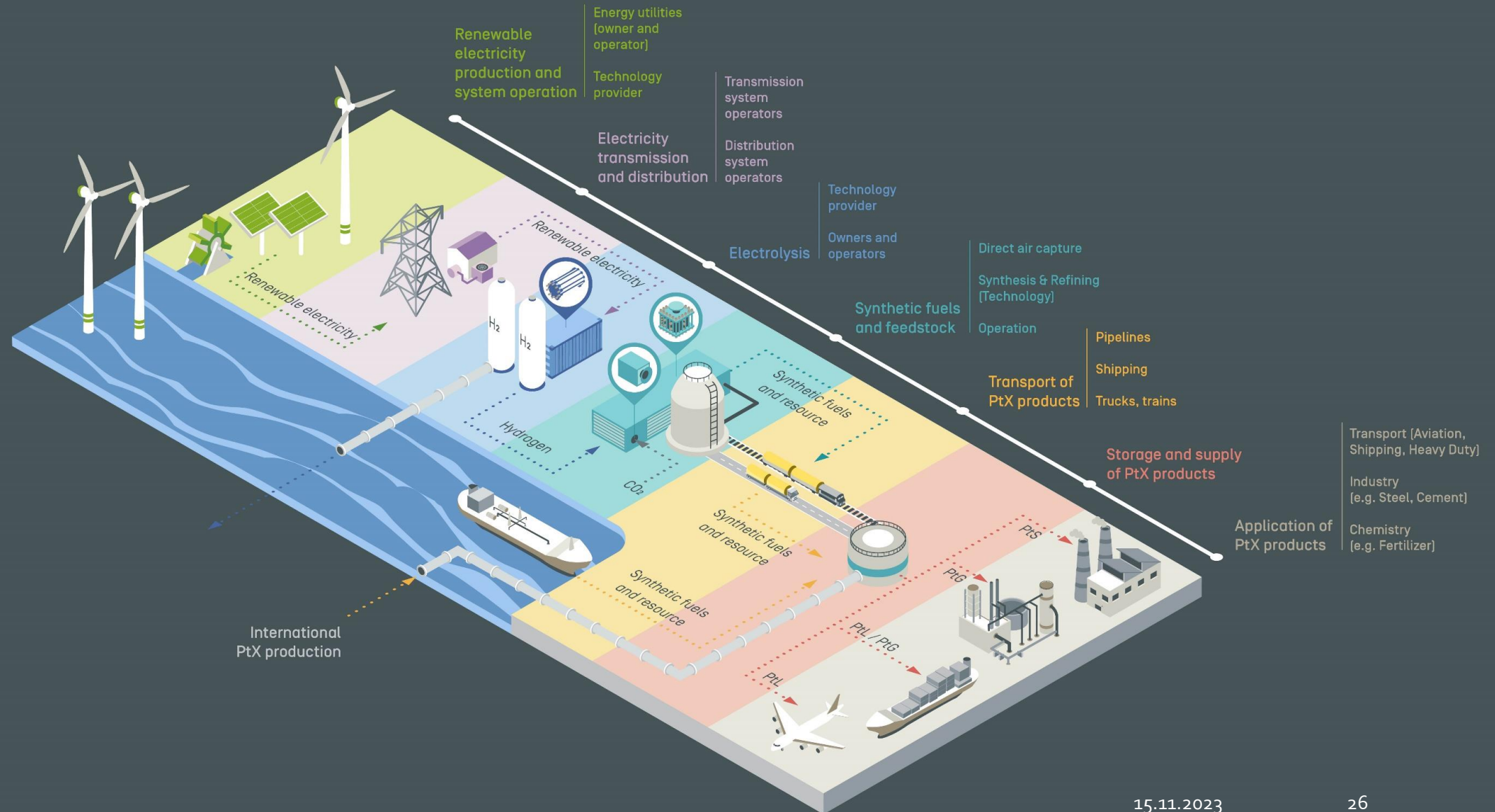


Options for hydrogen production (colours of H₂)



E: energy; RE: renewable energy * Steam reforming / autothermal reforming; ** With restrictions, see notes.

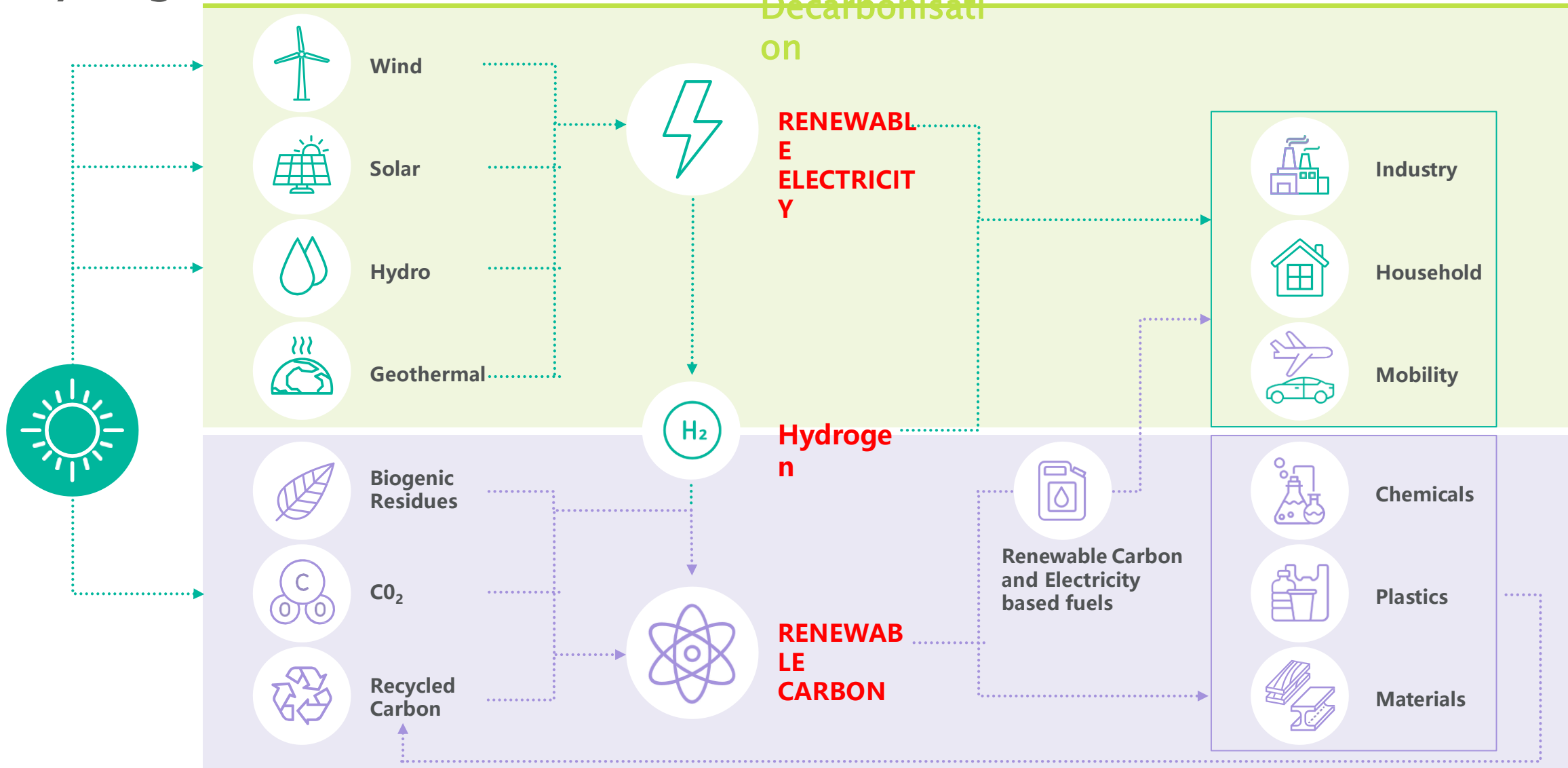
Power-to-X value chain



Renewable PtX-Training

Power-to-X: The concept beyond hydrogen

Decarbonisation



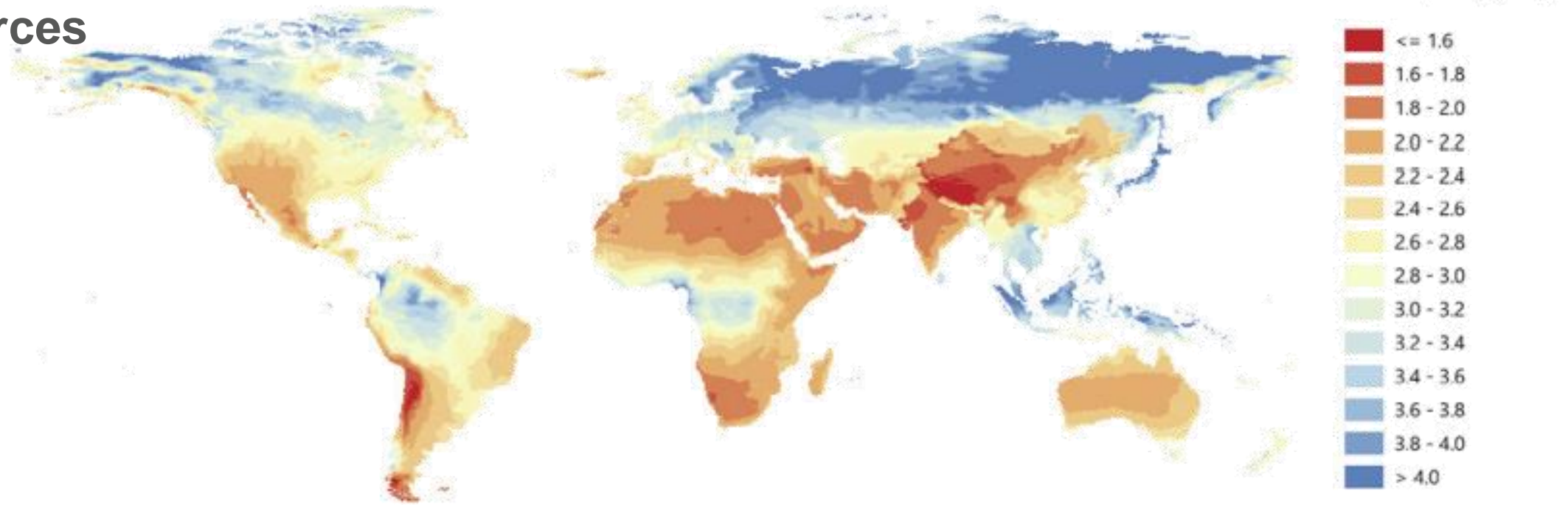
No fossil carbon



No fossil fuels

4. Scale-up and Outlook for H2 and PtX Production

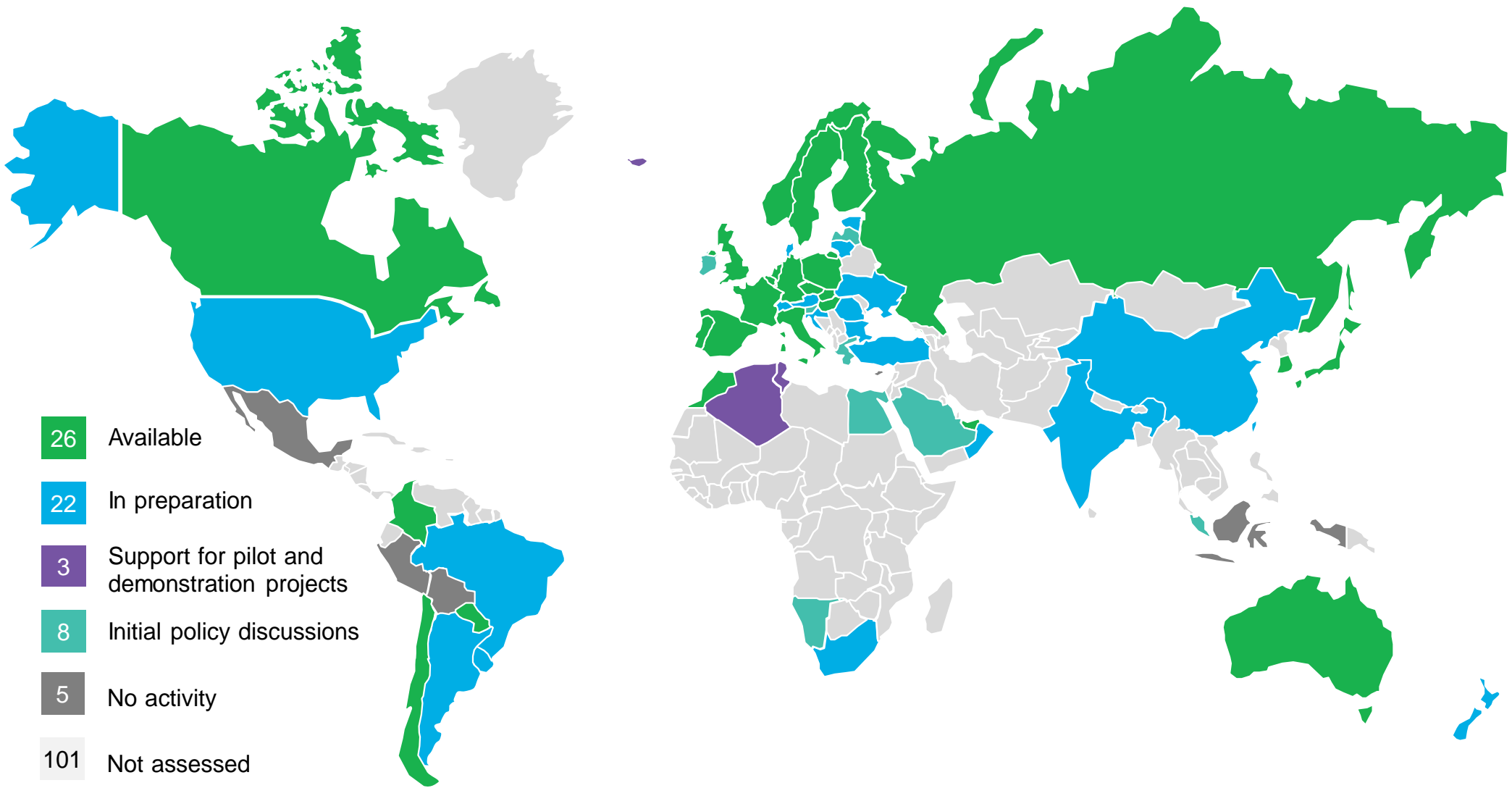
Current Production costs of green hydrogen depends on combination of Wind and PV resources



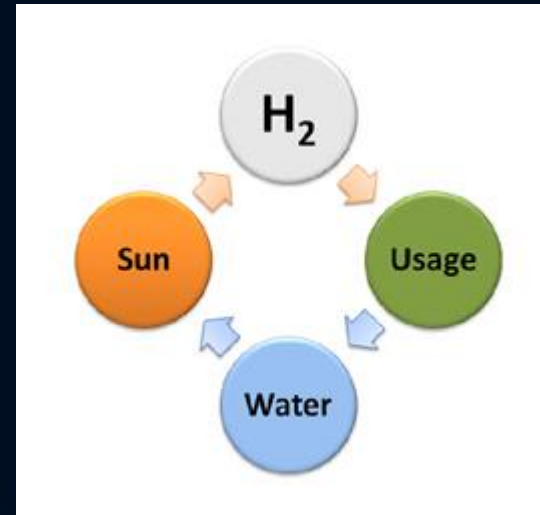
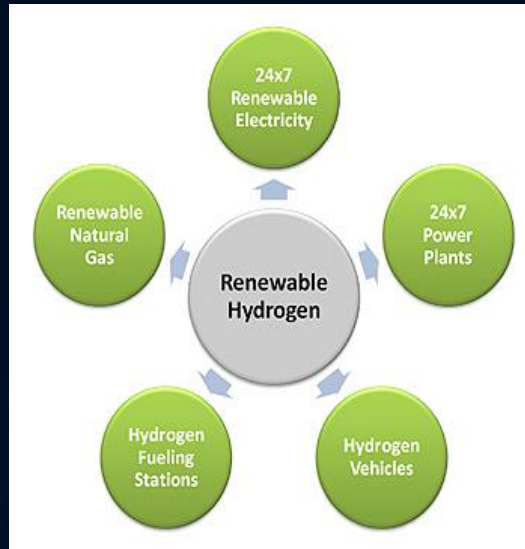
Notes: This map is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area. Electrolyser CAPEX = USD 450/kWe, efficiency (LHV) = 74 %; solar PV CAPEX and onshore wind CAPEX = between USD 400–1 000/kW and USD 900–2 500/kW depending on the region; discount rate = 8 %.

National hydrogen strategies as of January 6, 2022

Renewable PtX-Training



Methane and Hydrogen Cycle



Contact Us:

Tel: 011 285 0035

Web: www.saqccgas.co.za

Email: info@saqccgas.co.za

Facebook: @saqccgas

Linkedin: SAQCC Gas

Twitter: @saqccgas



Q and A Thank you

PRESENTER: EDDIE COOKE



Registration Process

Authorised Gas Practitioner

Initials Surname

IDNo:

Reg No. 00

Exp date: DD/MM/YYYY


Employer:

Skills

See reverse side of the card for scope of work

Picture

SAQCC Gas

 **labour**
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SAQCC Gas license

Point 1:

The process of registration is initiated by the associations. Each association has a different procedure in terms of requirements.

Point 2:

There are committees/technical experts appointed by each association to assess the application forms. These committees recommend such applications for registration to SAQCC Gas.

Point 3:

They are then processed by SAQCC Gas for registration. The license is issued to the applicant and is valid for 3 years.



Benefits of going Digital CoC

Digital CoC can be accessed through your smartphone or Tablet

Safe and Secure

Easily accessible from your smartphone or tablet

CoC data will be backed up

CoC will be easily sent to the client

Offline facility (*you can capture the information offline – once connection is restored you can submit/issue a CoC successfully*)

SAQCC Gas and association automatically receive the copy once CoC is issued.

Multiple license holder? (*the app allows you to buy & issue for any gas type that you're registered for*)





