# Decarbonising ammonia

## Deploying green hydrogen and CCS in the Pilbara

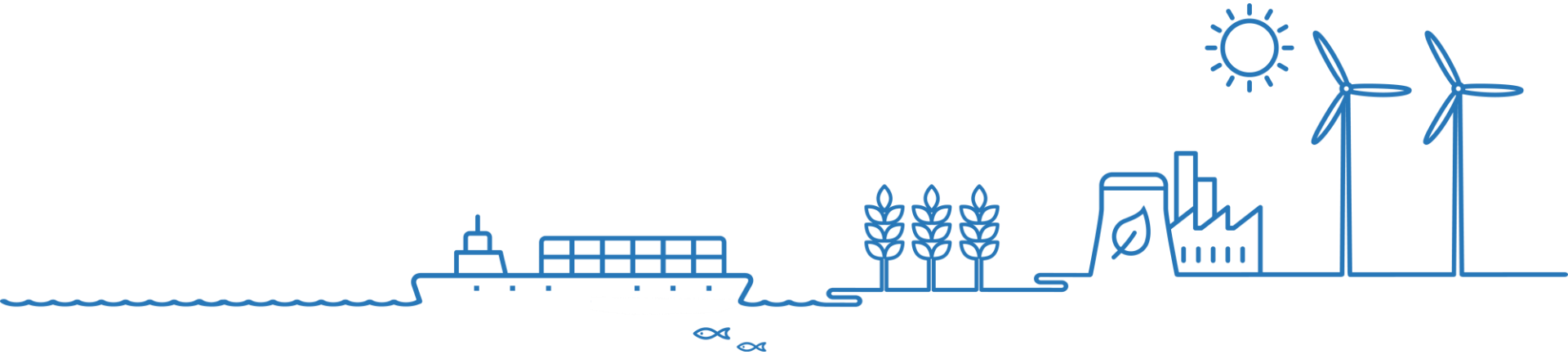

# Our Operations

- Multi billion-dollar processing precinct
- Yara Pilbara Fertilisers – 850,000tpa ammonia plant
- 5% of global tradeable ammonia
- Exports to Korea, Taiwan, Thailand, Japan
- Yara Pilbara Nitrates – 330,000tpa technical ammonium nitrate plant

# Natural Gas

- Gas is the feedstock for our production process.
- Second biggest industrial user of domestic gas in WA, approximately 8% of demand.
- Average demand of 90 terajoules per day, 33 petajoules per year.
- Represents 70-80% of production costs.
- Remains critical to operations for the next 25 years.

# Emissions Reduction



# Heroya Renewable Hydrogen Plant

# Project Yuri

- One of the first off-grid power to hydrogen installations at industrial scale
- ARENA and WA Government support
- Demonstrates clean ammonia value chain
- 18 MW Solar PV System
- 10 MW Electrolysis unit
- Renewable hydrogen from renewable electricity generated on-site


# Northern Lights

- World's first cross-border $CO_2$ transport and storage infrastructure
- Draws on Norway's decades of experience in $CO_2$ storage
- Permanent storage in reservoir 2,600 metres under seabed
- Yara Sluiskil will capture 800,000 tons of $CO_2$ from ammonia production each year for Northern Lights

# Carbon Capture and Storage

- Yara Pilbara emits 1.6 million tonnes of $CO_2$ equivalent per year.
- CCS a swift solution to cut emissions by two thirds.
- Focus on depleted reservoirs off WA coast.
- Signed MOUs with major service providers.
- Circular economy – storing carbon in the same reservoirs it came from.

# Several building blocks needed to fit together for the clean ammonia opportunity to reach its full potential

| Regulatory environment | Market | Technology | Infrastructure |
|---|---|---|---|
|  |  |  |  |
| A **global adoption of "fair" CO2 prices or subsidies** supporting low-carbon fuels; **"true" carbon pricing or forceful regulation** required to sufficiently incentivize the transition | **Users in key end-markets will shift towards ammonia** – or be "pulled" by their final customers | The **technologies required** to support the green "hydrogen economy" will be **efficiently developed and scaled to make green cost competitive** | The **required infrastructure and operational support will be developed** in line with market growth |

Knowledge grows

# Thank You