

Design a Net Zero World

A Roadmap to Net Zero

Chinachem Group Sustainability Conference 2022

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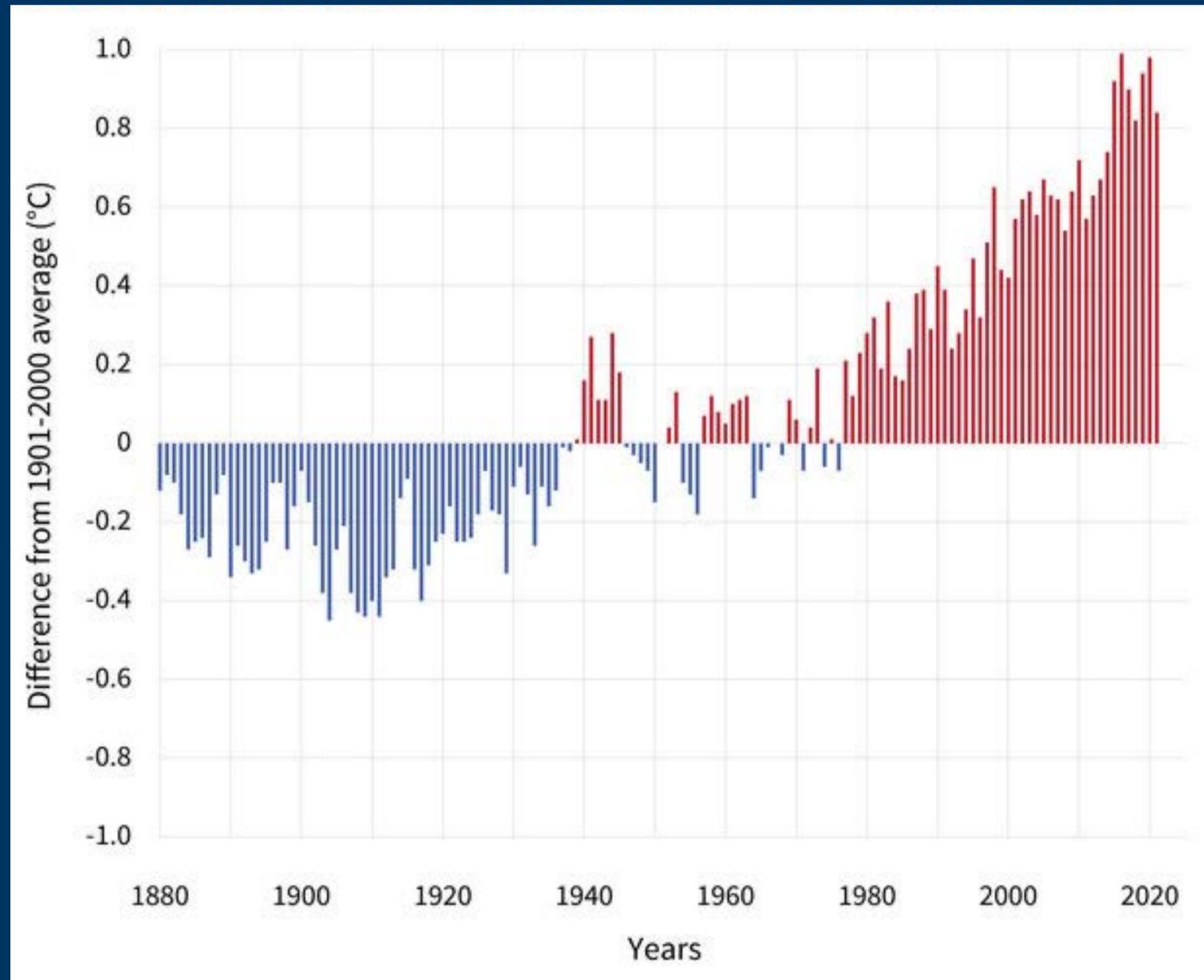
1. Why Net Zero?

- Today's unsustainable world
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Today's unsustainable world

- Earth's temperature has risen by 0.14° Fahrenheit (0.08° Celsius) per decade since 1880, but the rate of warming since 1981 is more than twice that: 0.32° F (0.18° C) per decade.
- 2021 was the sixth-warmest year on record based on NOAA's temperature data.



Tomorrow's priorities

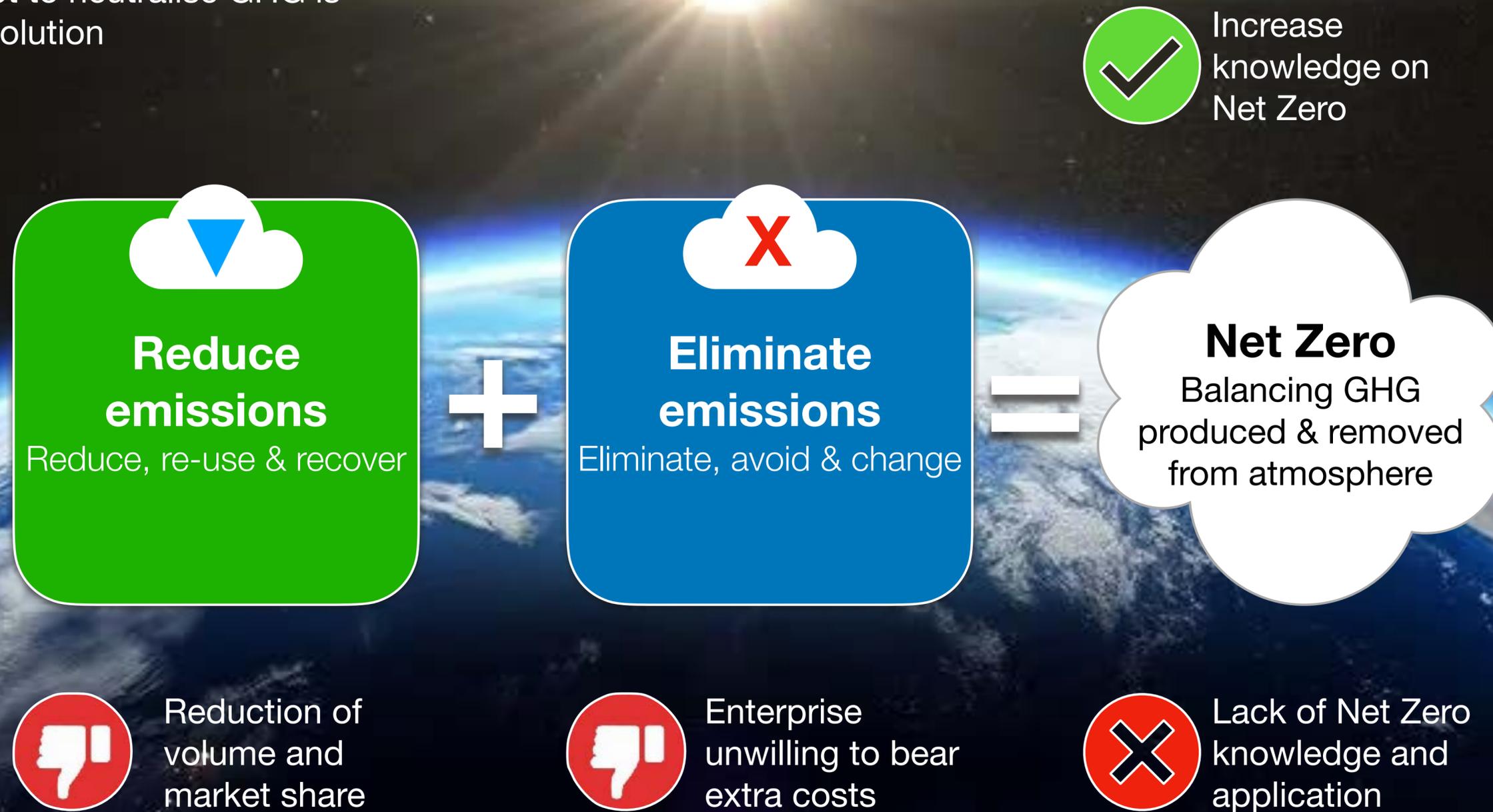
Over-urbanisation and over-consumption must be managed and controlled.

In terms of prevention, the effects of rising seawater and food resilience must be tackled.



Net Zero Equation

The current attempt to neutralise GHG is only a temporary solution

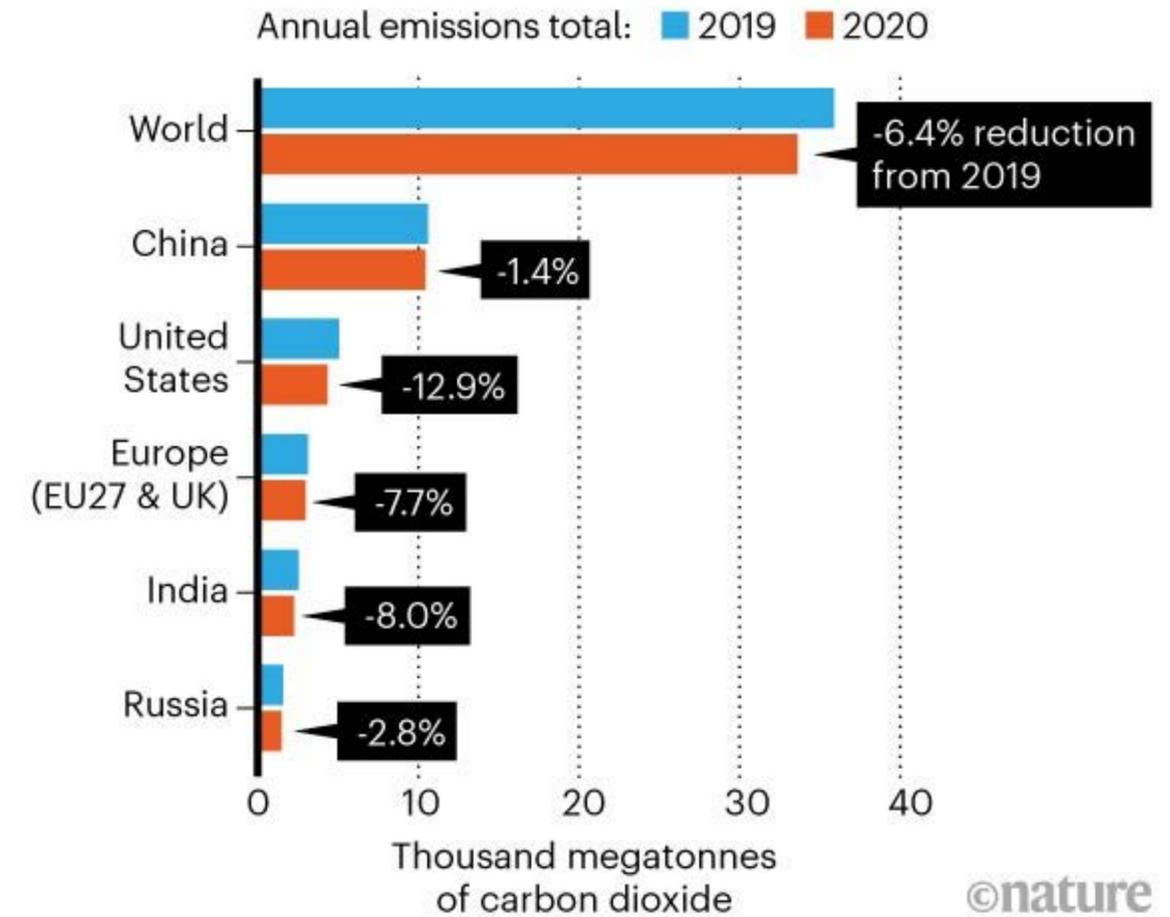


Is Net Zero possible?

During Covid-19, carbon emissions dropped by 6.4%. Even though economy declined in parallel, the environment is the greatest benefactor. From social perspective, changes to the way people live and work have brought about some positive changes.

CARBON CUTS

The COVID-19 pandemic took a bite out of CO₂ emissions in many countries, but trends varied. China saw a minor decrease because its economy recovered after outbreaks in early 2020. The United States tallied the largest reduction, driven by outbreaks lasting throughout the year.



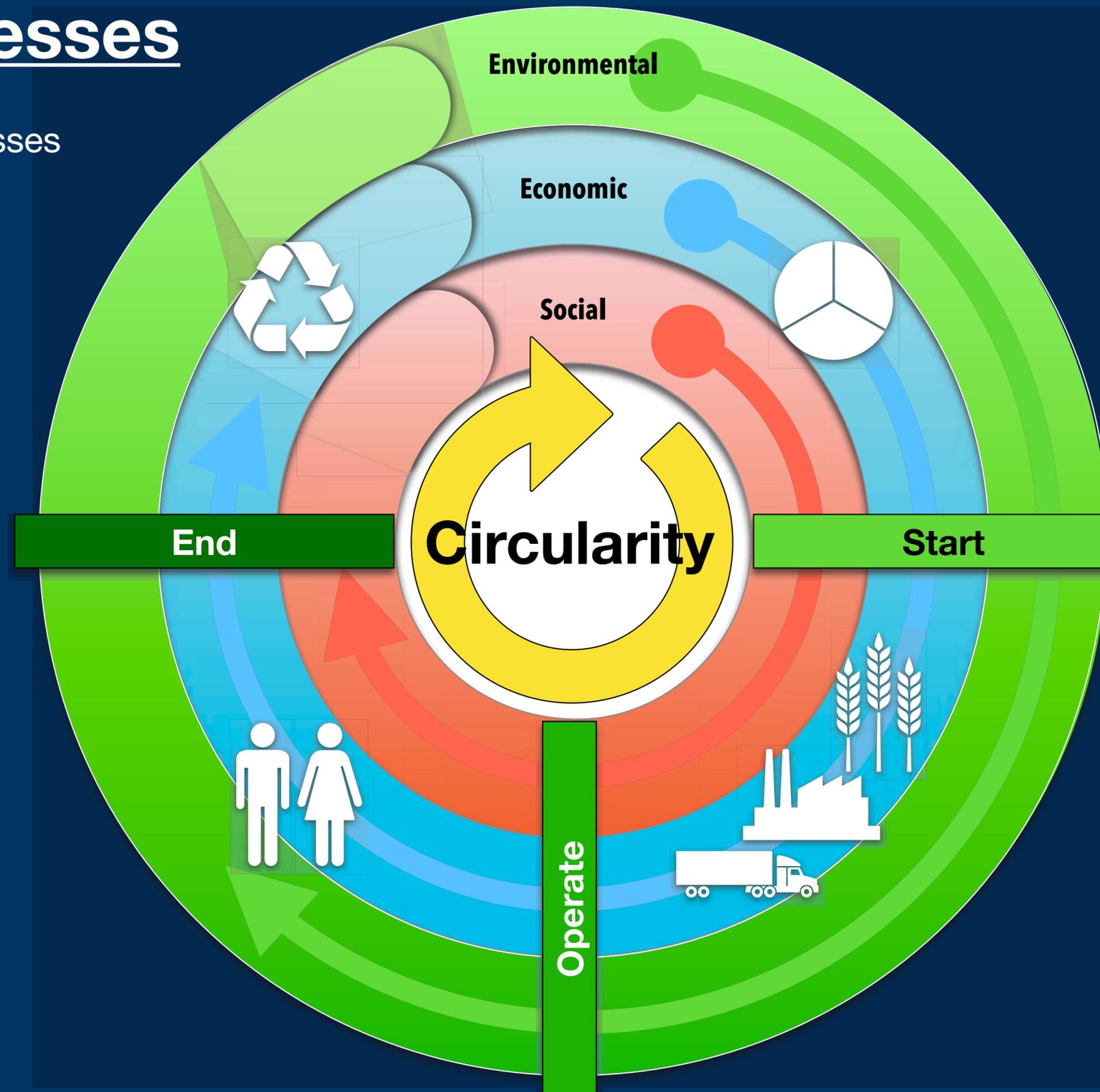
2. What must we rethink?

- Net zero processes
- Net zero environment
- Net zero organisation



Net zero processes

Develop a truly circular processes



1.
Audit current carbon emissions

2.
Examine current work processes

3.
Operation:
• Embodied carbon
• Energy efficiency
• Reduce waste
• Logistics
• Supply chain and demand

5.

Recycling
Disassembly
Re-use
Recycle
Up-cycle

-
-
-
-

4.

Behavioural change
Sustainability culture
Continual education
Digitalisation

-
-
-



Example: Interface

A circular business started in 1990s

1990s

Interface's sustainability journey began in 1994, when customers were beginning to ask what Interface was doing for the environment.



1994
"We had to cut the umbilical cord to oil"
Ray Anderson



2020
Our commitment to eliminate our negative impact on the environment

2020s

76% of energy used at owned manufacturing sites is renewable.

96% reduction of market-based GHG emissions at carpet manufacturing sites.

50% of the materials in the flooring products are recycled or bio-based.



Diversity of processes

Brown or Green Economy



Partial elimination

To change, start by eliminating “low hanging fruits”.



Proper start

Start right with first principles from Day 1.



Net Zero Environment

A

It is challenging to yield enough energy in high density environment especially in the tropics

B

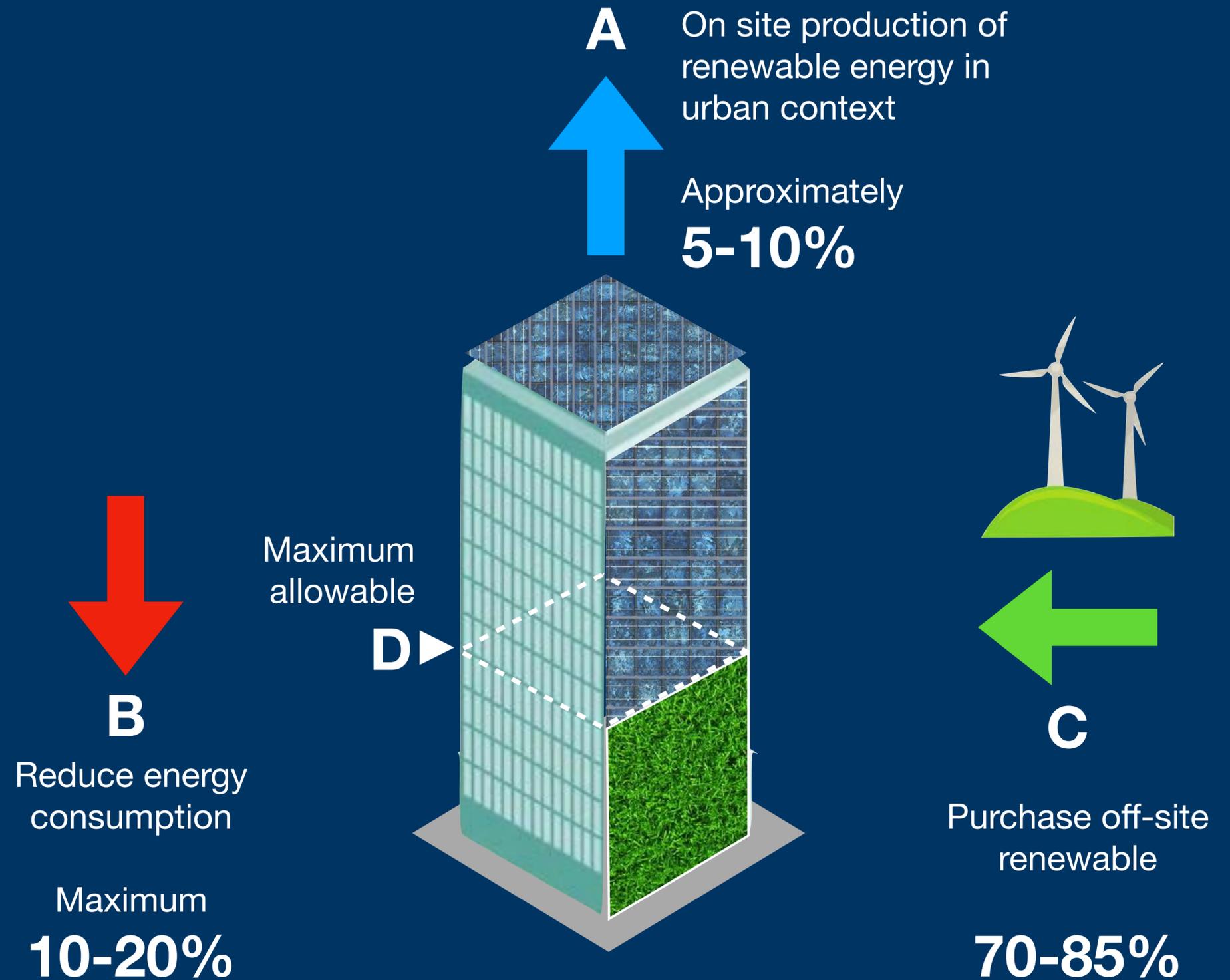
Behavioural change and use of natural ventilation is key. New paradigm of Flexi-use should be practiced.

C

It is not practical to imagine import of off-site renewable in large quantum. Present urban planning assumes that land must be maximised.

D

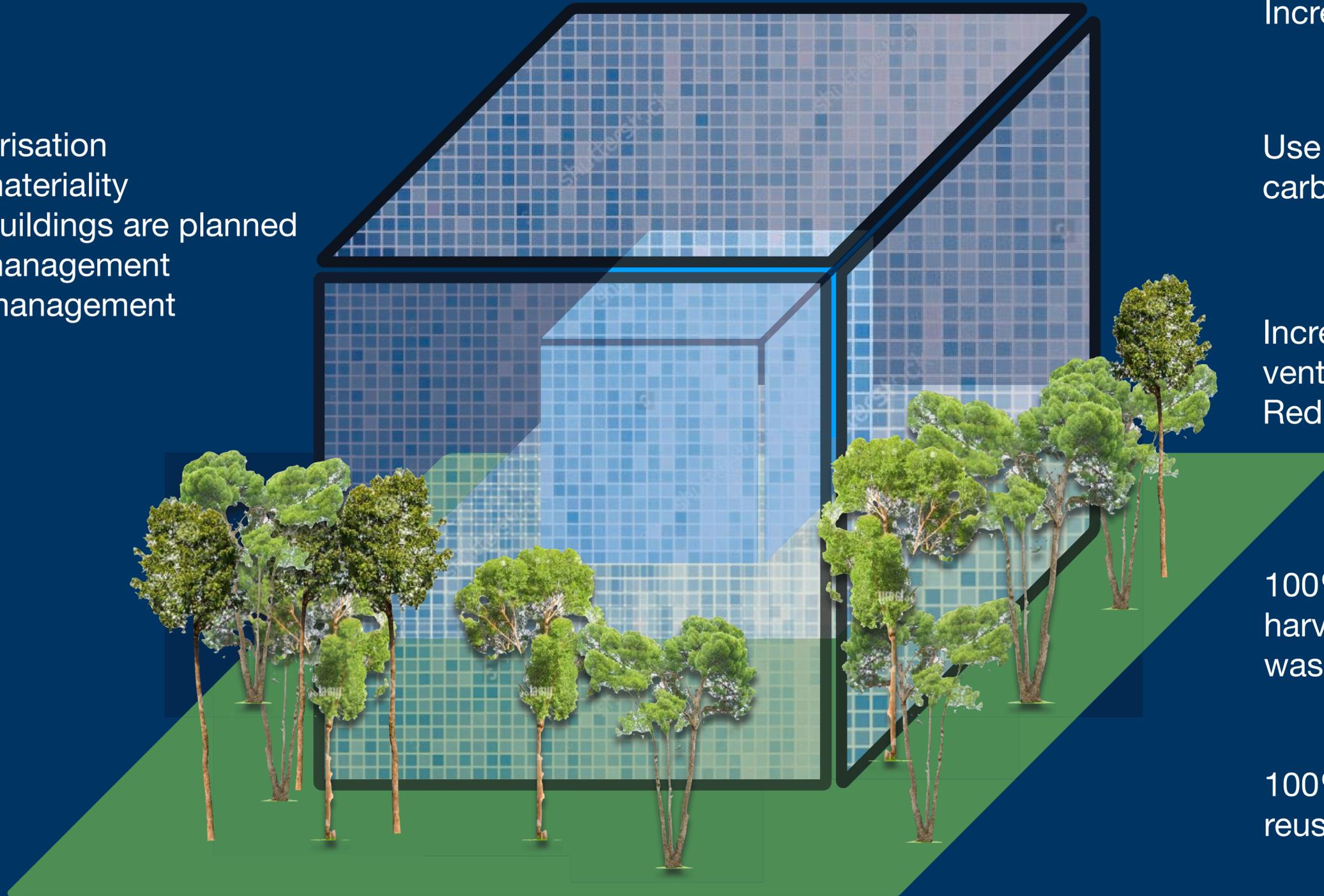
Is it conceivable to control development intensity by amount of energy produced or saved?



Net Zero Typological Building

5 new paradigms:

1. Intelligent solarisation
2. Zero carbon materiality
3. Rethink how buildings are planned
4. Smart water management
5. Smart waste management



Reduce direct solar exposure
Increase solarisation



Use low or zero carbon materials



Increase natural ventilation zone
Reduce A/C zone



100% rain water harvesting and washing

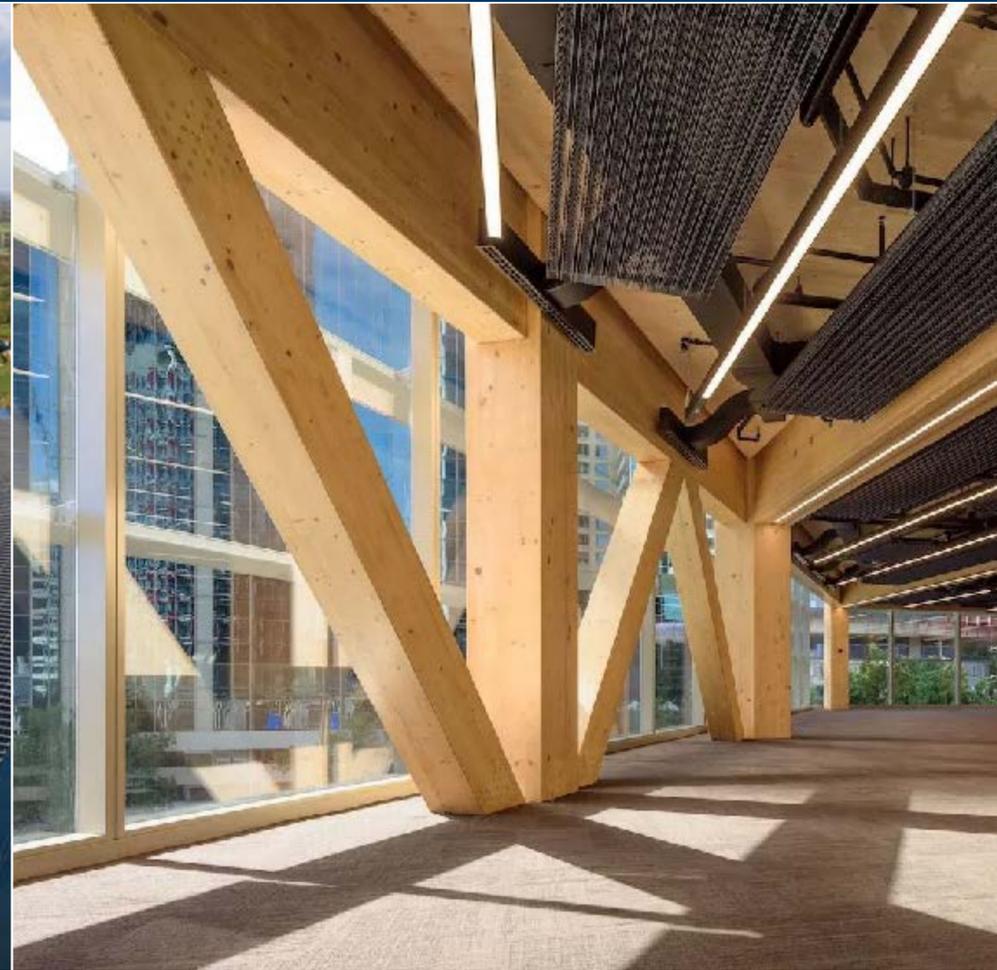


100% recycling and reuse



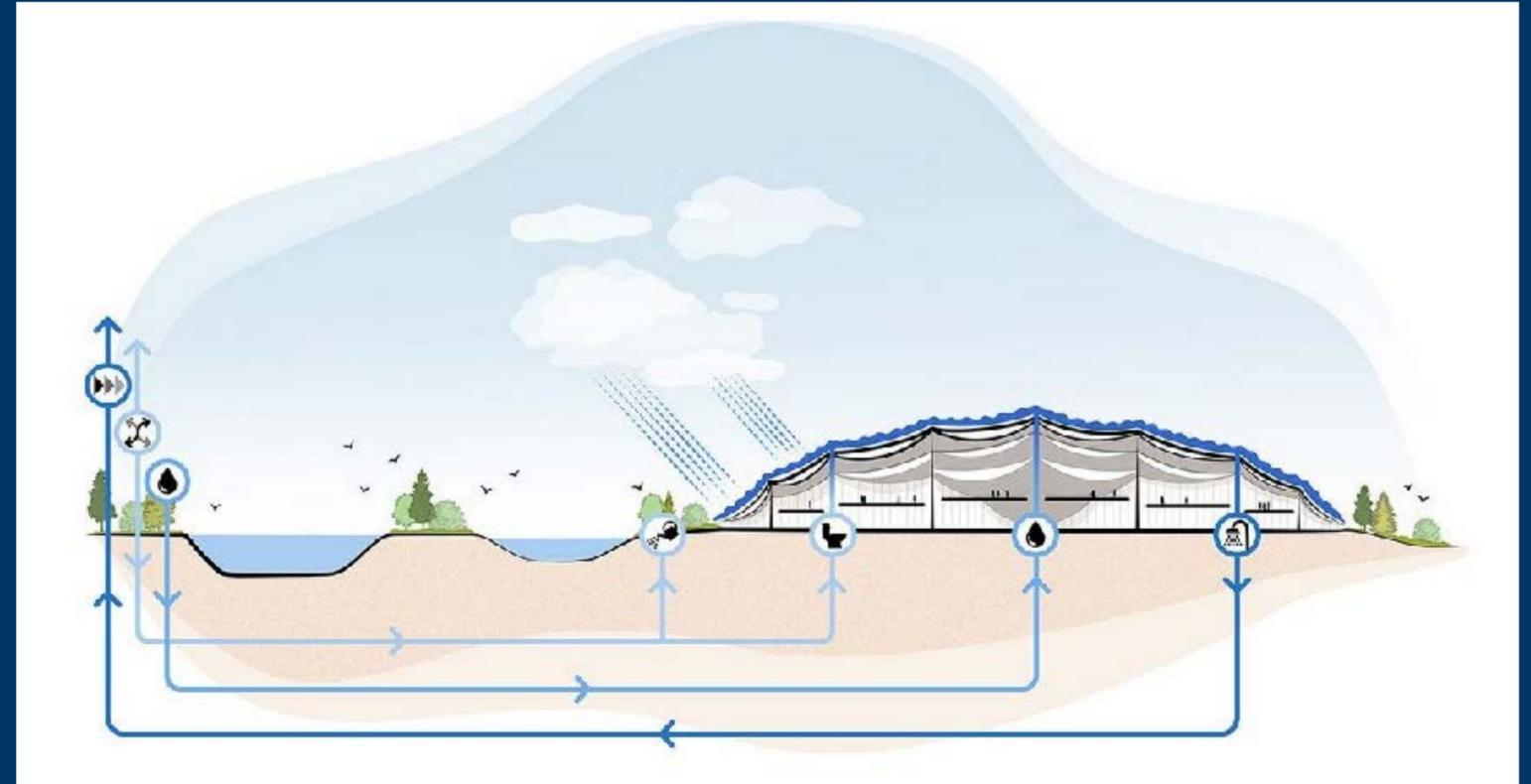
Paradigms change

1. Horizontal solarisation is more effective
2. Mass Engineered Timber to be default
3. Rethink paradigms of live, work and play



Example: Google HQ

Designed by Bjarke Ingels– and Thomas Heatherwick, Google HQ is a Ground-scraper. The site is expected to achieve a LEED-NC v4 Platinum certification and be the largest facility ever to attain the International Living Future Institute (ILFI) Living Building Challenge (LBC) Water Petal Certification.



Net Zero Organisation

Net zero push requires a change in organisation



Example: Sustainability Culture

Costa Rica

- 99% of Costa Rica's electricity is from renewable sources,
- On their way to becoming the first carbon-neutral country by 2021.
- First country in Central America to ban sport hunting in order to encourage growth in biodiversity



Denmark

- Around half of the country's energy is sourced from wind turbines.
- The world's largest green city, and is planning to be completely carbon neutral by 2025.
- Denmark has around half of their energy supplied by renewable sources, and due to the usage and popularity of bikes



Japan

- 50% of new cars to produce zero emissions within the next 10 years,
- The country's biggest major cities are aiming to be 100% carbon emission free by 2050.
- Recycling system is one of the best across the world, with around 10 different categories of recyclables.



3. Roadmap towards Net Zero

- Net Zero “People”
- Net Zero Education
- Net Zero Campaign
- Net Zero Innovation



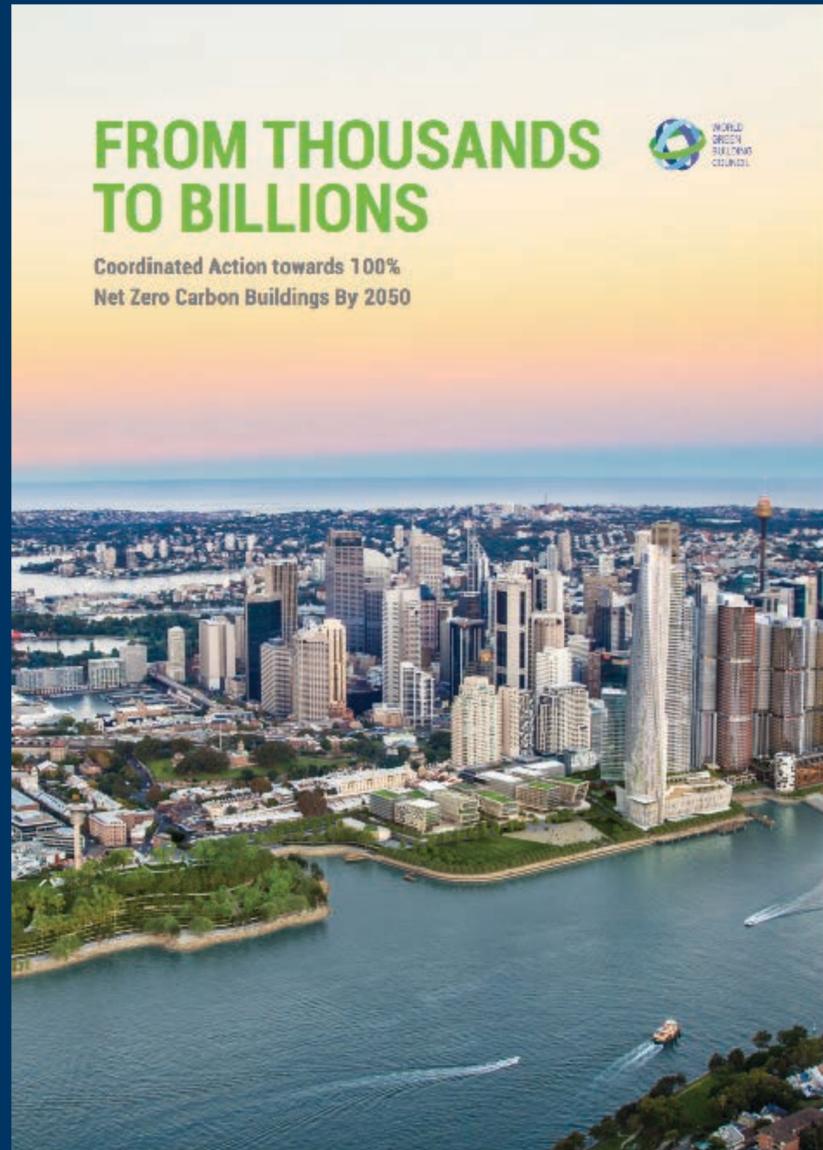
Net Zero “People”

People is the most important in driving net zero change. To achieve this, we must encourage both top-down and ground-up leadership in Net Zero movement. WorldGBC is one such example.



Net Zero Education

A movement must be supported by knowledge. More efforts must be placed on open sharing of ways to achieve Net Zero.



Net Zero Campaign

There are still many others who don't know or are partially aware. Efforts must be made to communicate to them.



Net Zero “Innovation”

Lastly, Net Zero advancement cannot be achieved without new technology and innovation. This movement could spark new thinking in:

- Urban planning
- Architecture and Engineering
- Transportation and aviation
- Food and agriculture
- Finance and economy
- Information and Communication

Sparking off a new “Renaissance”.



Conclusion

Are we hopeful for a Net Zero World?

The answer must be YES!

We must take decisive actions and act while we still have time to turn the tide.





Thank You

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