



Australian Government

Department of Foreign Affairs and Trade

# HYDROGEN THE HERO?

Presentation for the 2<sup>nd</sup> Mekong-Australia Policy Dialogue

Energy and Electricity Futures for ACMECS Members

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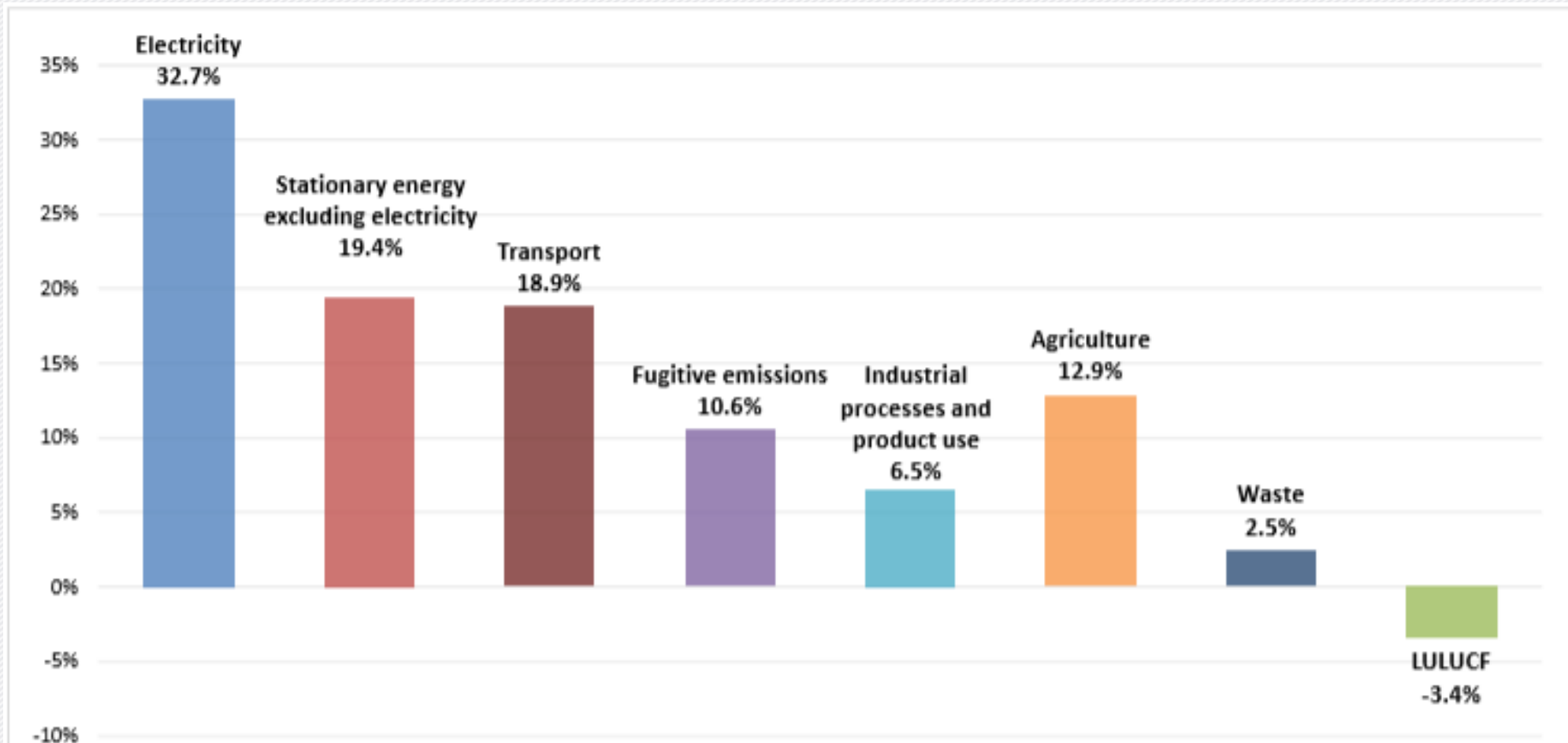
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# HYDROGEN HAS POTENTIAL ECONOMY WIDE USES

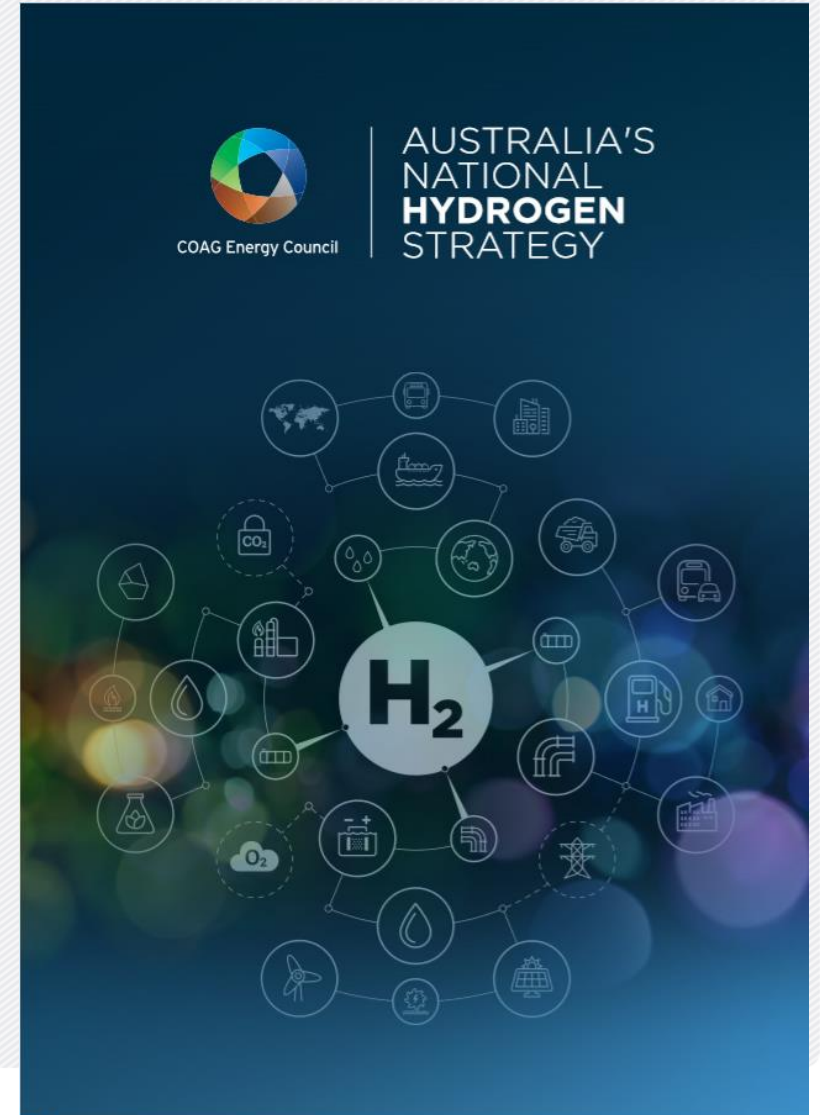


# AUSTRALIAN EMISSIONS BY SECTOR, YEAR TO MARCH 2020



# AUSTRALIA - COMPREHENSIVE APPROACH TO HYDROGEN

- Australia released its National Hydrogen Strategy in November 2019, which included 57 recommendations agreed by all Energy Ministers in Australia at federal, state and territory levels
- The recommendations support the accelerated deployment of hydrogen domestically as well as the development of an Australian hydrogen export industry



# AUSTRALIA IS INVESTING IN INTERNATIONAL TECHNOLOGY PARTNERSHIPS TO REDUCE EMISSIONS

- Australia's recent **Low Emissions Technology Statement** has set priority technology stretch goals
  - Clean hydrogen <\$2 per kilogram **[USD 1.50]**
  - Including funding for hydrogen export hubs
  - Energy storage dispatched <\$100 per MWh **[USD 75]**  
(to enable firmed wind and solar at pricing at or below today's average wholesale electricity price)
  - CO<sub>2</sub> compression, transport, and storage \$20/t **[US 15]**
  - Low emissions steel production <\$900/t **[US 675]**, and aluminium <\$2,700/t [US ~2,000]
  - Soil carbon measurement <\$3/hectare/yr **[~USD 2]**

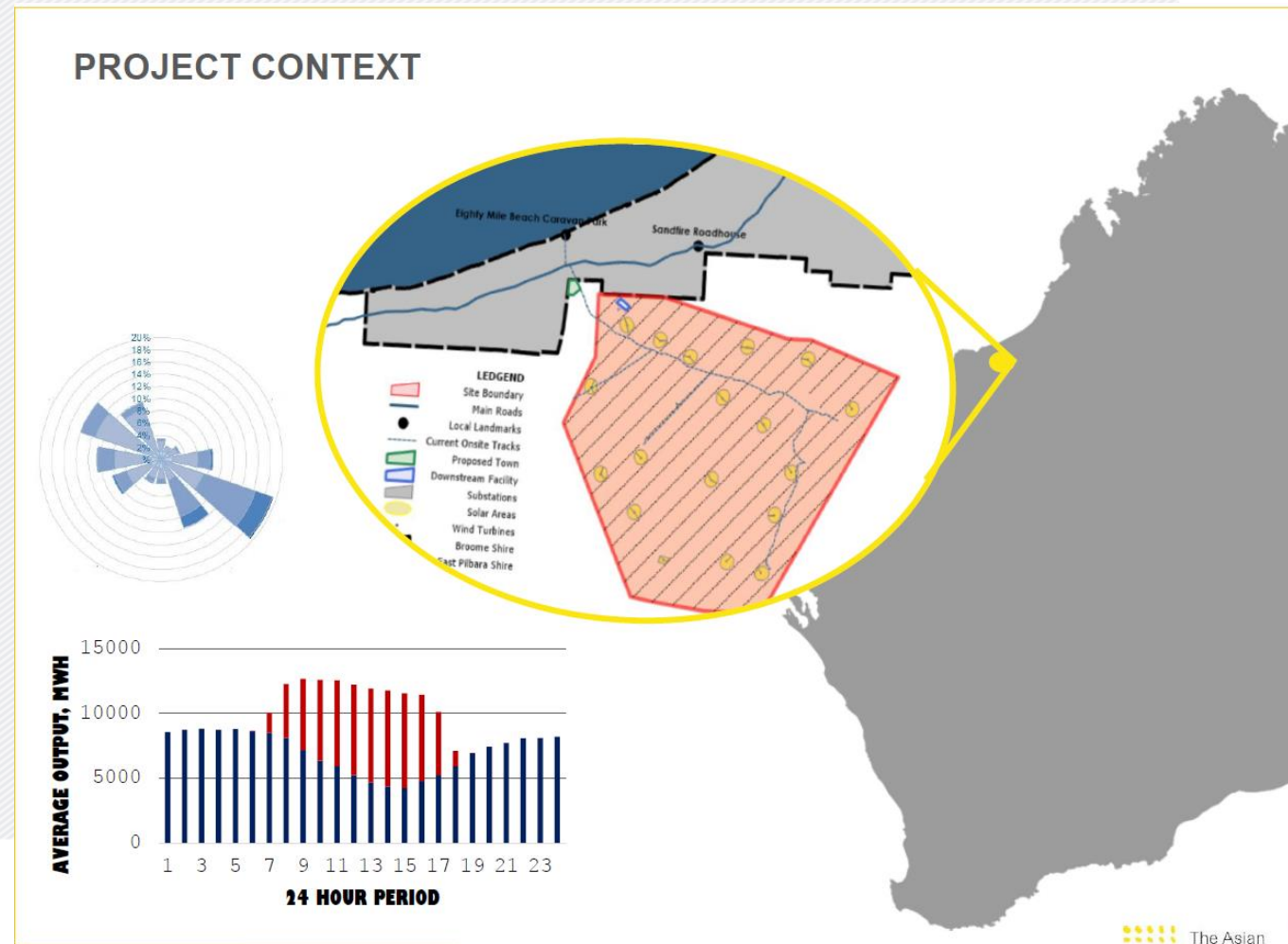


## LEVERAGING GOVERNMENT CAPITAL TO CROWD IN PRIVATE INVESTMENT

- Mobilising early stage investments in low emissions industries, technologies and projects to support our traditional industries – manufacturing, agriculture, transport – while positioning our economy for the future.
- The **Australian Renewable Energy Agency (ARENA)** has been fundamental, contributing funding to renewable energy projects totalling \$6.48 billion
  - creating many jobs, halving construction costs, improving energy reliability and reducing emissions.
- Our government funded **Clean Energy Finance Corporation (CEFC)** has driven over \$28 billion of investment commitments in clean energy projects across all key technologies
  - **together with ARENA, CEFC is investing up to \$500 million in hydrogen projects.**
- **CSIRO** has launched a new program of large scale missions, including for Hydrogen and its derivatives, aimed at solving some of our greatest challenges.
- Over the next decade, the Australian Government expects to **invest over \$18 billion** in low emissions technology to leverage additional co-investment of between \$50 billion to \$100 billion.

# EXCITING NEW GREEN HYDROGEN DEVELOPMENT ASIAN RENEWABLE ENERGY HUB (AREH)

- At 26 GW of renewable energy, AREH will be the world's largest power plant
- it plans to ship 'green' ammonia (a hydrogen based energy carrier) to global customers
- it could replace 3 billion litres of imported diesel and support current and future industry, including green steel





# HYDROGEN FUELS MARKETS

- Market **demand growing** for hydrogen fuels in Asia and Europe
- **New technologies** using hydrogen for electricity generation, transport and energy storage rapidly coming online.
- Australia has the resources, technology, workforce and experience needed to be a hydrogen fuels producer and exporter, including of **green or 'zero emissions' hydrogen**
- For example, we are piloting **supply of hydrogen from the La Trobe Valley** to Japan with carbon sequestered as part of CarbonNet project.
- **Partnering** with Japan, Germany, Singapore, ROK +++



World's first liquefied hydrogen carrier in Kobe, Japan last year, as part of the Hydrogen Energy Supply Chain

# HYDROGEN THE HERO?

National hydrogen strategies help countries examine how hydrogen can best assist their energy goals

38th ASEAN Ministers on Energy Meeting (AMEM)

- Ministers endorsed ASEAN Plan of Action for Energy Cooperation (Apaec) Phase 2
- greater efforts to promote various technologies such as **hydrogen**

Could hydrogen help Mekong countries achieve their sustainable energy goals – including ambitious renewable energy targets?

# HYDROGEN HAS POTENTIAL ECONOMY WIDE USES



## STAYING ENGAGED

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