Steeling Ourselves for the Future: Australia, China, and Green Steel

Green Development Conference

Yulin, October 2026

Lev Lafayette,

Australia-China Friendship Society (Victoria)

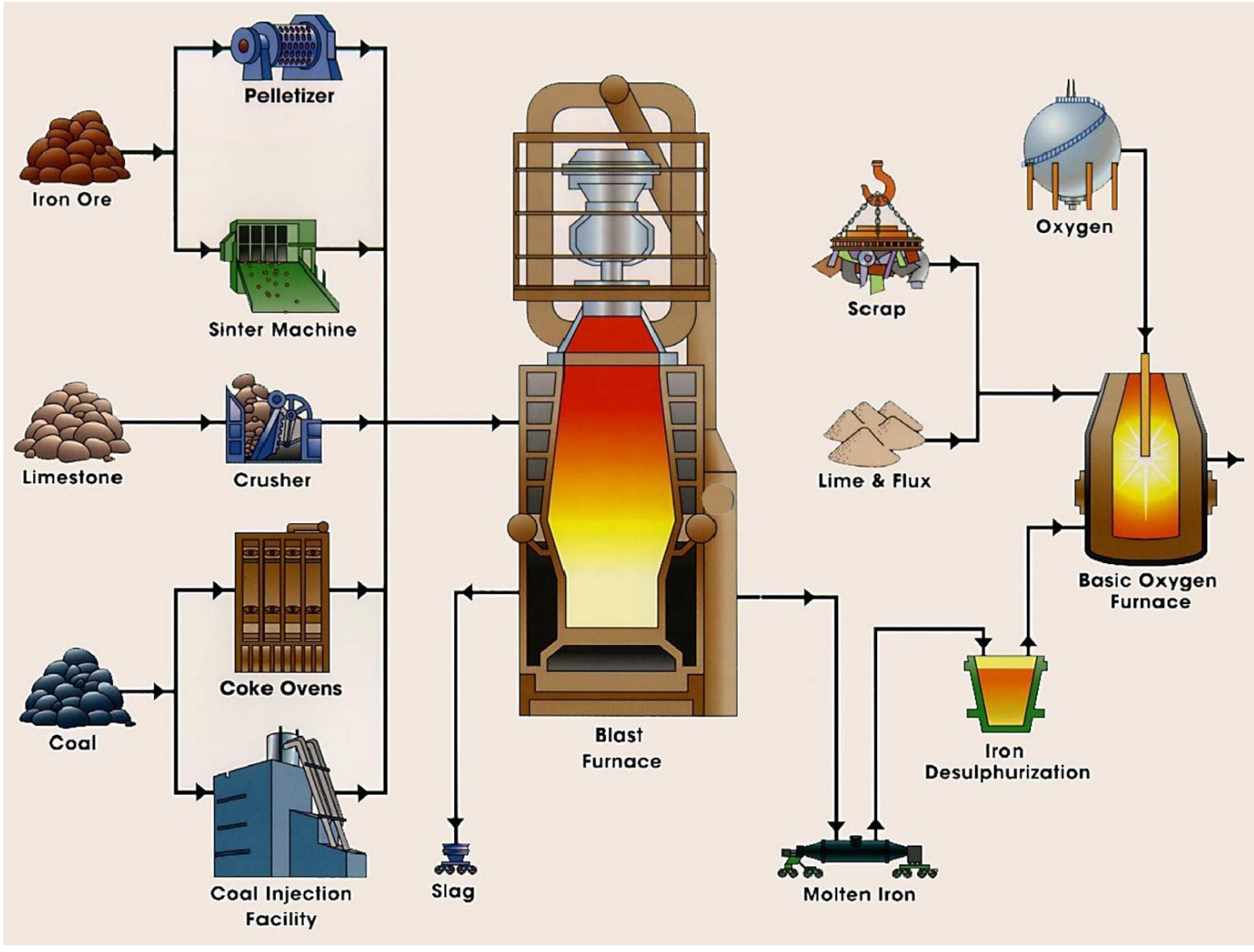
Victorian Branch (Inc).

Australia & China, Coal & Iron Ore

- China is the important partner for iron ore exports from Australia (c85%), and a major partner for coal exports (#2 after Japan, c20%).
- Limited market suppliers for iron ore, alternatives available for coal.
- Exports of iron ore started in 1973, but coal and iron ore significantly increased in the 1980s, and scaled up in the 2000s.

Use of Australian Coal and Iron Ore

- Australian iron ore primarily used to produce steel for manufacturing and construction.
- Australian coal is used for electricity generation and steelmaking.
- China’s steel industry (52% of the world supply) depends on iron ore (raw material) and coal (blast furnaces).

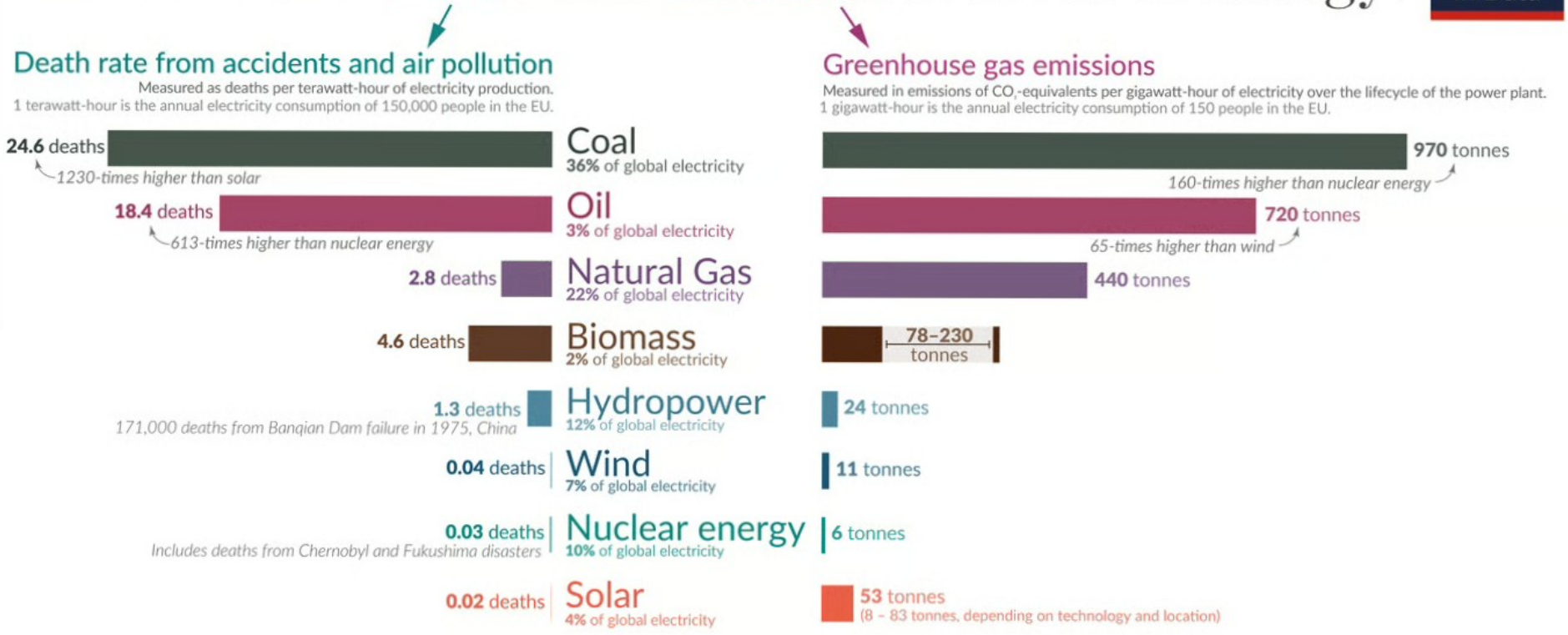

Pelletizer
Iron Ore
Sinter Machine
Limestone
Crusher
Coke Ovens
Coal
Coal Injection Facility
Slag
Blast Furnace
Scrap
Oxygen
Lime & Flux
Basic Oxygen Furnace
Iron Desulphurization
Molten Iron

Two BIG Problems with Coal

- Coal is by far the most deadly (“deaths per terawatt hour”) method of producing electricity.
- Burning coal is the most significant source of greenhouse gas emissions, and specifically CO2 emissions with a long atmospheric lifespan.
- Note: Temperature increase in the last fifty years from AGW is the fastest recorded in Earth’s history.

What are the safest and cleanest sources of energy?

Our World in Data



Death rates from fossil fuels and biomass are based on state-of-the art plants with pollution controls in Europe, and are based on older models of the impacts of air pollution on health. This means these death rates are likely to be very conservative. For further discussion, see our article: OurWorldinData.org/safest-sources-of-energy. Electricity shares are given for 2021.

Data sources: Markandya & Wilkinson (2007); UNSCEAR (2008; 2018); Sovacool et al. (2016); IPCC AR5 (2014); UNECE (2022); Ember Energy (2021).

OurWorldinData.org – Research and data to make progress against the world's largest problems.

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Alternatives to Coal

- China is world-leader in non-coal energy production. Enormous scale of solar power, windpower, hydroelectricity, nuclear power.
- Coal has declined from 70% of electricity production to 55% in one decade (IEA, 2025).
- Coupled with electric vehicles and reforestation, China’s GHG emissions have already peaked.

What About Steel?

- Recycled steel has reduced coal use with Electric Arc Furnaces – an established technology. But insufficient for new demand.
- Hydrogen-based iron. Hydrogen reacts with iron ore producing direct-reduced iron, which then can be melted. Not yet cost-competitive and requires *a lot* of renewable energy.

The Lucky Country

- *If* China wishes to be a world supplier of steel *and* China wants green iron *then* China needs a trading partner that has (a) a lot of space for solar panels (b) a lot of sunlight (c) not many people and (d) a lot of iron ore.
- Where is such a place?



Enter Yulin

- Yulin is traditionally a major coal and energy centre for China, with coal reserves and industry. Yulin is already developing alternative higher-value alternative uses to coal in electricity production (e.g., plastics).
- A potential and beneficial development for Yulin is research and development of hydrogen-based iron, hydrogen production and storage, coal-hydrogen metallurgy, all of which can scaled up at more competitive locations (e.g., Australia).
- Requires strong partnership between steel manufacturers, research institutes, iron-ore producers, and co-operation between Australian and Chinese governments

Images and References

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