Promoting shipping's energy transition - recent findings in relation to reward mechanisms

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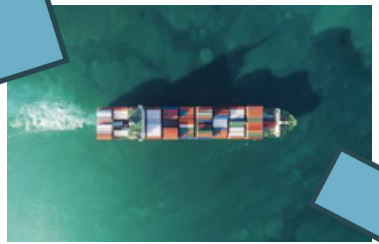
1 Neom = 1million tonnes eNH3 p.a. ~$10bn

Energy transition for international shipping = average of 1 Neom per month for the next 20 years

Reward needs to unlock investment

IMO Net Zero Fund

Reward



Ship owner

Offtake

E-fuel production

Debt

Bank

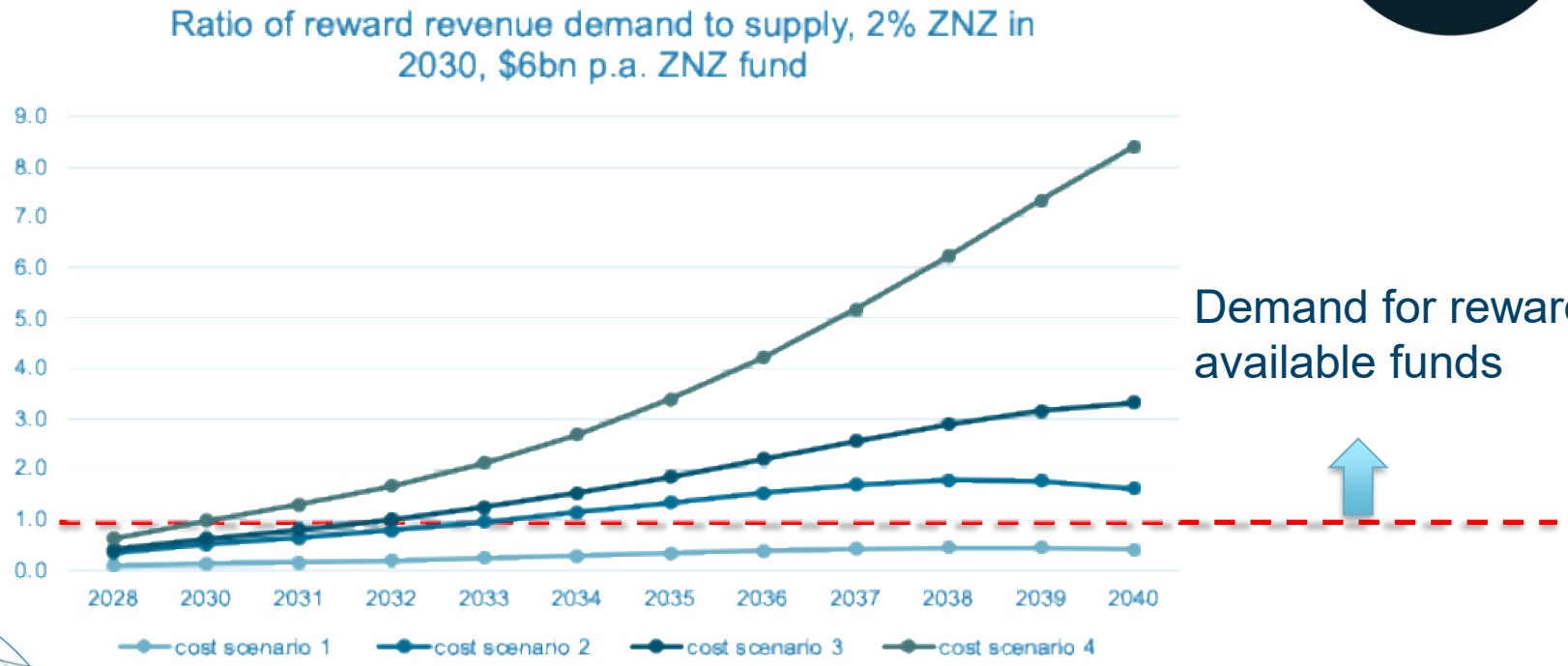
Cost-effective ZNZ reward maximises revenue for JET *

Less cost-effective reward

More cost-effective reward

***JET (Just and Equitable Transition):** supporting developing and vulnerable states through finance, capacity-building, and technology transfer

There is a material risk of reaching the fund's liability limit



Demand for reward > available funds

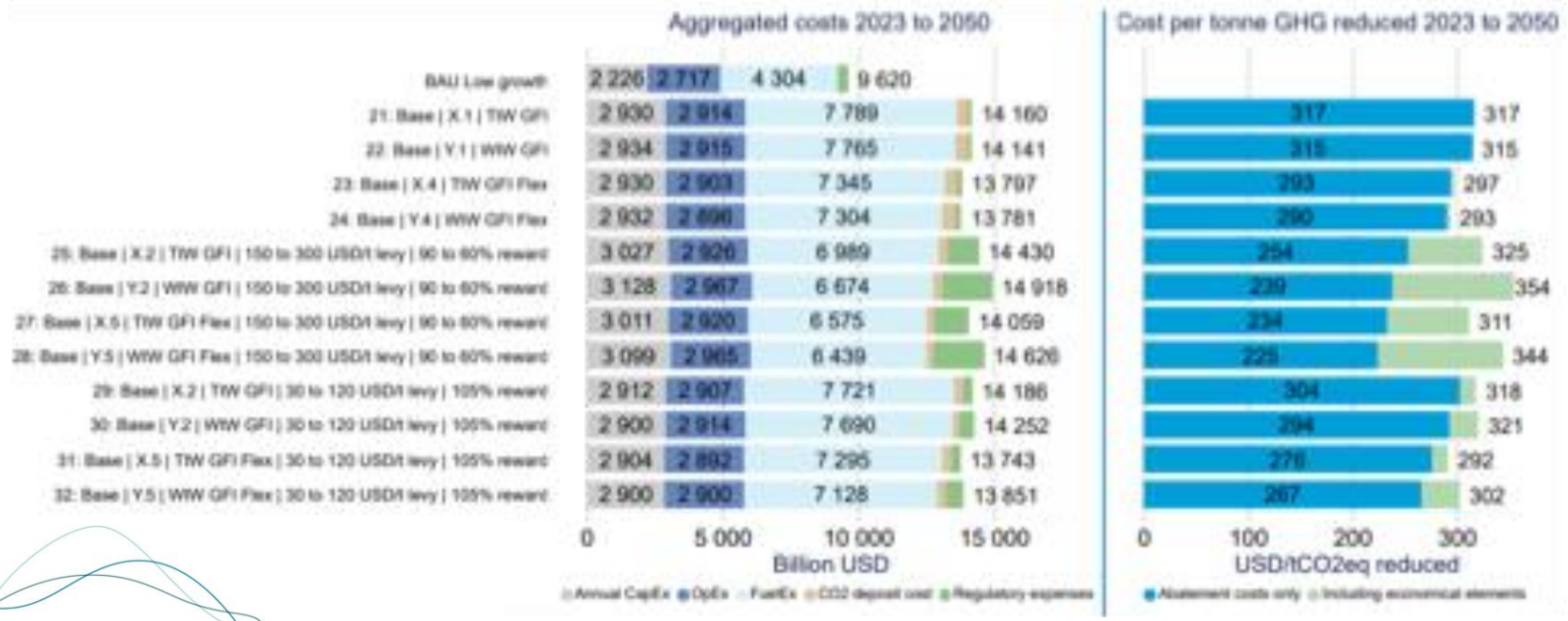
50-150 $/tCO2e reward rate, constant (scenarios 3 and 4) or reducing over time (scenarios 1 and 2)

Literature base

- Economic theory literature
- Innovation and transition theory literature
- Policy literature
- IMO's mid-term measure CIA

Rewarding ZNZ can reduce transition cost

CIA (DNV) scenarios with reward have lower cost abatement



Reverse auctions and differentiation can support cost-effective transition

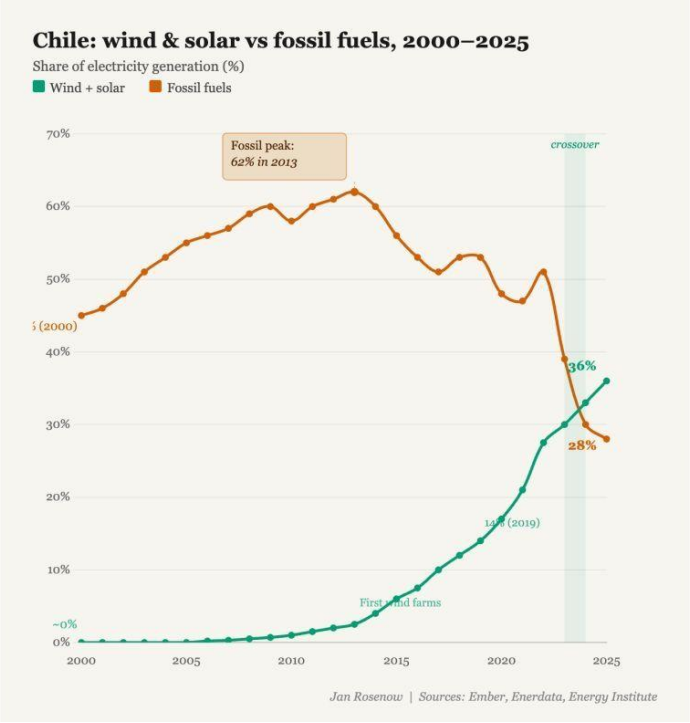
What is a reverse auction?

1. IMO defines an auction date, magnitude and scope e.g. 1st May, $1bn, ZNZ type X
2. Shipowners bid for a reward rate and volume e.g. $100/tCO2e, 10,000 tonnes
3. IMO evaluates bids, awards to lowest reward rate bids (up to $1bn limit value is reached)

Reward mechanism choice affects investment certainty

- Flat rate:
  - Short-run – rent seeking
  - Longer-run – rate uncertainty (discount)
- Auction:
  - Competitive
  - Can guarantee reward rate

Cost-effectiveness in practice: Chile accelerated clean energy through reverse auctions



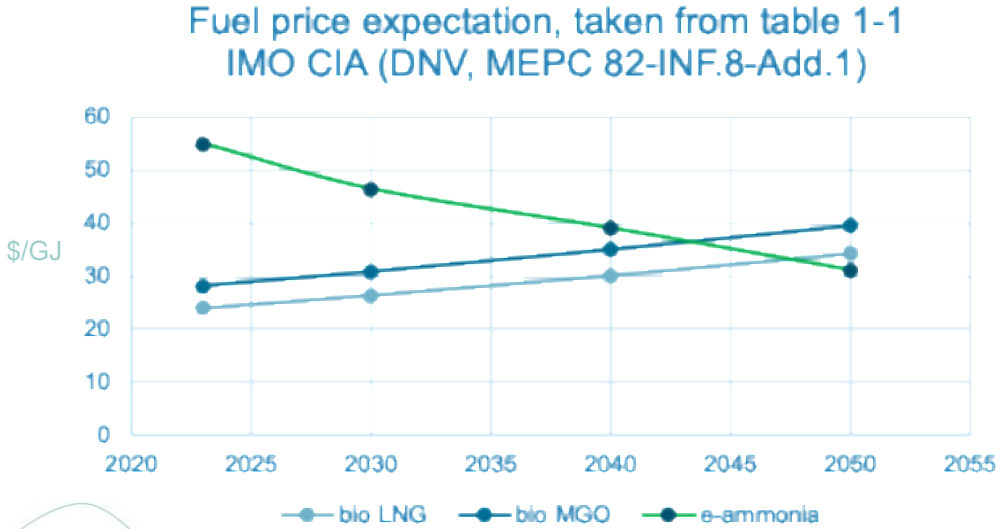
- Carbon price
- Technical standards
- Auctions – competitive long-term PPA's
- Differentiation

https://tinyurl.com/453jpv3b

https://www.iea.org/commentaries/unlocking-investment-opportunities-in-latin-america-s-energy-transition

https://initiatives.weforum.org/playbook-of-solutions/case-study-details/chile-country-platform/aJYTG0000000Io94AE

Differentiation also affects cost-effectiveness

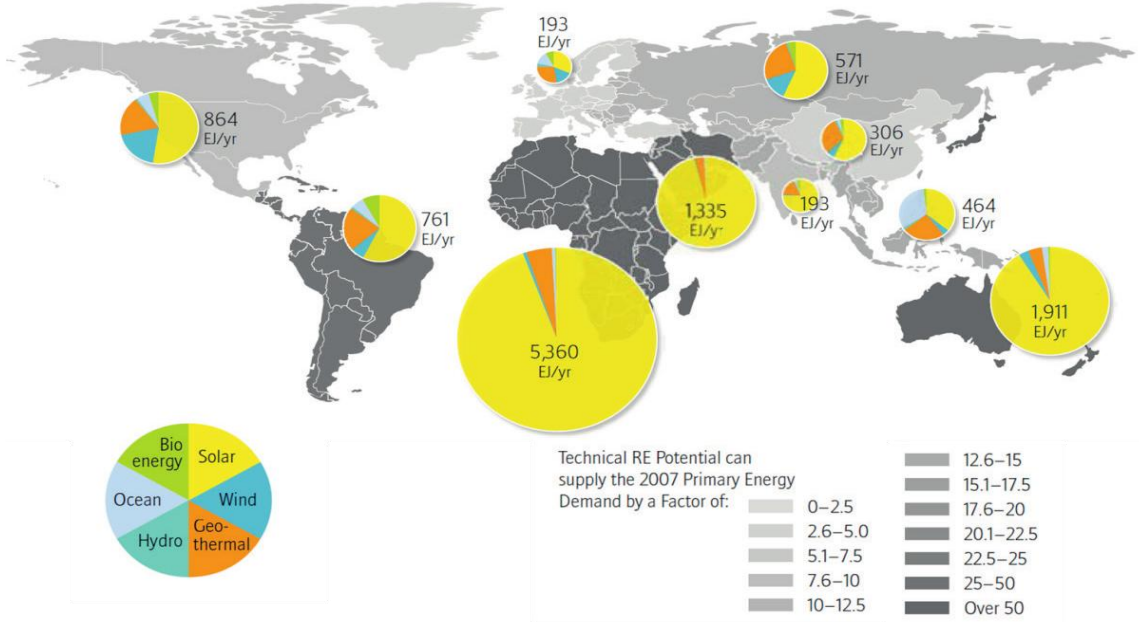


- Flat rate, e.g. ZNZ type differentiated reward rates
- Auction, e.g. differentiated auction pots

Auctions can be designed to support JET

Significant clean energy potential in developing countries—auction design is key

Shipping – 20-40EJ/yr



IEA Renewable Fuels

Conclusions 1

- Rewarding ZNZ can reduce overall transition cost
- Reverse auctions and differentiation can support cost-effective transition
- Auctions can be designed to support Just and Equitable Transition

Conclusions 2

Differentiation, reward mechanisms and their support for different types of ZNZ

	IMO-Defined With Discount	Reverse Auction
No Differentiation	Best support for current least cost ZNZ, worst support for long-run scalable ZNZ	Constrained support for long run scalable ZNZ (competition with other ZNZ)
Differentiation	Constrained support for long-run scalable ZNZ (uncertain reward rate)	Best support for longer-run scalable ZNZ, alongside support for current least cost ZNZ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