



Shell Scenarios

The Energy Security Scenarios

Energy transition in a security-conscious world

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Warning: Uncertainties ahead

The Energy Security Scenarios

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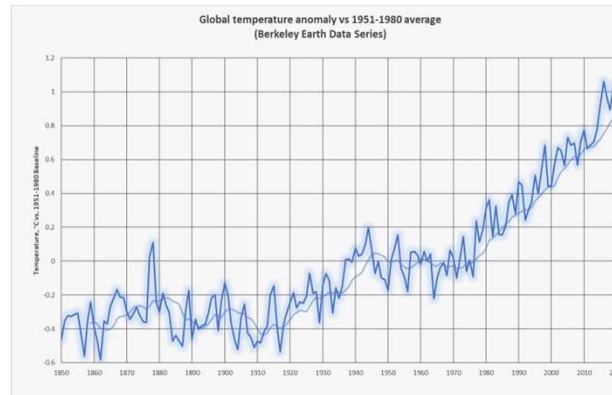
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In a troubled world, three key drivers of change emerge

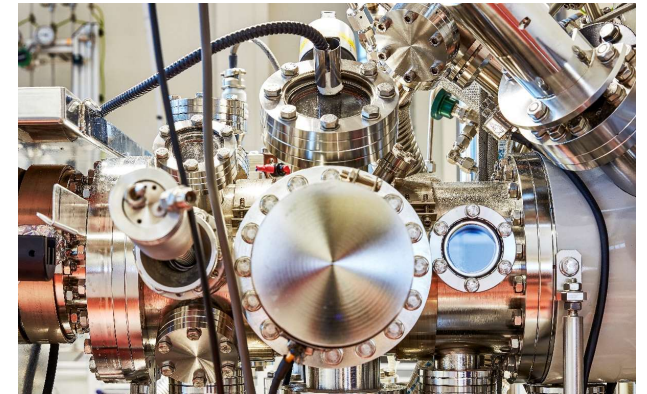
Rising energy costs, food prices, inflation



Global surface temperature continues to rise



Accelerated technological change

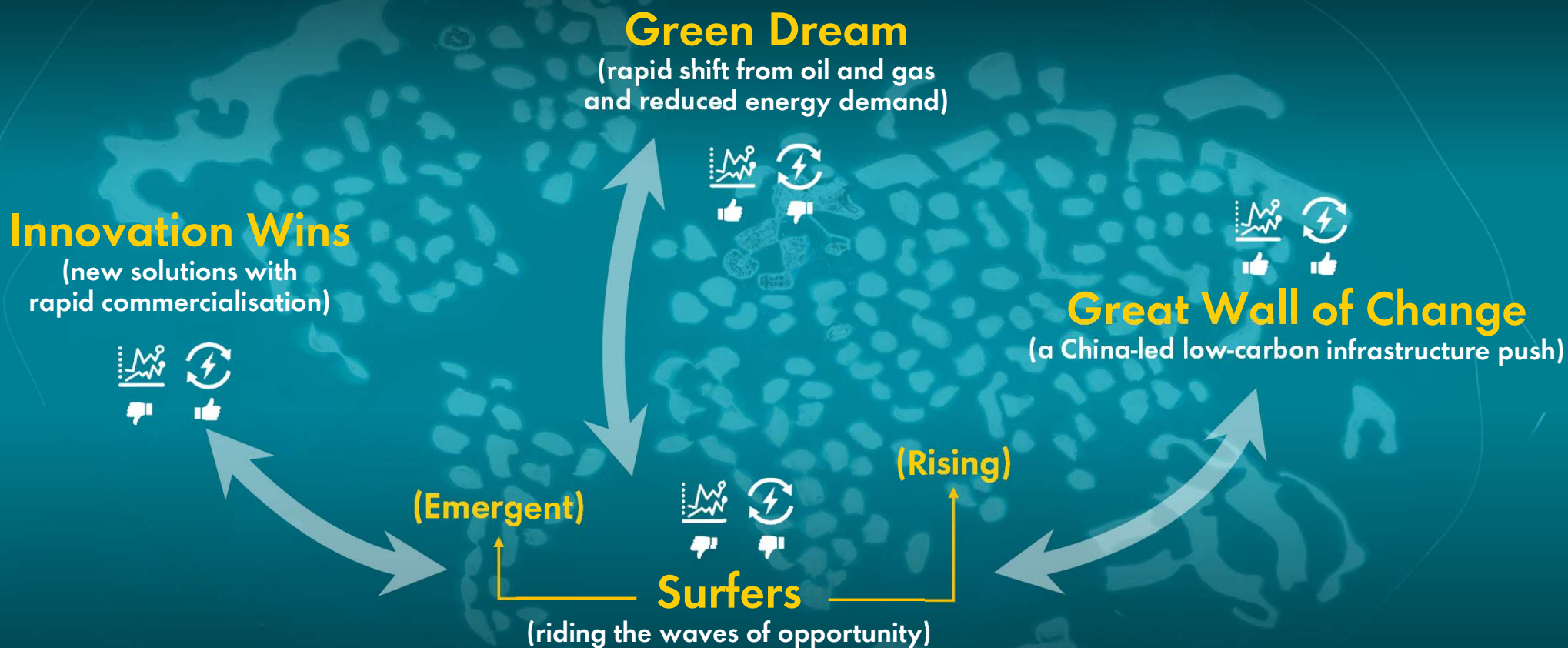


A security mindset is rapidly emerging throughout the world...

...but a deeper exploration reveals the foundation for an accelerated energy transition



Four emerging energy transition archetypes, each with a differing pace of decarbonisation



Features of a security focussed world

Security
(energy, health,
economy) as a
national priority

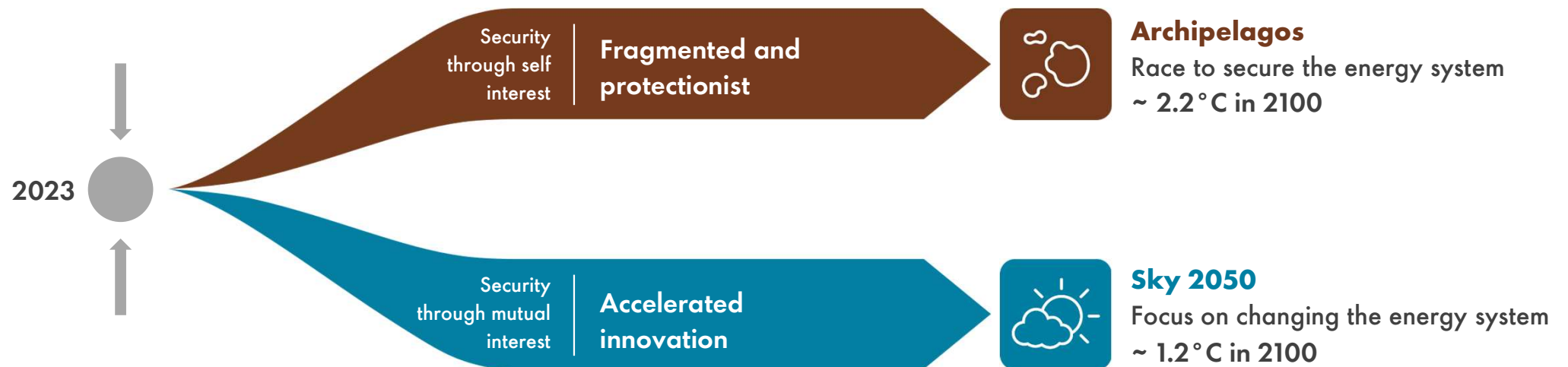
**The end of
globalisation
and market
liberalisation**

**Different clusters
of response that
lead to uneven
transition
progress**

Two scenarios emerge, **Sky 2050** and **Archipelagos**

As the security mindset takes hold and national interests take precedence a tension emerges between national climate pledges and what countries must do to address immediate energy concerns.

We are collectively entering a world of competitive transition.

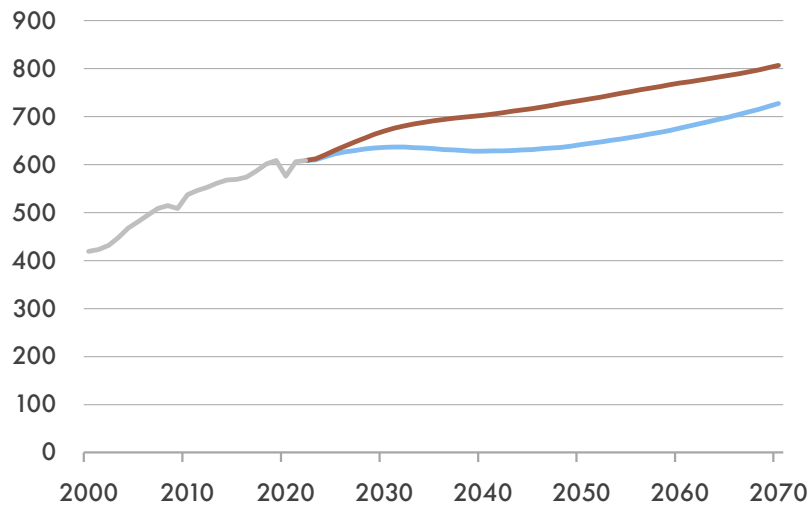


The Energy Security Scenarios

Primary energy in Sky 2050 and Archipelagos

World total primary energy demand

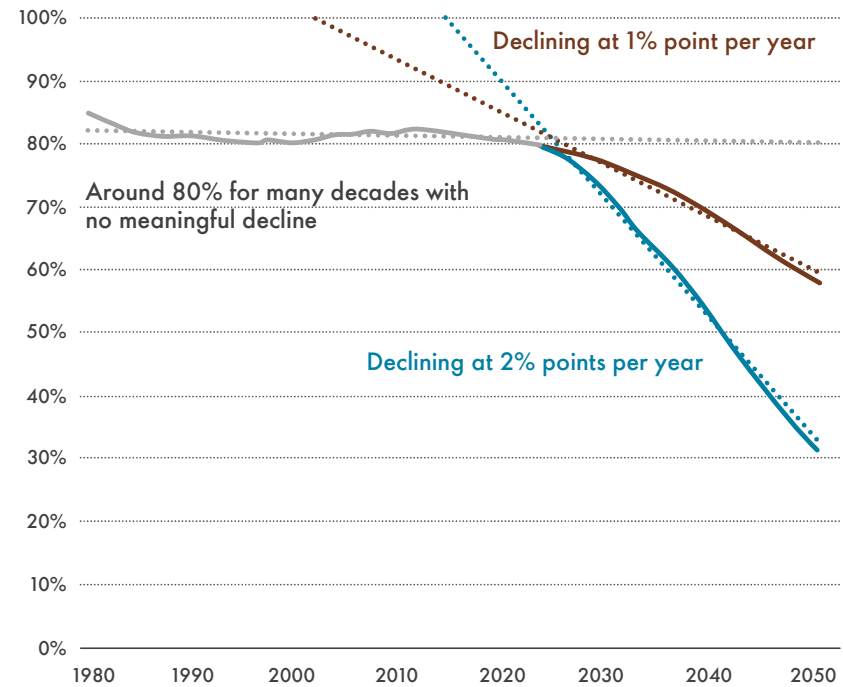
EJ/year



— Sky 2050 — Archipelagos — History

Oil, coal and gas as a fraction of total primary energy

Fraction of primary energy (%)



— History — Archipelagos — Sky 2050

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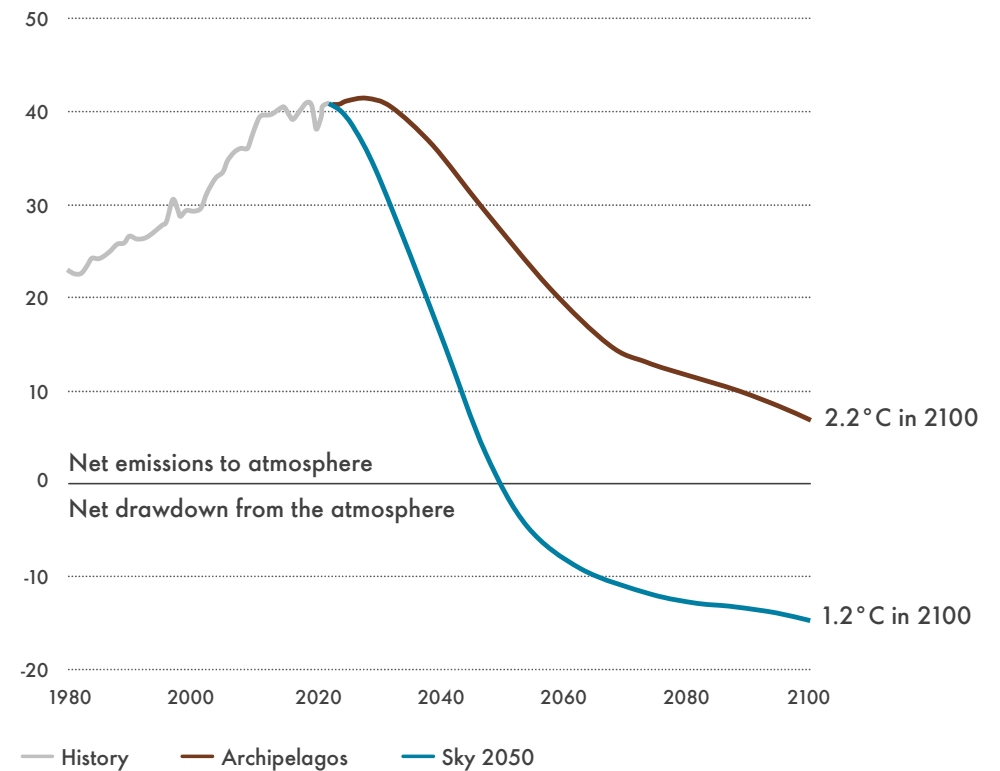
Features of **Sky 2050** and **Archipelagos**

Net zero emissions (NZE) is an almost inevitable outcome

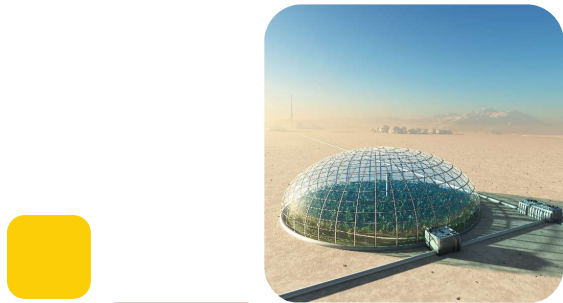
- **Sky 2050** reaches NZE in 2050 (by design), combining energy and land use changes.
- By 2100, warming is less than 1.5°C in **Sky 2050**.
- **Archipelagos** reaches NZE early in the 22nd century but warming exceeds 2°C.
- Scenarios above 2.5°C no longer appear plausible given the anticipated pace of the energy transition.

Global anthropogenic CO₂ emissions

Energy, Industrial processes and land use, CO₂ emissions (Gt per year)



From collaborative to competitive energy transition



Archipelagos

security through self interest
vicious cycle of protectionism and alliances

← **Mind** the gap →



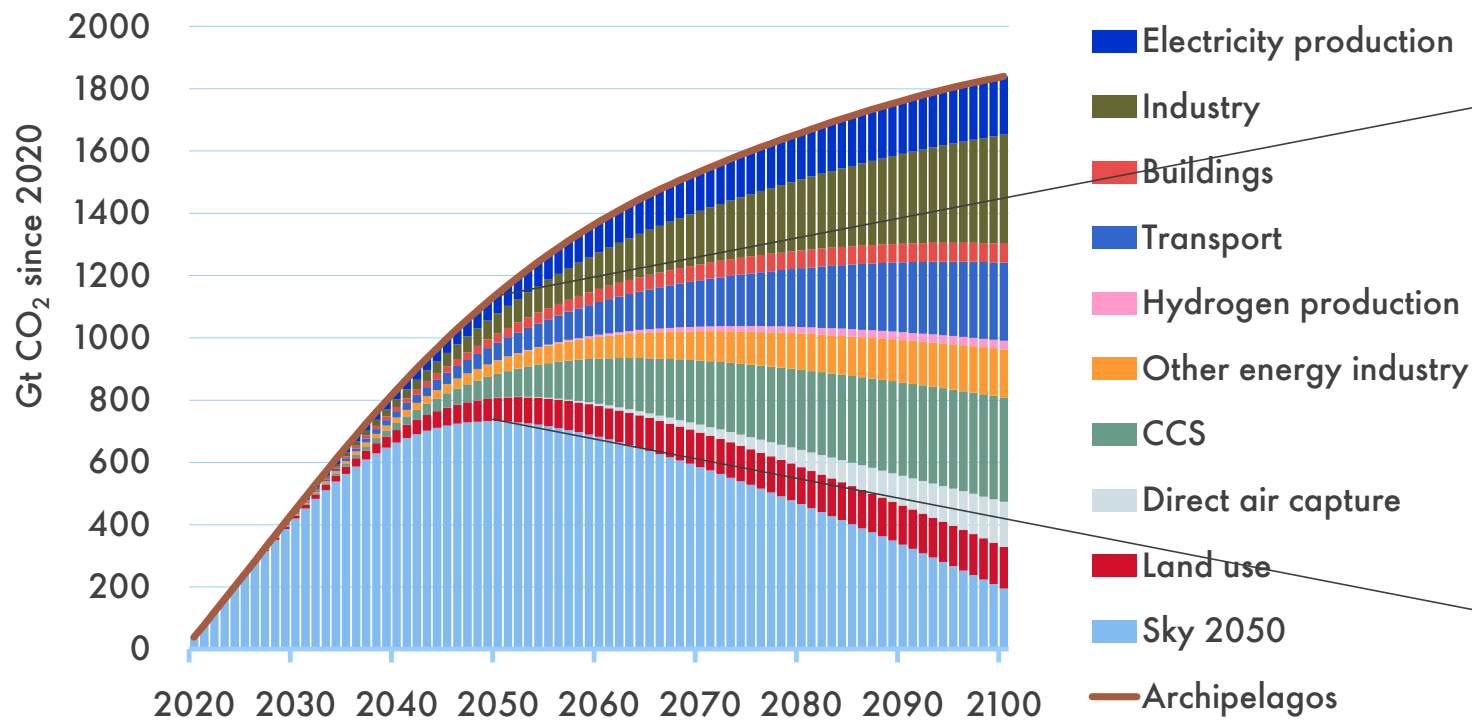
Sky 2050

security through mutual interest
virtuous cycle of competition and innovation

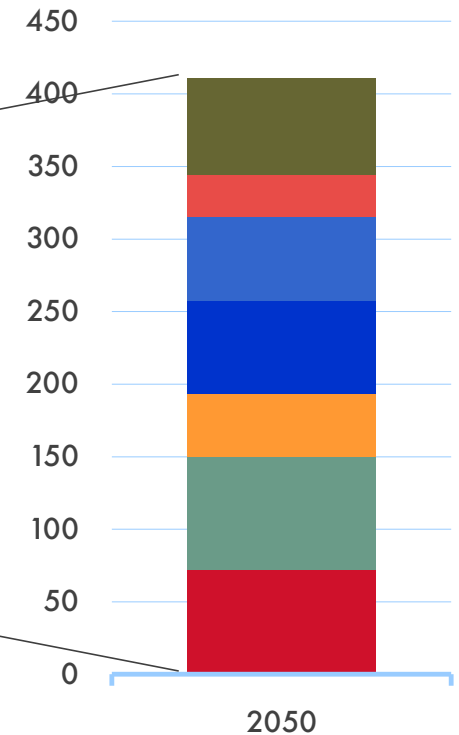
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Bridging the gap to Sky 2050

Cumulative emissions - Gap to Sky

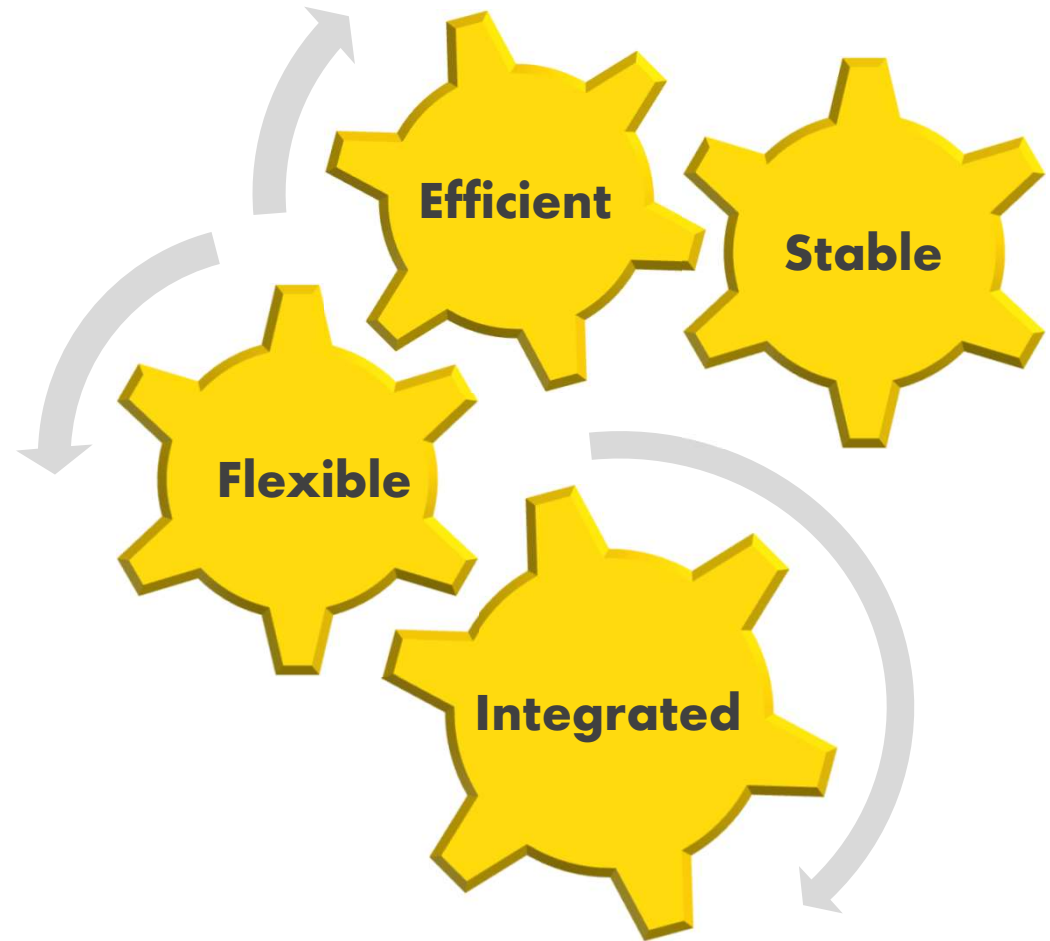


Gap to Sky



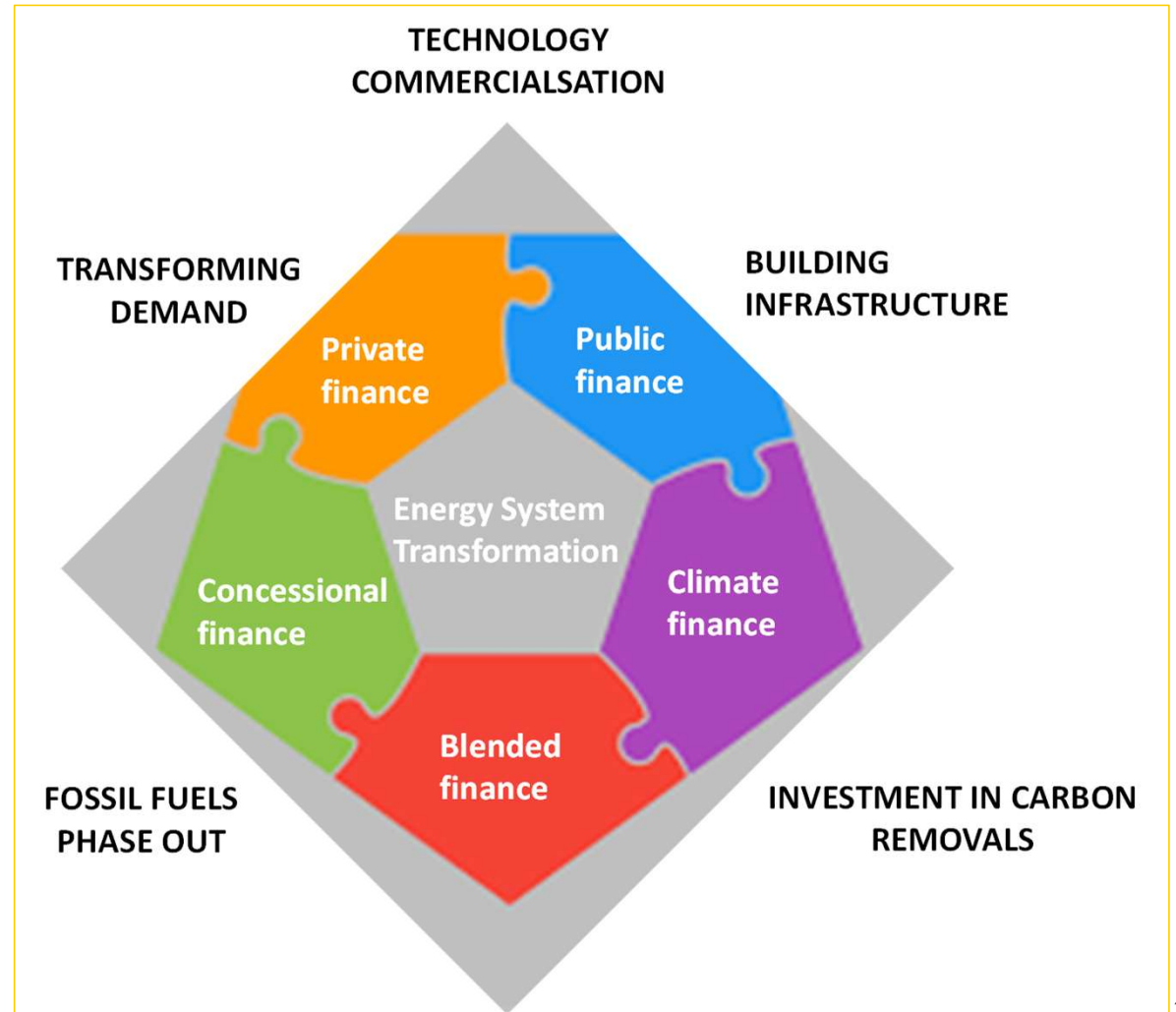
Bridging the gap to Sky 2050

Implementing smart policies



Bridging the gap to Sky 2050

Piecing together the financing mosaic



Thank you for listening

