



# Re-Perceiving Energy Transitions.....

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*Transformative Scenarios*

Most people see  
Energy Transition as ...

*A single, slow-moving, costly,  
supply-led **BURDEN***

But there can be a very different way to look at this...



## Alternative Perspectives...

Every Strong Current generates Counter-currents...

- and you can't tell in advance which will turn out stronger



*Ignoring this reality fundamentally weakens decision-making ("lazy strategy")*

*The "Scenario Mindset" broadens perspectives, and stimulates richer consideration of choices and their potential upsides and downsides*

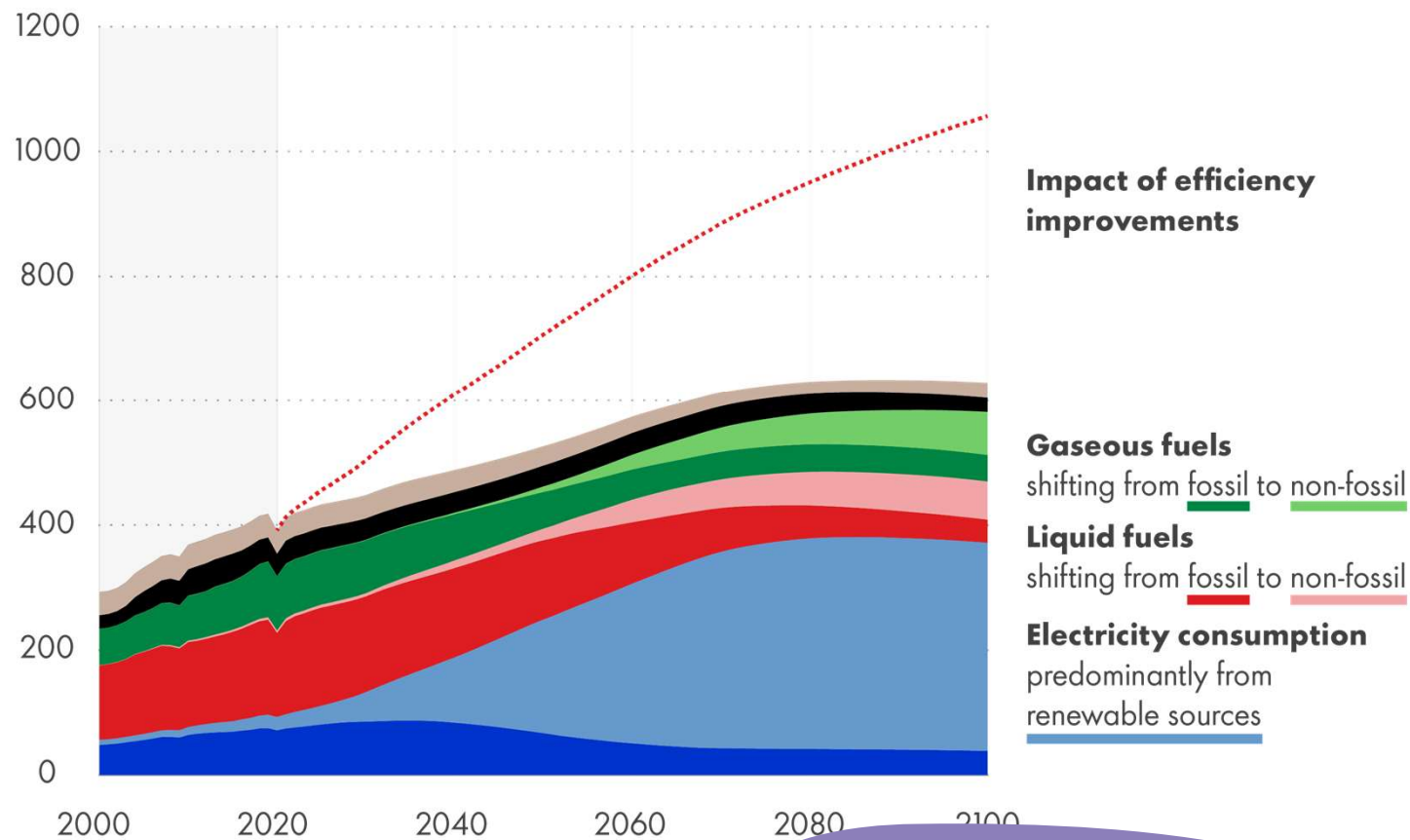
*Identify both relatively stable expectations and also critical uncertainties... and their consequences for investments & policy*

**All Outlooks:** Energy needs grow globally, with differences between regions and transition pace but with similar transition nature...

**Building Blocks:**

1. Structural Efficiencies
2. Renewable Sources
3. Deep Electrification
4. Liquid & Gaseous Fuel Substitution
5. Carbon Removals

**EJ/year (final energy) Example: Total final consumption of energy – Shell Sky 1.5 scenario**



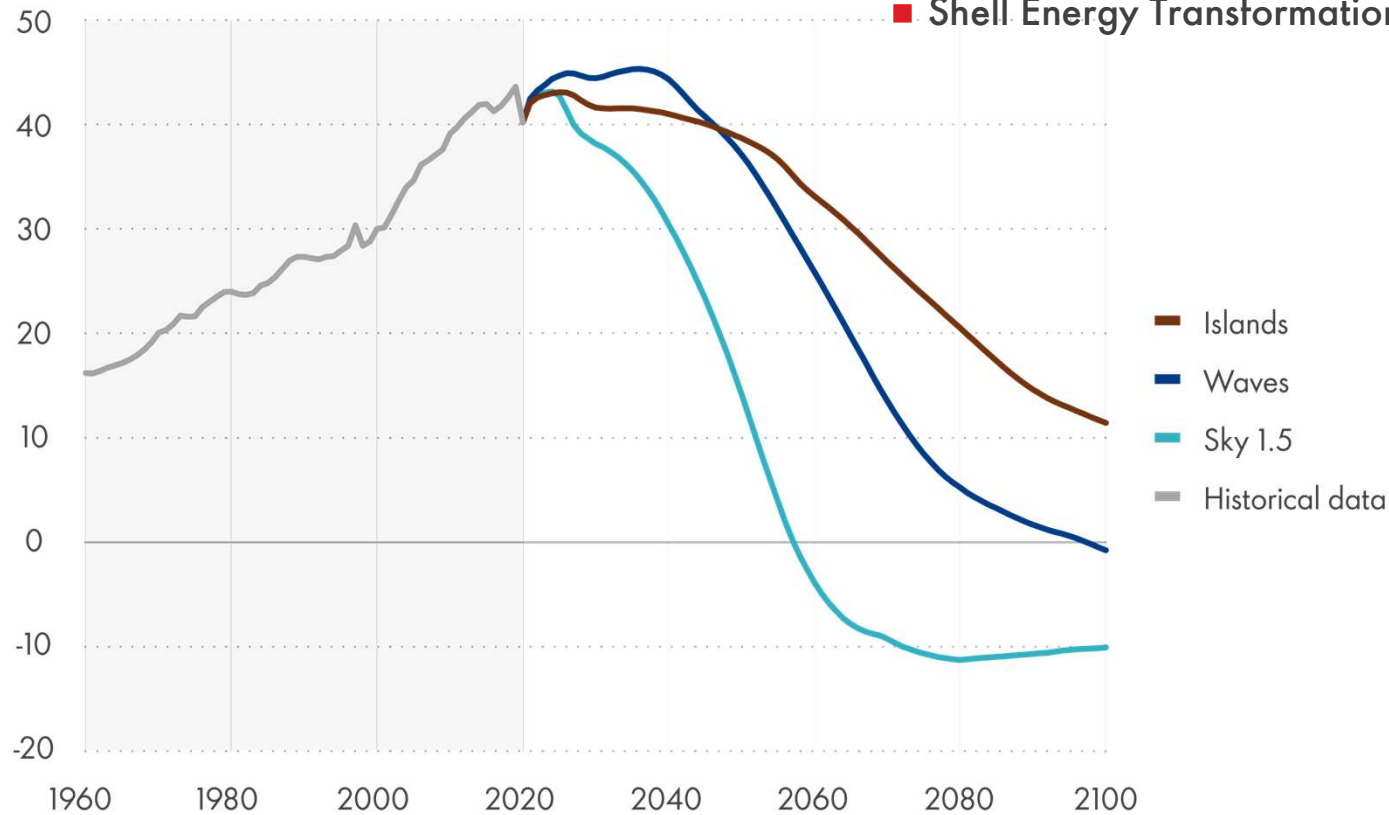
Source: Shell analysis based on data from the IEA (2020) World Energy Balances, all rights reserved

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# Insights: All Outlooks Decarbonise - The Key Difference is “When”...

## CO<sub>2</sub> emissions

Gt CO<sub>2</sub>/year



THE ENERGY TRANSFORMATION AND SECURITY SCENARIOS

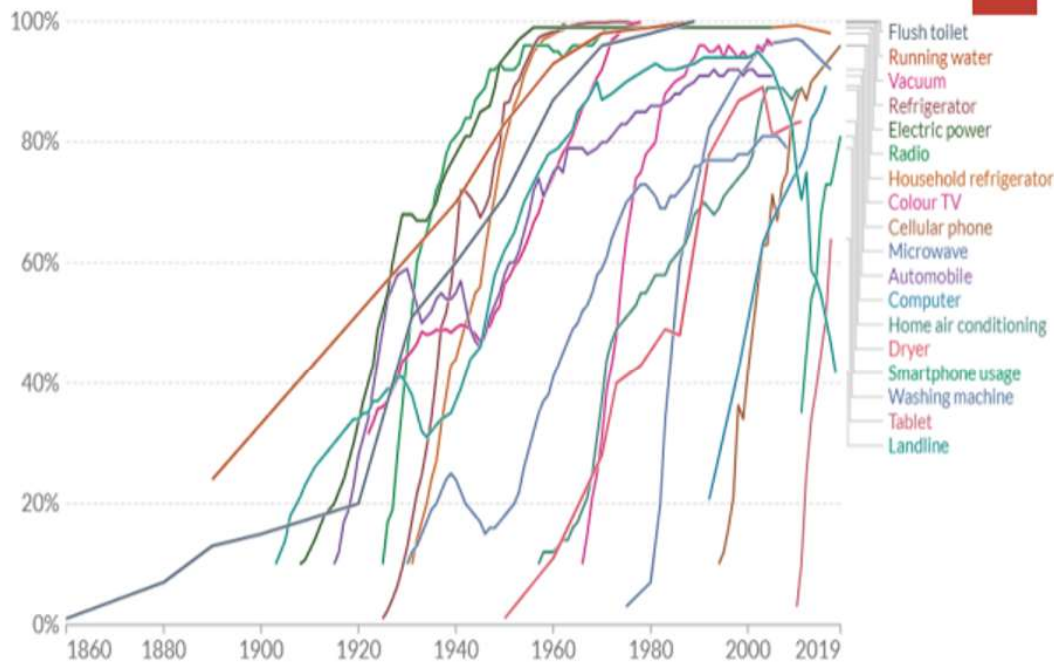
Source: Shell analysis based on data from Global Carbon Project (2020) and the IEA (2020) World Energy Balances ([Link](#)), all rights reserved

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# Learning more about the “pace” of Transitions...

## Individual products

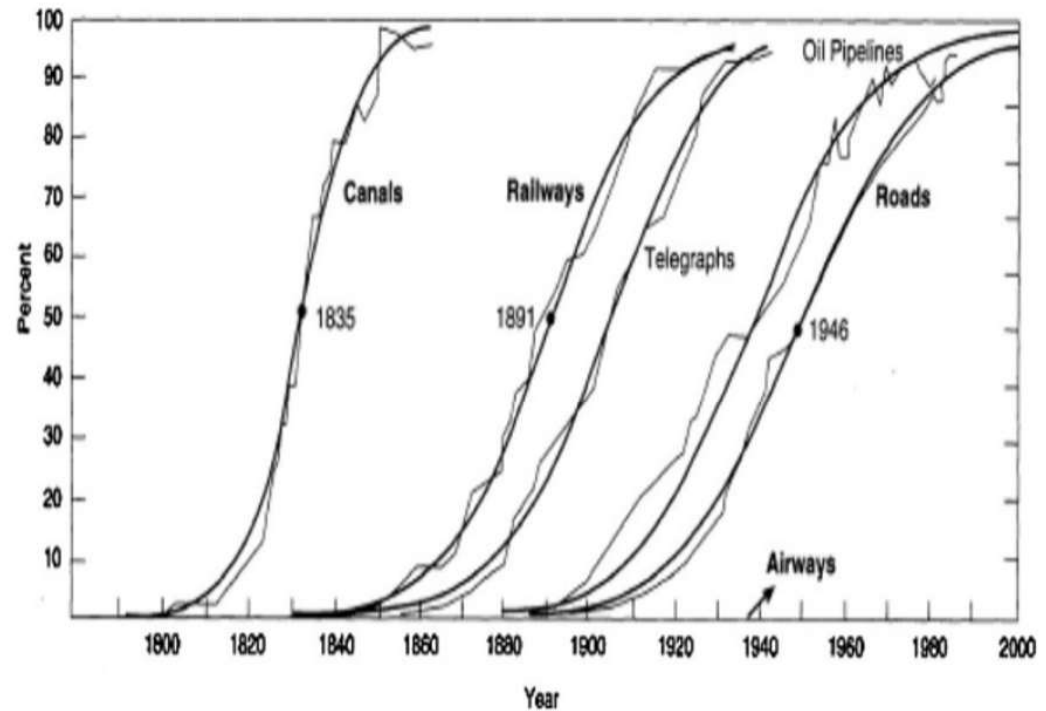
Technological adoption by household in the United States



Rapid exponential growth along S-curves is a standard characteristic of successful new technologies.

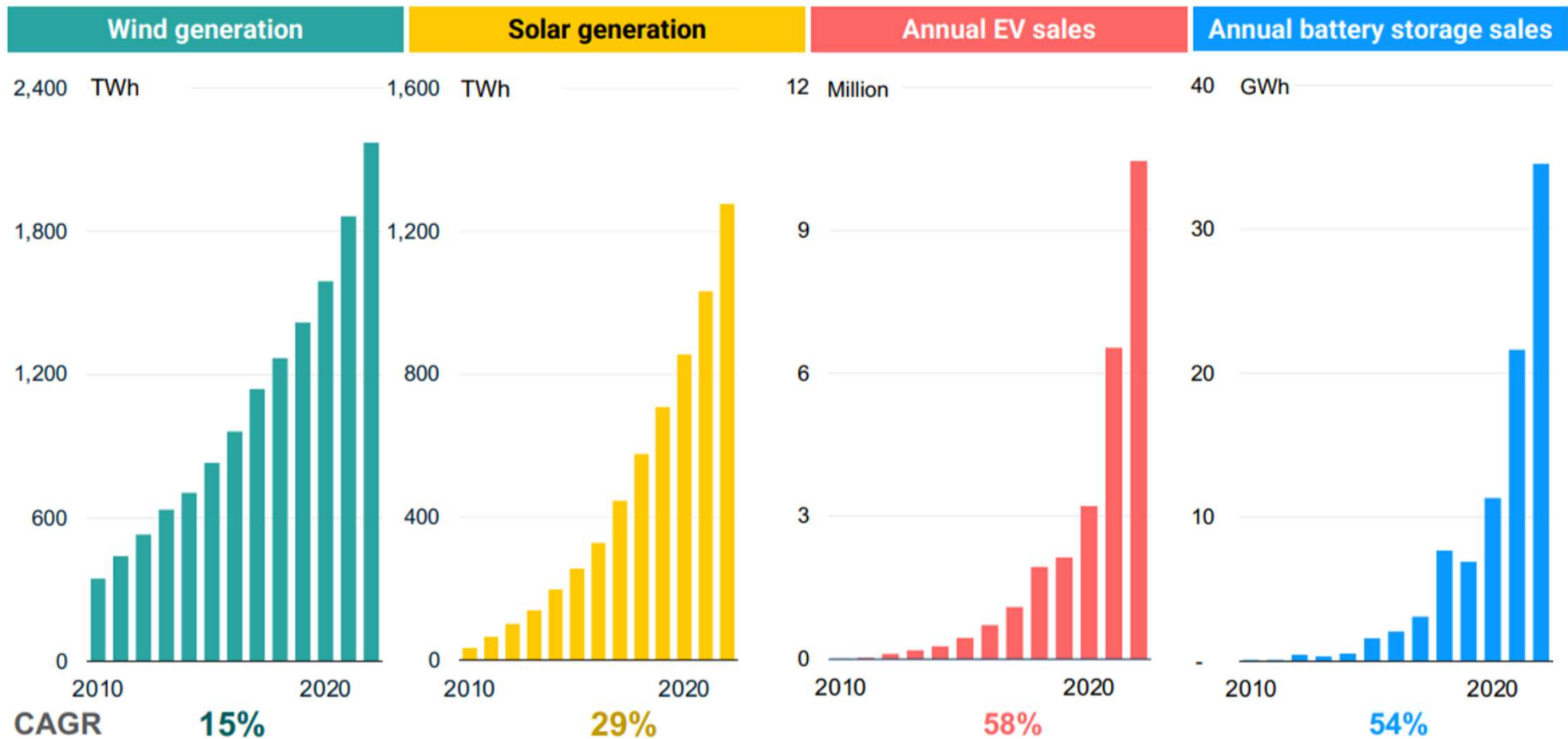
## Infrastructure systems

Share of maximum size in the United States



S-curve-type growth even applies to infrastructure.

# Recent Examples...





## Take-off growth is frequently “explosively fast” *once it emerges*

- This is driven by **competitive dynamics** as an industry equilibrium “flips”
- The “flip” comes from “Fear of Missing Out” once a pioneer demonstrates the prospect of an advantage, particularly in an already competitive space
- Pioneers & Forerunners ignite the growth “rocket”
- Fertile ground for pioneering can be prepared
- **The Strategic Question is often not “Fast or Slow” but “Sooner or Later” – with different implications**
- However, most standard financial evaluations mishandle uncertainty and under-recognize this economic opportunity

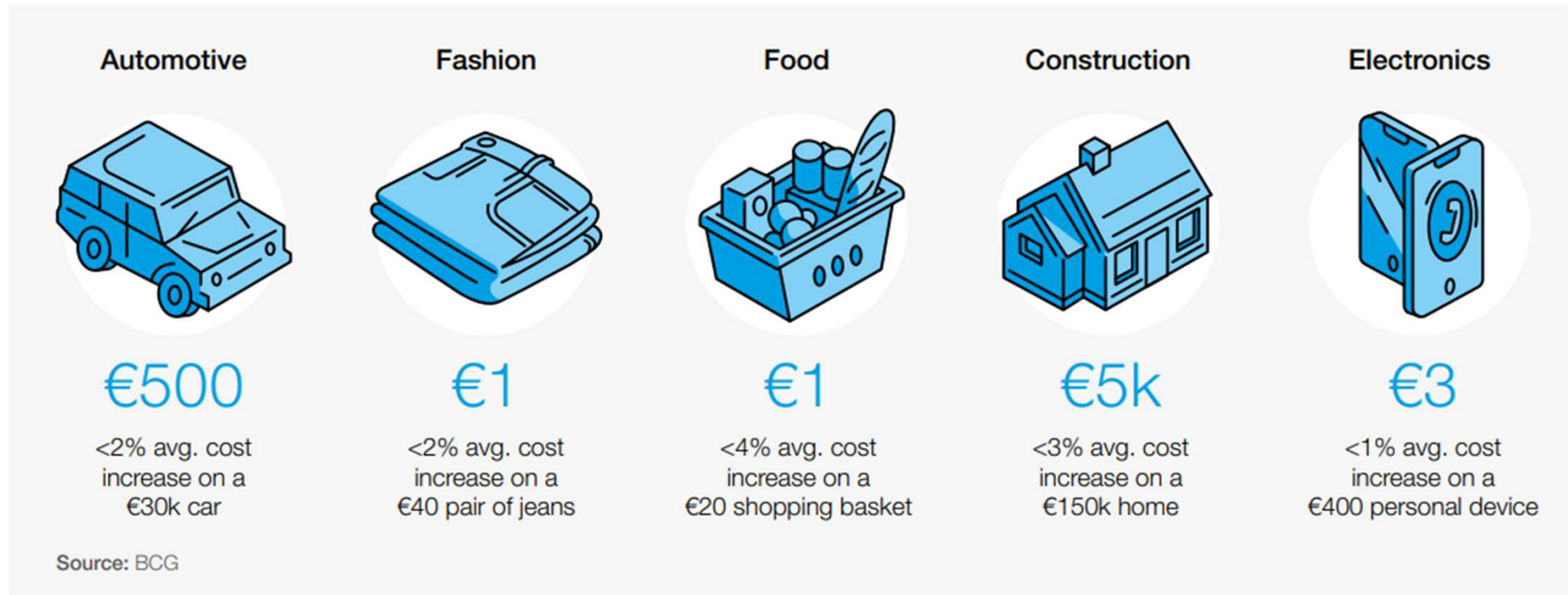


# The Challenge – large cost premia in commoditised activities



Source: BCG/WEF report, January 2023

## Encouragement: Decarbonised supply-chains would add only modest costs to final products – well in the range accessible to many customers



The new business opportunity is to connect potentially available downstream premia to fund the high-emissions upstream activities in the supply-chain like steel manufacture

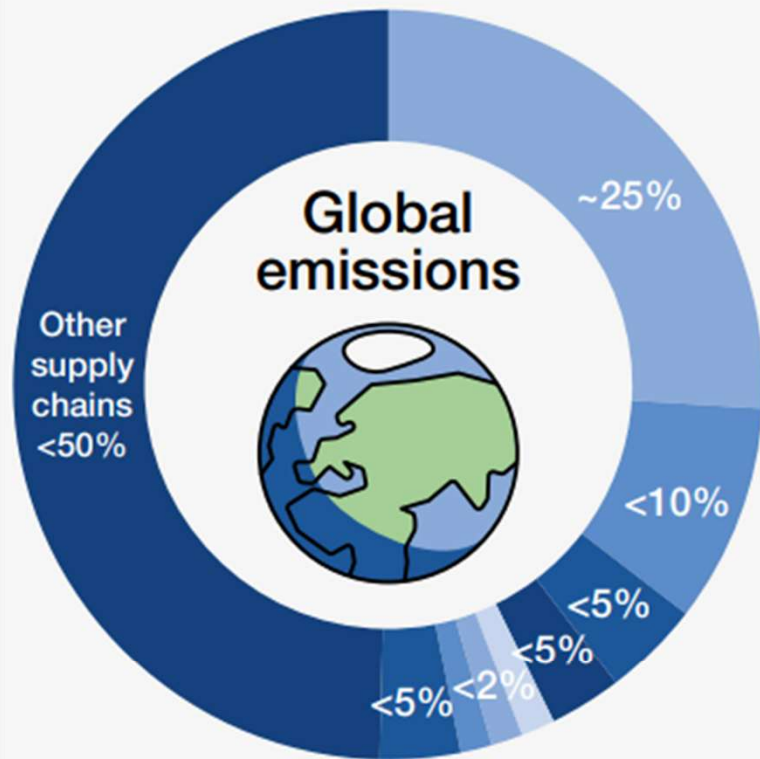
**At the “Macro” level, the costs of Transitions are modest**

“We estimate that the net costs of Net Zero will be around 0.2% of UK GDP per year...”

- UK Government Committee on Climate Change, 2025



# Digging deeper at the Micro-level: Just eight business-chains account for over 50% of emissions

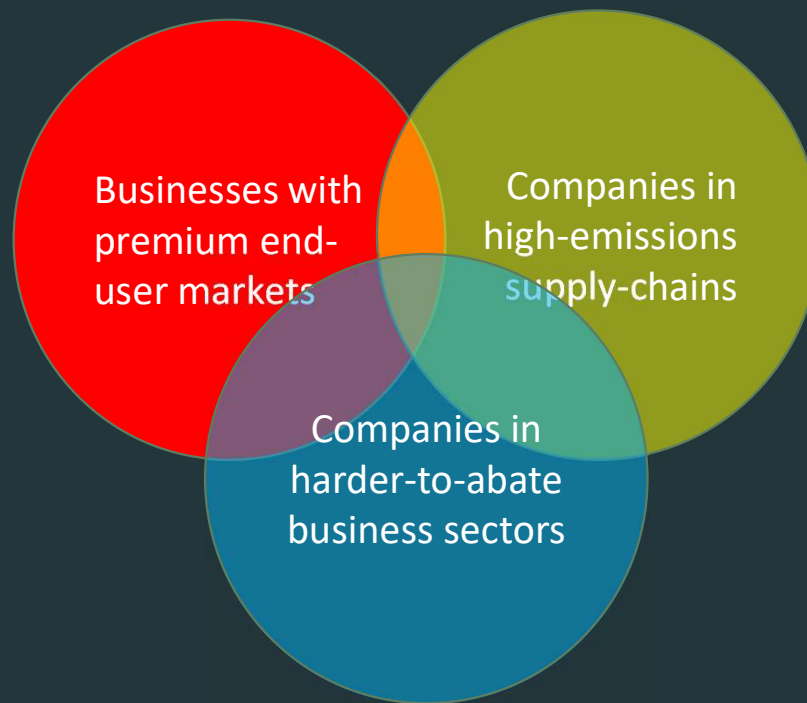


**Note:** Only selected value chain steps are shown here; value chain steps not shown at scale; FMCG = fast-moving consumer goods

**Source:** BCG

# The Alignment Challenge:

- Sweet Spots for smart Downstream/Upstream business-chain alignment...



Economically attractive energy transition activities could be catalysed and funded through premium markets or regulation in **health & personal care; IT, communications & electronics; professional services; fashion; automotives; construction; hotels & restaurants; and food retail**

# Opportunity: Choosing to be a Forerunner or a Regular Follower...



Securing **Competitive Strongholds** is key, but early movers in explosive growth areas can secure early sweet spots

Strategy	Scenario		
	Early Take-off	Late Take-off	No Take-off
Commit Early (Forerunner)	+++ (potential)	+ (potential)	-
Commit Late (with masses)	0	0	0
Avoid investment	---	-	0

Particularly when steps are carefully chosen, the “regret” from delayed returns may be modest compared to the “regret” of missed opportunity

# Re-Perceiving Energy Transition...

*From:*

*A single, slow-moving, costly, supply-led burden*

**To:**

***A series of fast-moving, modest cost, high opportunity, demand-enabled tipping points, of uncertain timing***

***Recommendation:***

*Adopt fresh perspective, move to front foot more frequently, promote selected key business-chain alignments, focus on securing Competitive Strongholds*





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