



“CLIMBING THE LADDER” THE FUTURE OF MOBILITY.



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HAVE YOU SEEN A WEREWOLF?



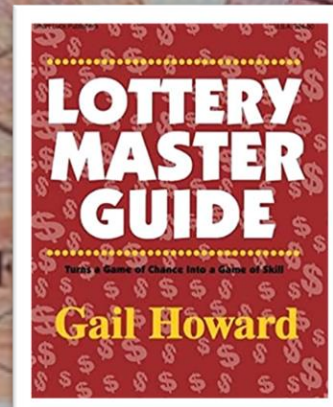
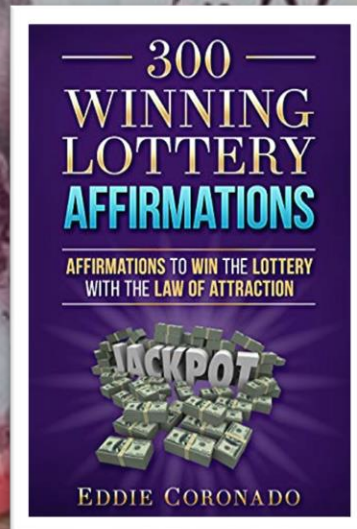


**THERE ARE NO
SILVER BULLETS**





PREDICTING THE FUTURE?





THE
NATIONAL
LOTTERY®

IT'S RANDOM



FORECASTING THE FUTURE



Hon Richard Danzig*
“Driving in the Dark”

Prediction lies at the root of all strategic thinking. Indeed, it underlies most everyday decisions.

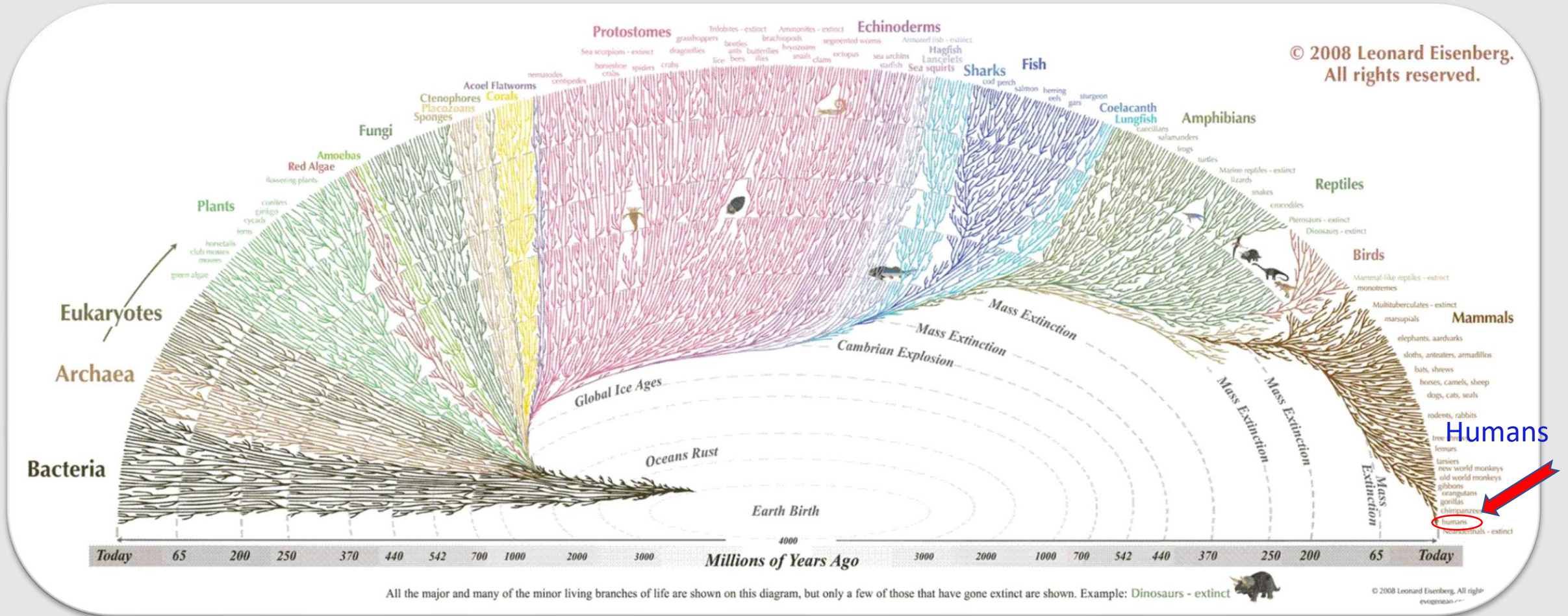
Whereas routine, short-term predictions are generally right, strategic judgements about future environment are often, one might say predictably, wrong.

The common response to this shortcoming is to try to improve predictive capabilities.

I propose a different tack, namely that long-term strategies should NOT be built on “visions” of the future but instead the premise that longer term predications... however presently credible, will probably prove wrong.”



LIFE EXISTS DUE TO DIVERSITY



A STRATEGY TO SURVIVE



THE NOTION OF PICKING WINNERS PERSISTS



House of Commons
Transport Committee

**Fuelling the future:
motive power and
connectivity**

Third Report of Session 2022-23

Report, together with formal minutes relating
to the report

Ordered by the House of Commons
to be printed 21 February 2023

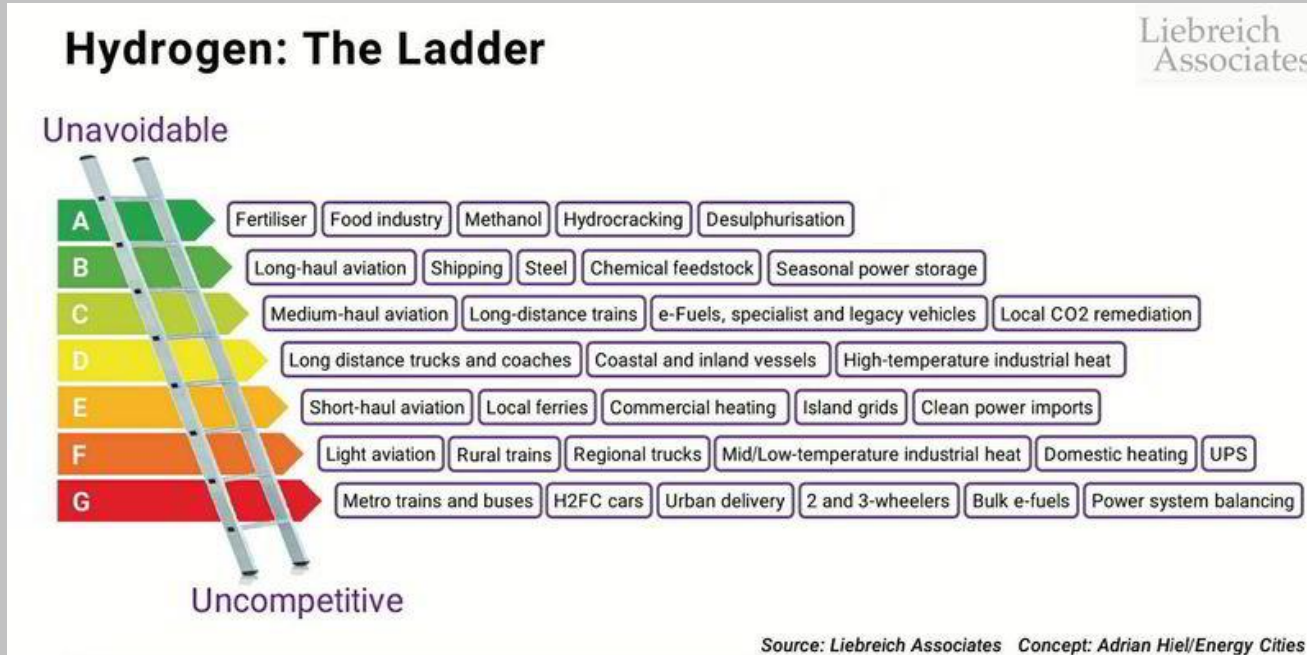
HC 159
Published on 2 March 2023
by authority of the House of Commons



GOVERNMENT **MUST**
'PICK WINNERS' ...
SAYS TRANSPORT
COMMITTEE



OPINIONS, INTEREST GROUPS, COMMERCIAL OPPORTUNISTS



THE DOCTRINE BECOMES THE MANTRA



DESPITE THE PROOF





THE SUPPLY & DEMAND DILEMMA





THE SUPPLY & DEMAND DILEMMA



**RESILIENT &
EFFICIENT**





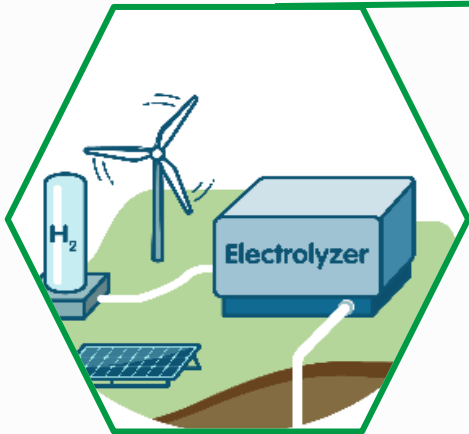
H2: A RESILIENT ENERGY SUPPLY = A COMPLIMENTARY MULTI SECTOR SOLUTION

Renewable sources of energy

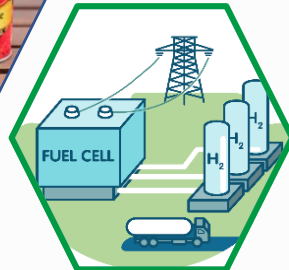
Renewable energy system

Reduce end use emissions

1. Enable large-scale, efficient local & international renewable energy integration

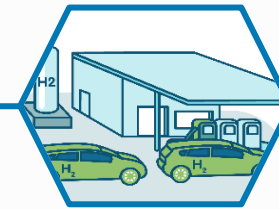


2. Global H₂ production

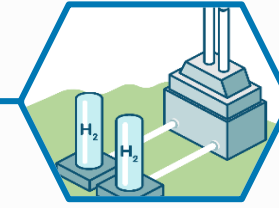


3. H₂ storage & Distribution of energy across sectors and regions

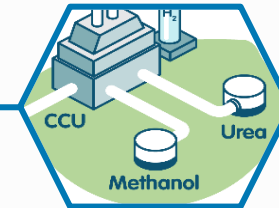
4. Decarbonise ALL transport



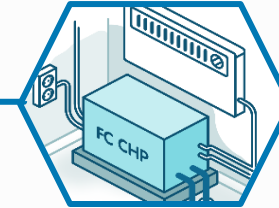
5. Decarbonise industry energy use



6. Serve as feedstock using captured carbon



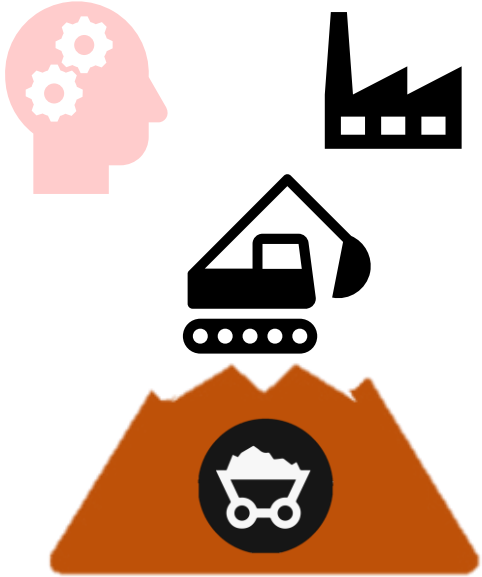
7. Help decarbonise building heating & power





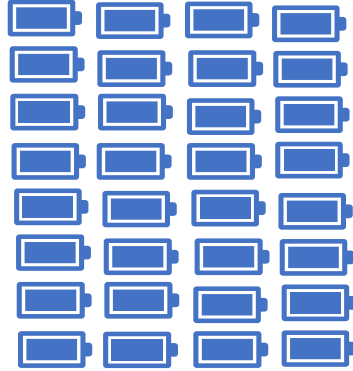
THE RESOURCE, BATTERY & ENERGY TRILEMMA

What should we do?

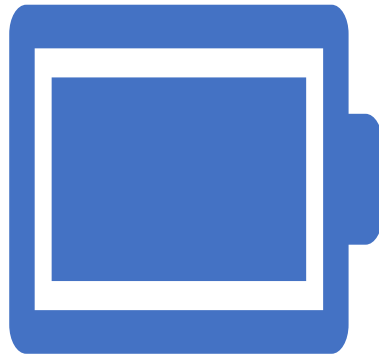


- How do we:
1. Reduce environmental damage from exploitation?
 2. Use finite raw materials efficiently?
 3. Make production sustainable?

30 + hybrid or FCEV batteries



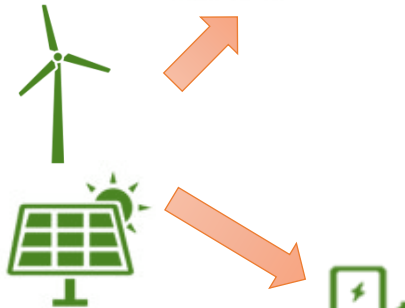
Or



1 large BEV battery

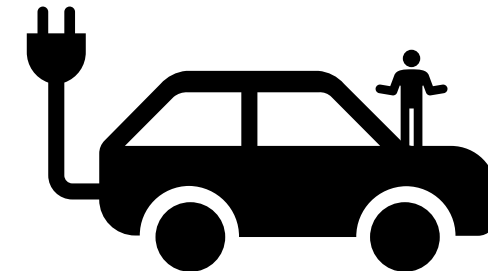
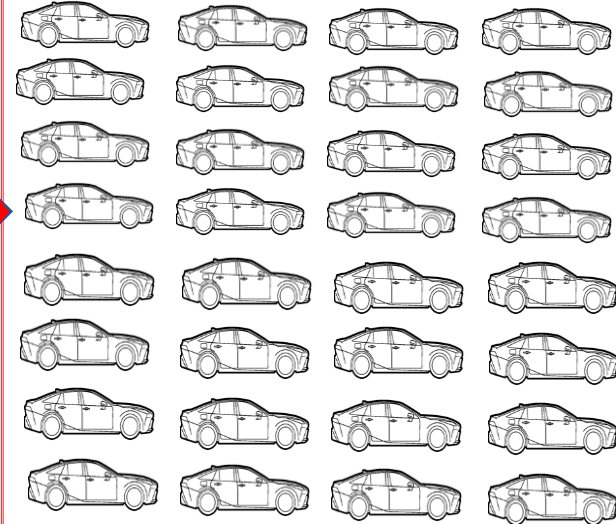
All need on demand refuel

Renewable energy stored as hydrogen



Renewable energy cannot always be available on demand for BEV charging

30 + Fuel Cell
Zero tailpipe emission cars



1 BEV
Zero tailpipe emission car

Fuel Cell can reuse or ~100% recoverable & recyclable



Li difficult & costly to reuse or recycle safely



THE FUTURE IS DIVERSITY

DIFFERENT NEEDS

AT DIFFERENT TIMES

**DIFFERENT
SOLUTIONS**

IN DIFFERENT PLACES





THANK YOU

WE NEED PEOPLE WHO ARE
BRAVE ENOUGH TO CHALLENGE
THE STATUS QUO

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