

Achieving low-carbon growth: planning, incentives, and financing

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Motivation

- A lot of talk about 2oC but limited awareness of implications
- Planning targeted to the medium term
- Debate excessively focused on carbon pricing and a few green financial products

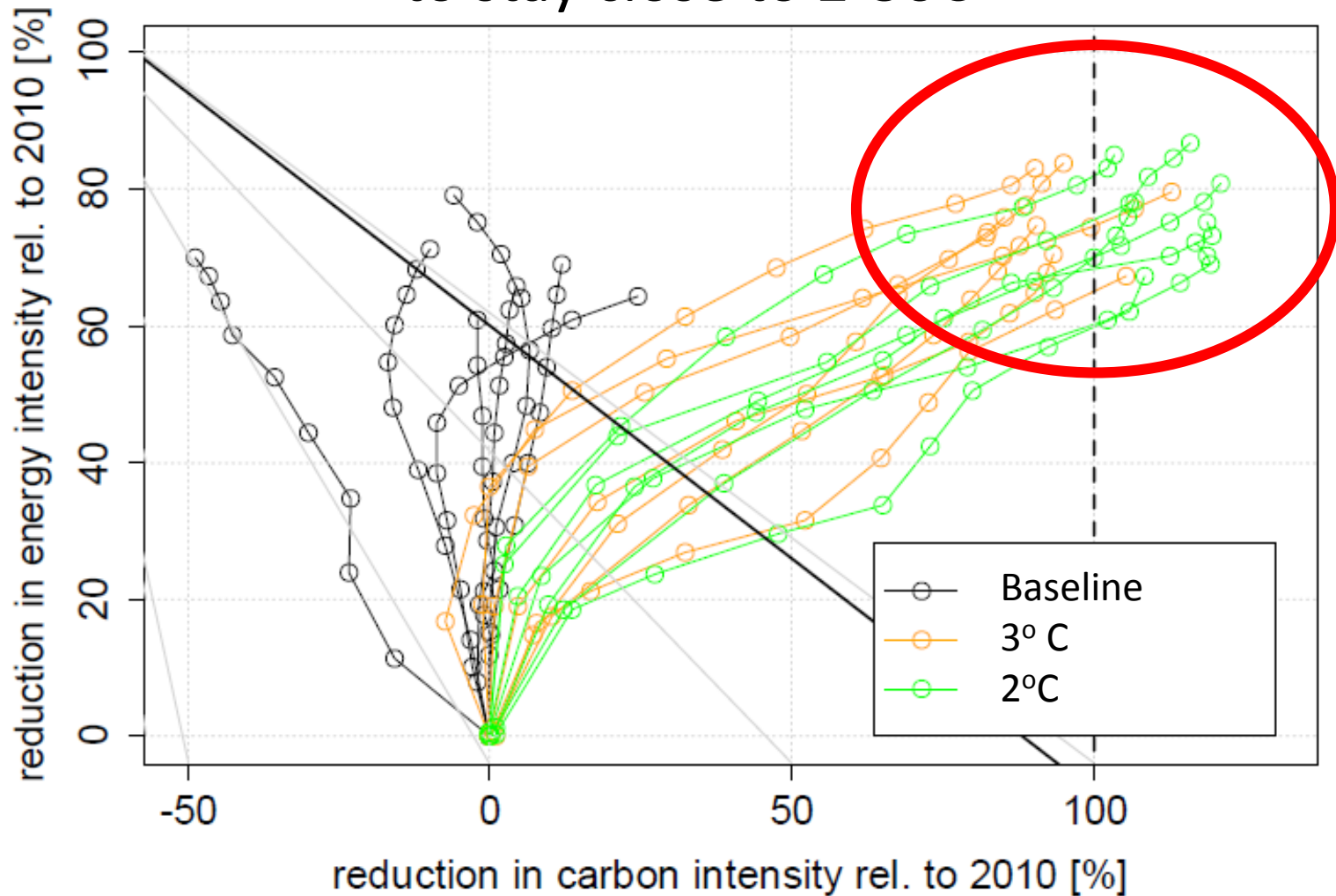
Self evident?

Stabilizing the climate

=

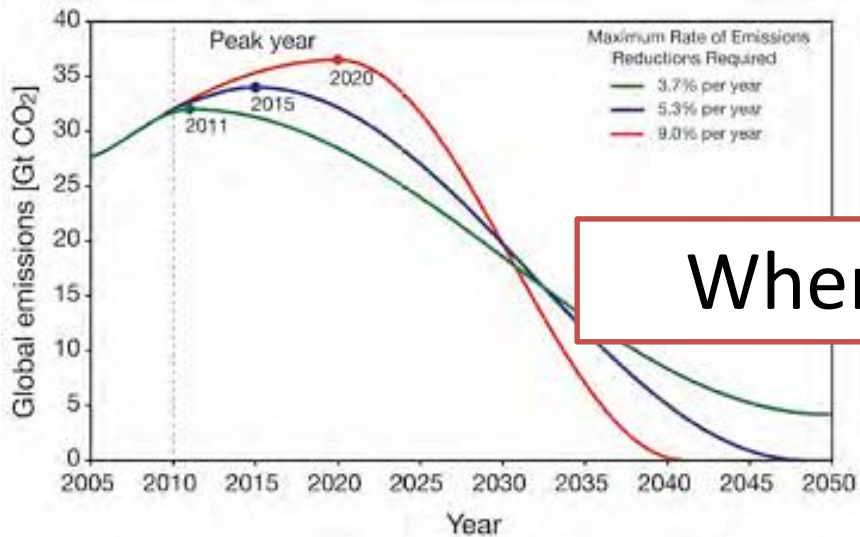
full decarbonization

Full decarbonization needs to happen by 2100 to stay close to 2-3oC



Adapted from IPCC Fig. WG3.6.17. Development of carbon intensity vs. final energy intensity reduction relative to 2010 in selected baseline, and mitigation scenarios reaching 550 and 450 ppm CO₂-e concentrations in 2100

Not whether to decarbonize but



When?



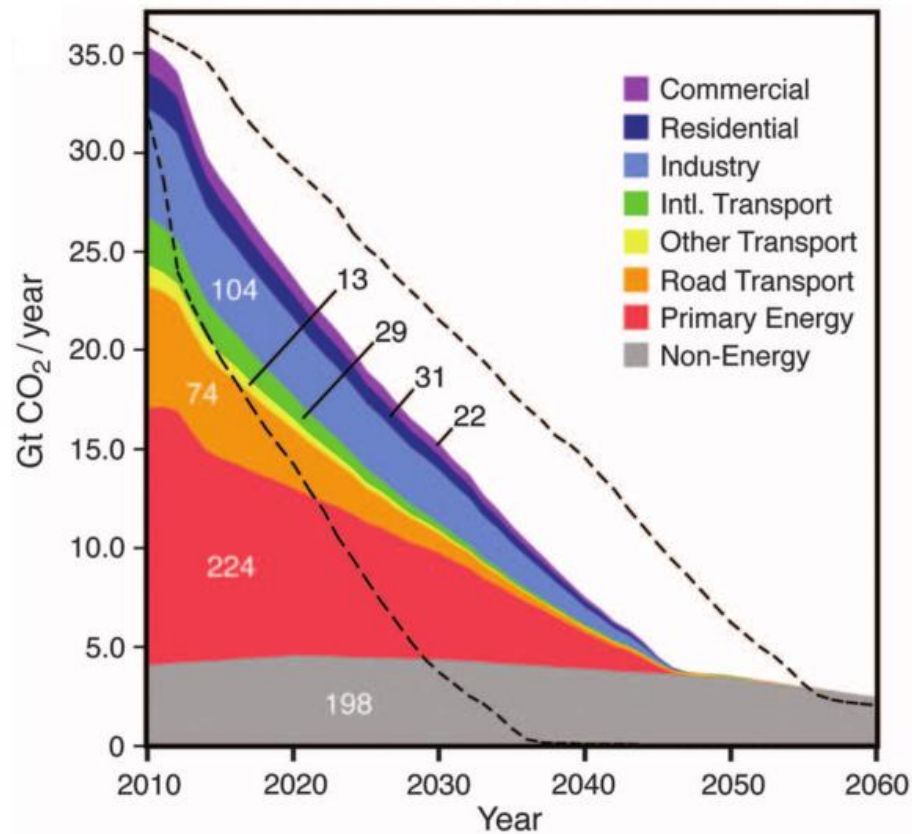
How?



Start early & plan well

**THE FOUNDATIONS TO A LOW-CARBON
FUTURE ARE BEING LAID NOW**

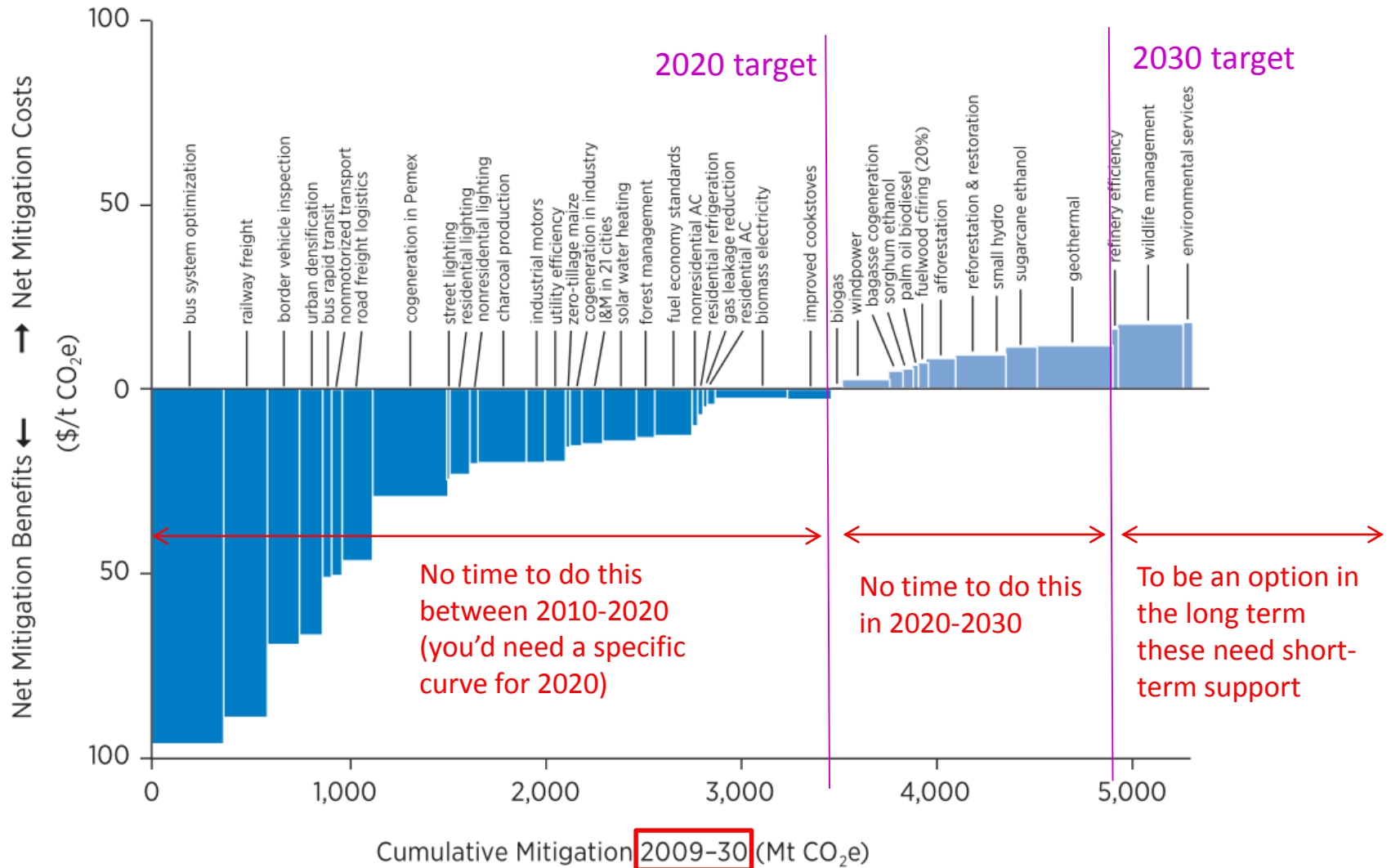
Existing long-lived capital already commits us to significant emissions



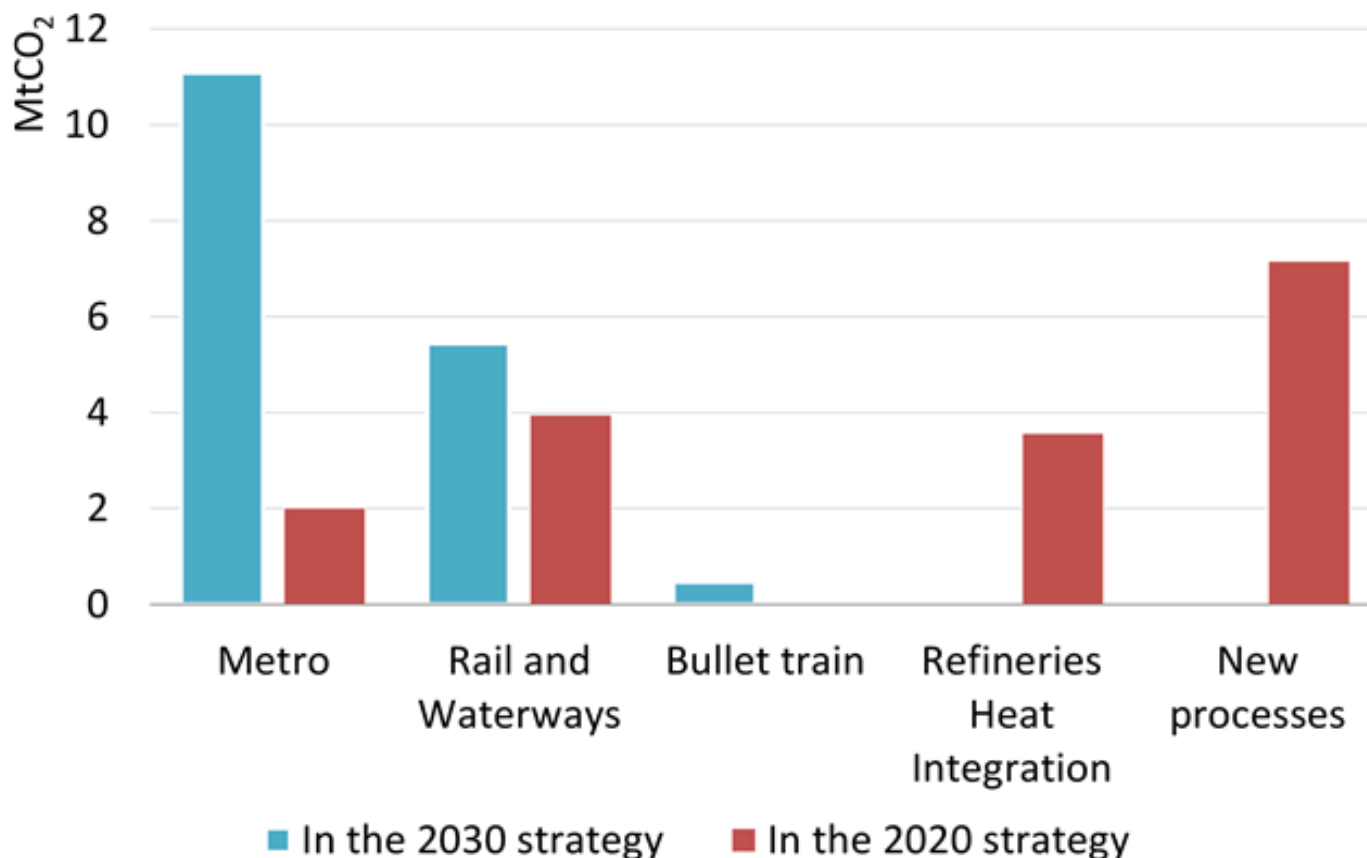
Note: Numbers in the graph represent the total emissions associated with particular capital – for example, existing capital for primary energy (in red) will generate some 224 Gt of CO₂ over its lifetime unless it is retired early. Source: Davis et al 2010.

Reaching a shorter-term target through cheap options (supply curve approach) would cause carbon-intensive lock-in

Marginal Abatement Cost Curve for Mexico (ESMAP, 2010a)



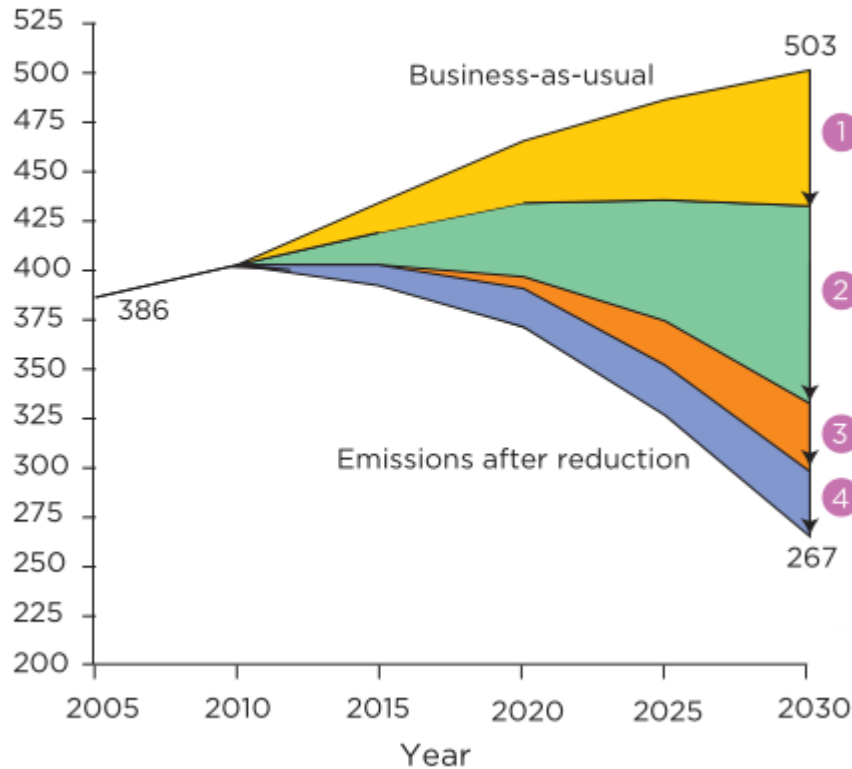
The choice of interventions to reduce emissions depends on the end goal – an example from the Brazil low carbon strategy



Note: The red bars represent the optimal emission reduction strategy if the goal is to reduce emissions by 10% in 2020; the blue bars are the optimal emission reduction strategy if the goal is to reduce emissions by 10% in 2020 knowing the goal is to reduce emissions by 20% by 2030. Thus, if the goal is simply a 10% reduction in 2020, limited use should be made of metro and rail; however, these become critical to ensure the feasibility of a 20% reduction by 2030. Source: Vogt-Schilb et al. 2014

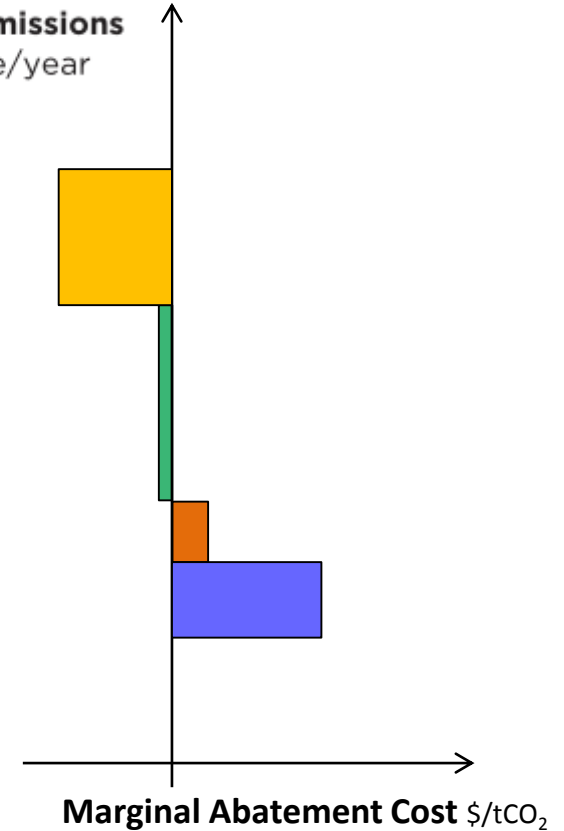
Managing coordination failures – across time and sectors

GHG emissions
MtCO₂e/year



potential

GHG emissions
MtCO₂e/year



time

cost

How?

**PRAGMATIC POLICY PACKAGES TO
TACKLE MULTIPLE MARKET AND POLICY
FAILURES**

Many challenges

Prices do not
reflect
environmental
externality

knowledge
externality

Economies of
scale, learning
by doing in
innovation

Inertia

Complex political
economy :
Transition entails
massive rent
transfer

Long term
investments
needed

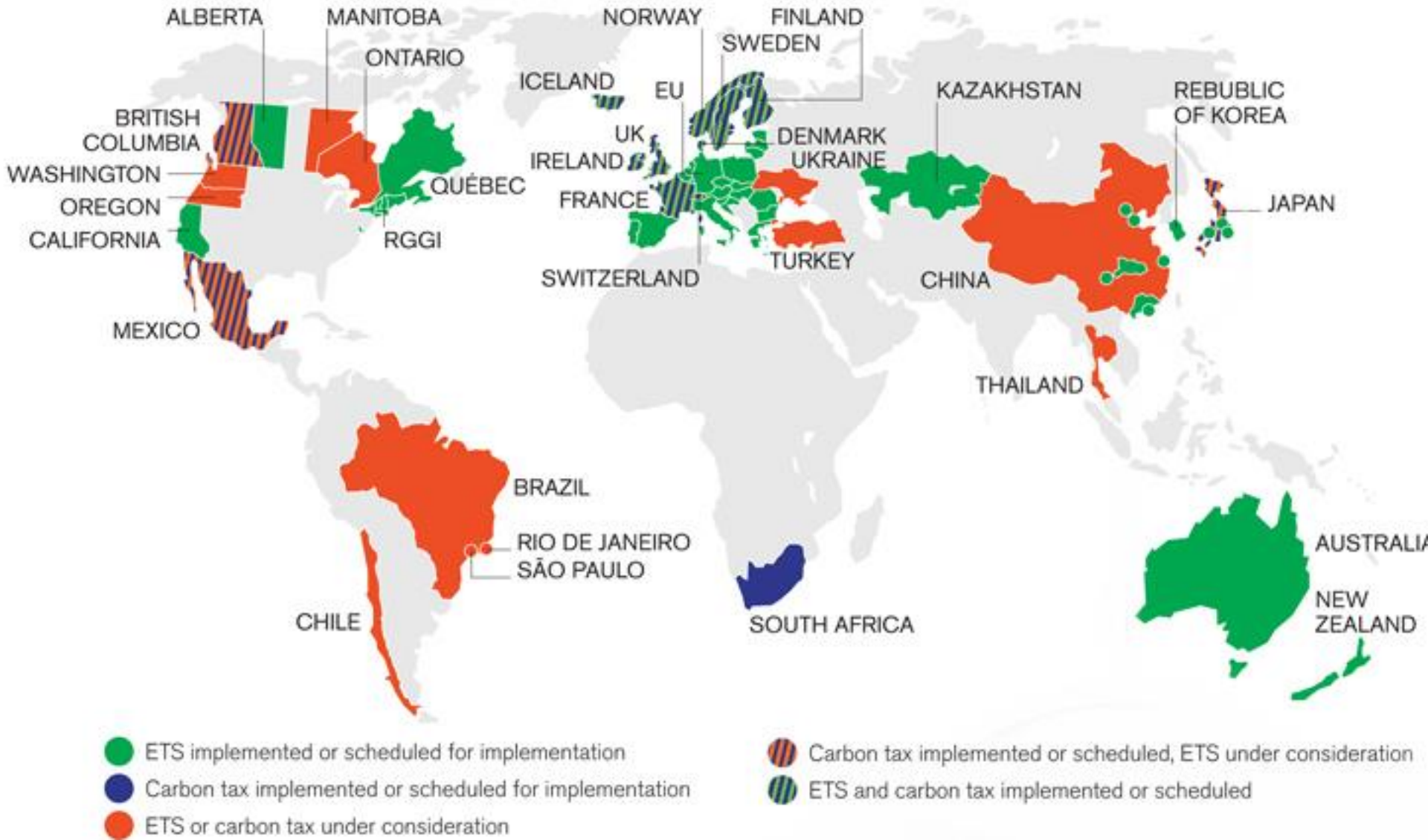
Current govts
can't commit
to future
carbon prices
or regulation

Social
acceptability:
poor could
be hurt; jobs
gains and
losses

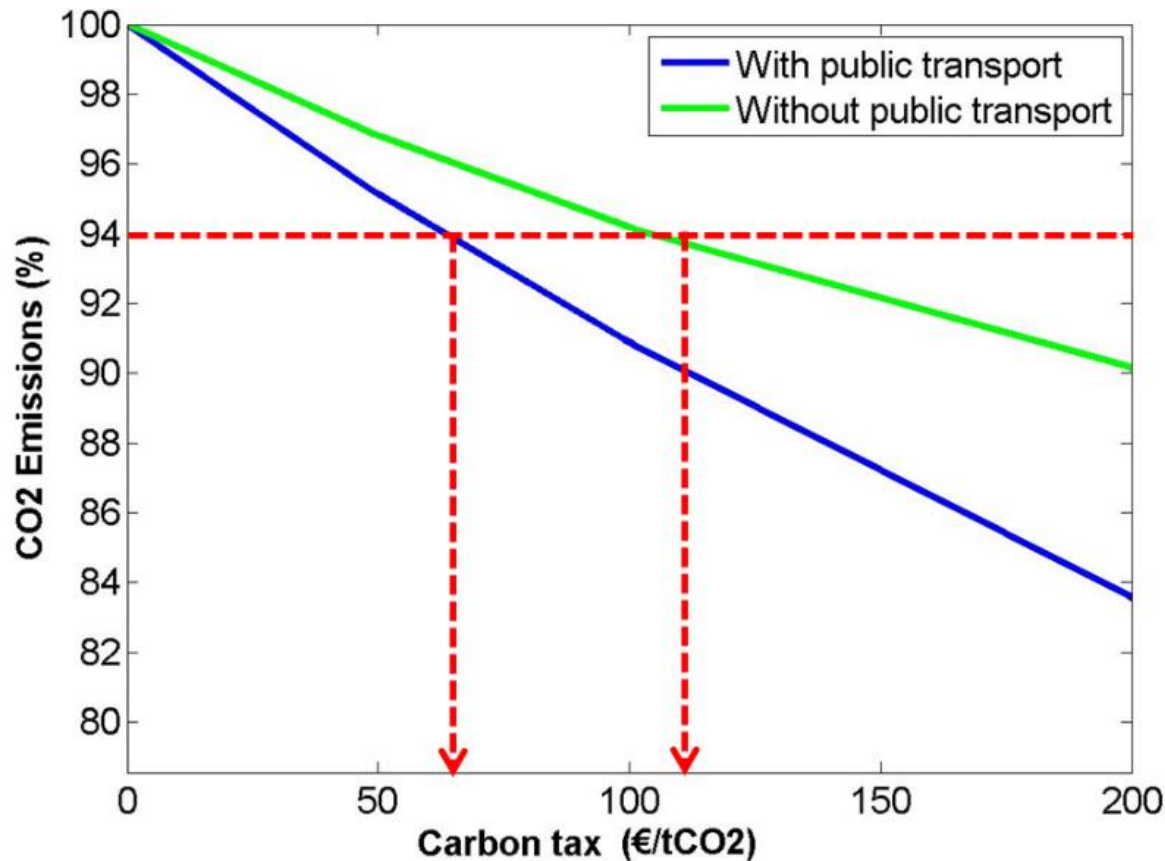
Financial
sector focused
on short term

Sequencing
and cross-
sector
coordination
needed

Fiscal policies can...help get the prices right

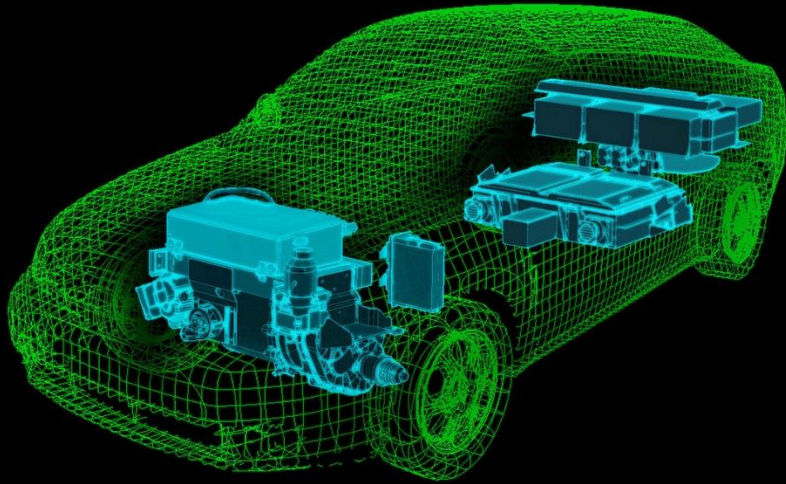


.... finance alternatives: public investments in infrastructure

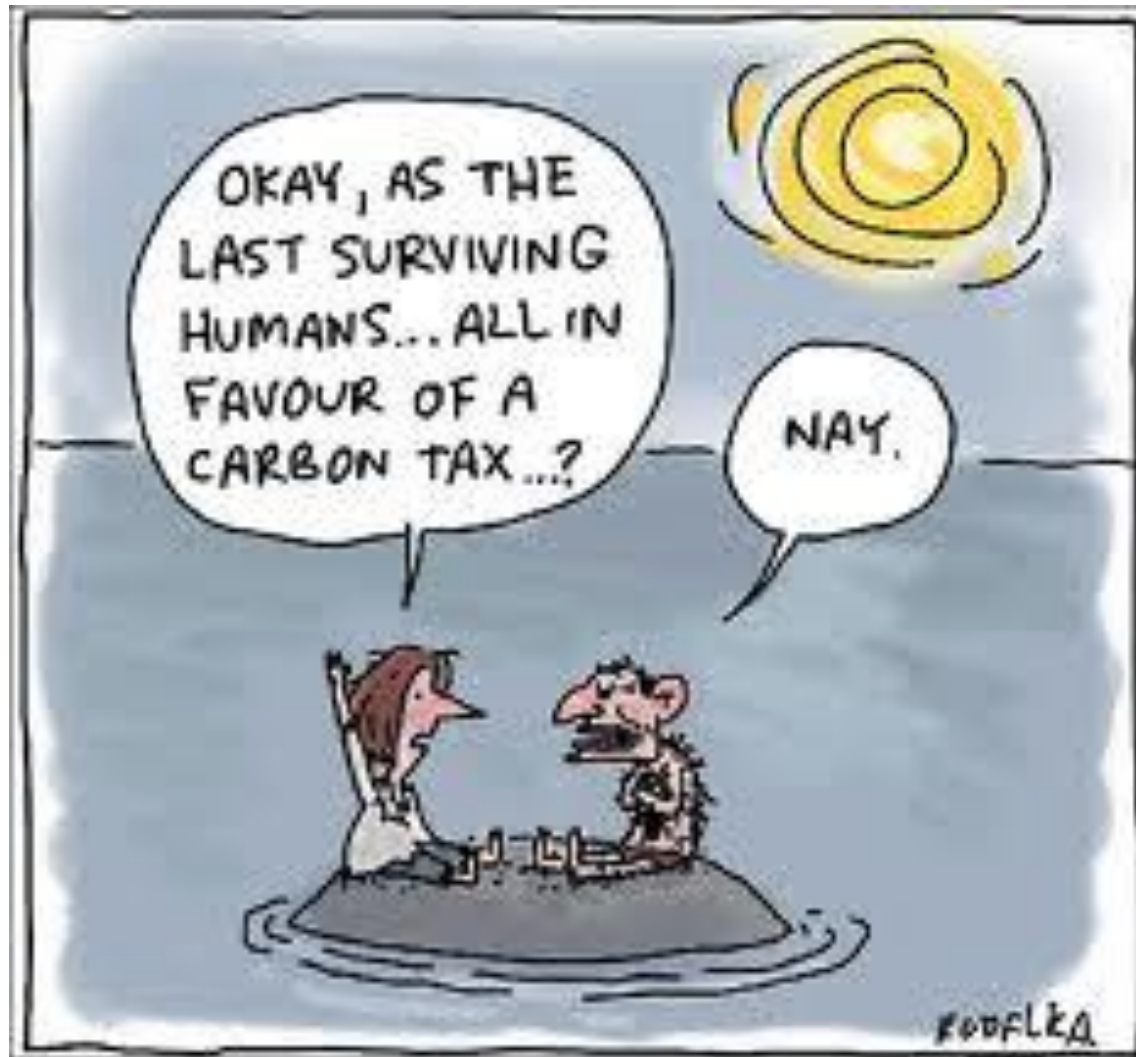


Note: Based on a transportation model of Paris that shows the different transport and housing choices made by households in response to carbon prices, with and without public transportation. With public transportation, the carbon tax can be reduced by half and still achieve the same reduction in CO2 emissions – and a given carbon tax will achieve significantly higher emission reduction. Source: Avner et al. 2014.

...finance alternatives: subsidies for green R&D



...ensure social and political acceptability



But more is needed ... for long-term
credibility



...to promote the right behaviors



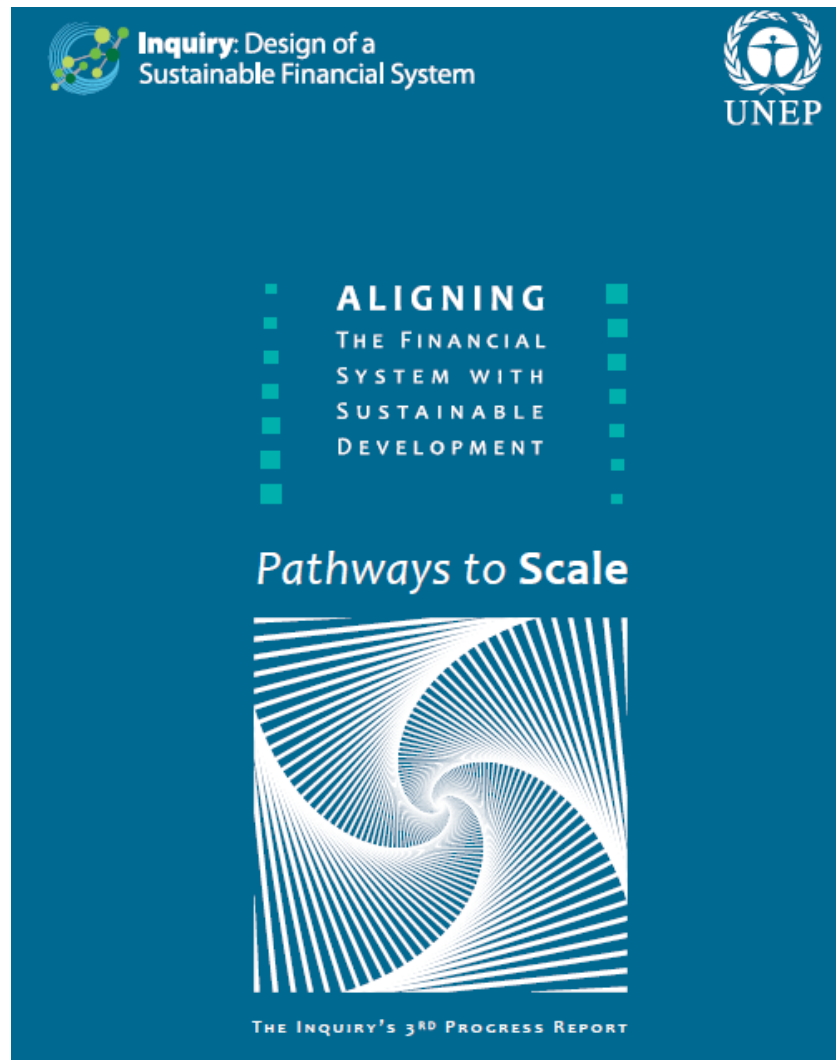
HOME ENERGY USE

▶ GREAT 😊😊

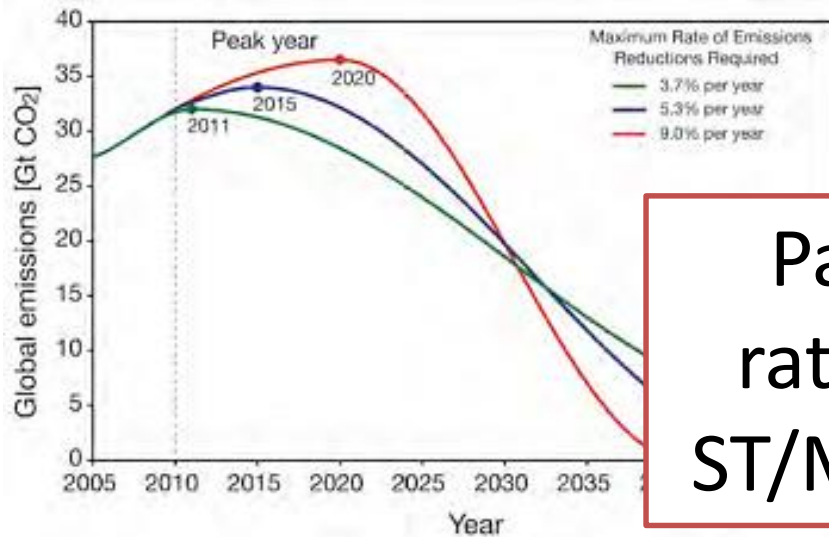
GOOD 😊

MORE THAN AVERAGE

...to tackle short termism in financial markets



Not whether to decarbonize but how to do it cost-effectively



Pathways
rather than
ST/MT targets

TAX

Rely on a policy
package

