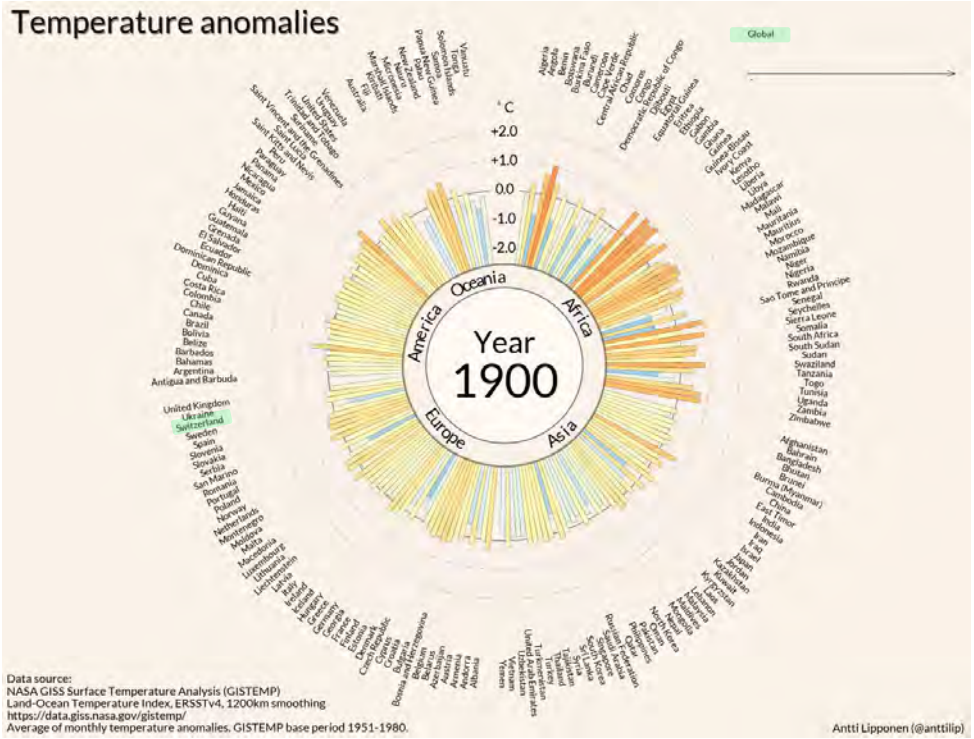
The Phase-out of GHG Emissions to Reach the 1.5°C Target and the Role of the Construction Sector

Agenda

1. What for?
2. How ambitious?
3. The construction sector?

Global Warming: Merely a few Outliers?



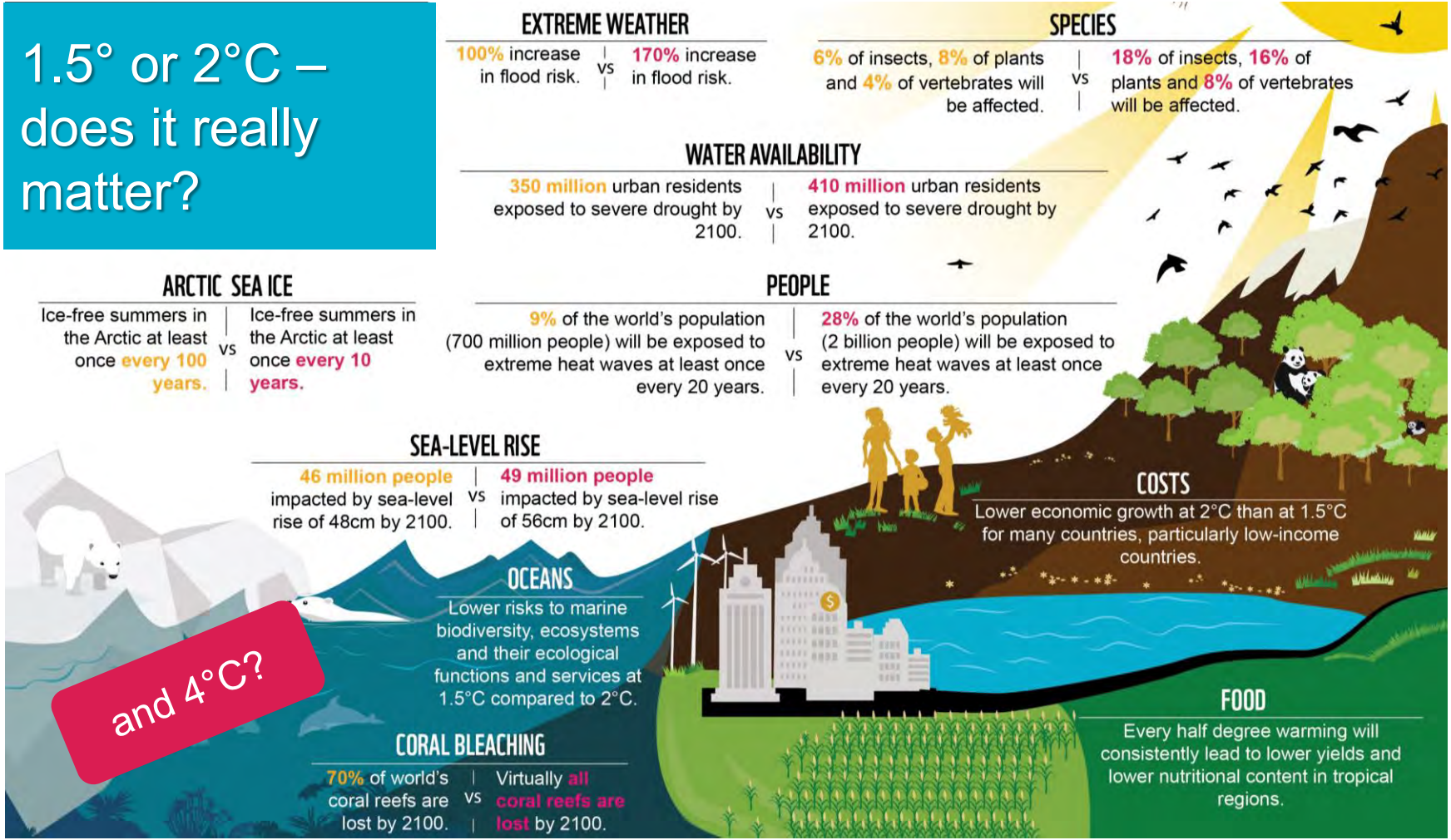
Where are we now?

Human activities are estimated to **have caused** approximately 1.0°C of global warming above pre-industrial levels.

Estimated anthropogenic global warming is currently increasing at **~0.2°C per decade** due to past and ongoing emissions.

Global warming is likely to **reach 1.5°C** between 2030 and 2052 if it continues to increase at the current rate.

1.5° or 2°C – does it really matter?



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The public expects solutions from us

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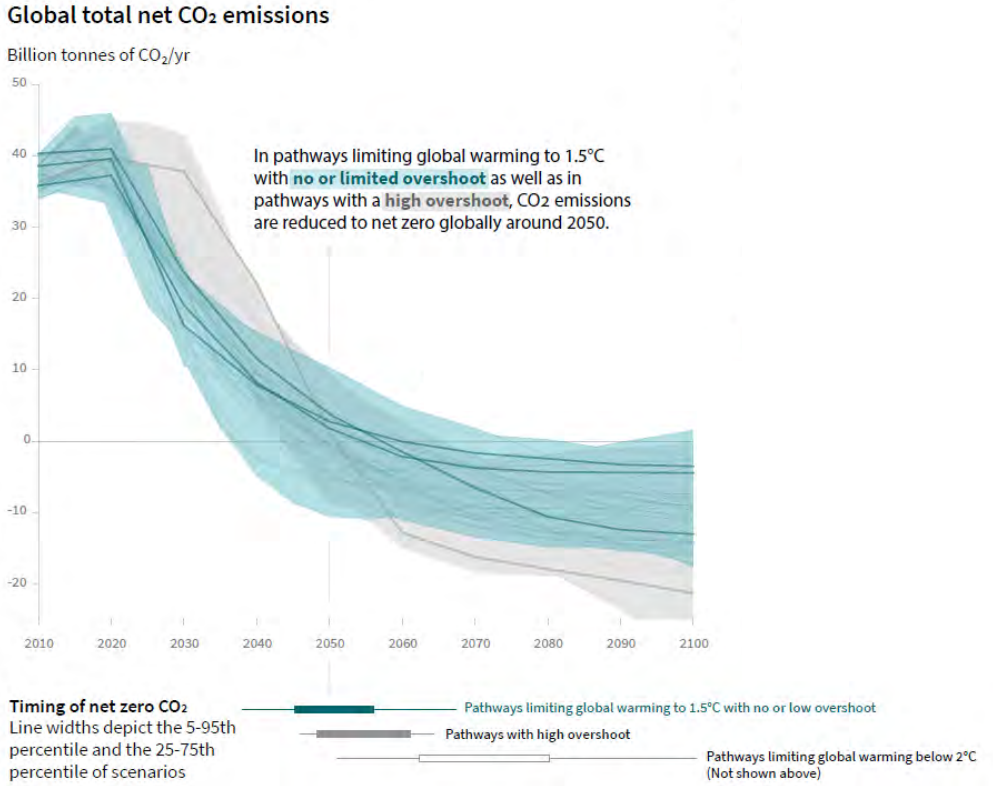
What are the Pathways for 1.5°C?

The **earlier** we start, the easier it is to remain below 1.5°C

The longer we stick to BAU, the heavier we rely on **net negative emissions**

Global CO_2 emissions must be reduced by 40-50% by 2030, **net zero** must be achieved by **~2050**

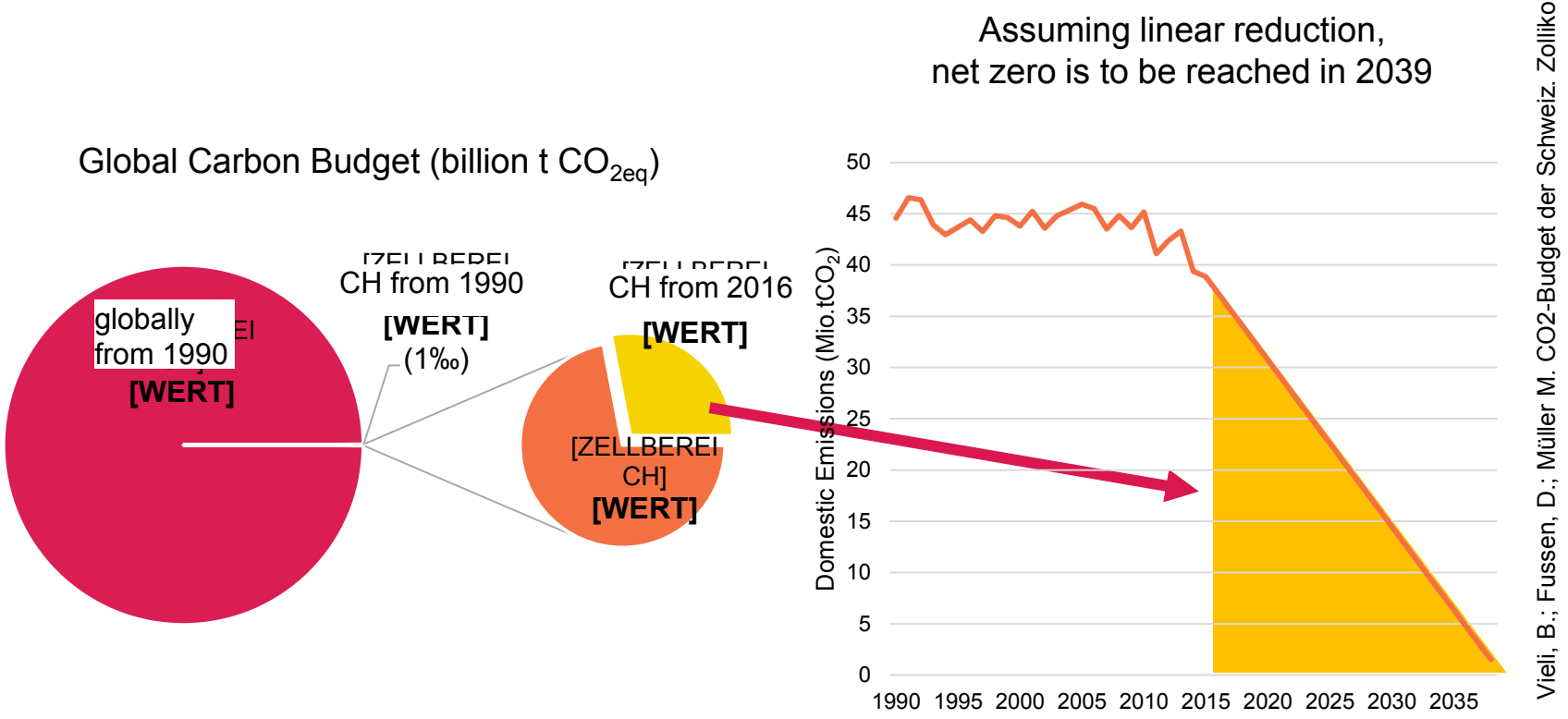


IPCC. SR15 Figure SPM.3a. 2018

Common Misconceptions

wrong	right
net-zero not until 2nd half of this century	until 2050
net-zero until 2050 in every country	on average; countries with high GDP / responsibility much earlier
~1t CO_2 per capita remains (from energy-related sources)	most sectors must reduce to 0t CO_2 (fossil-free) *otherwise every sector claims the remaining tonne…*

What is the *Swiss* Pathway to Paris?



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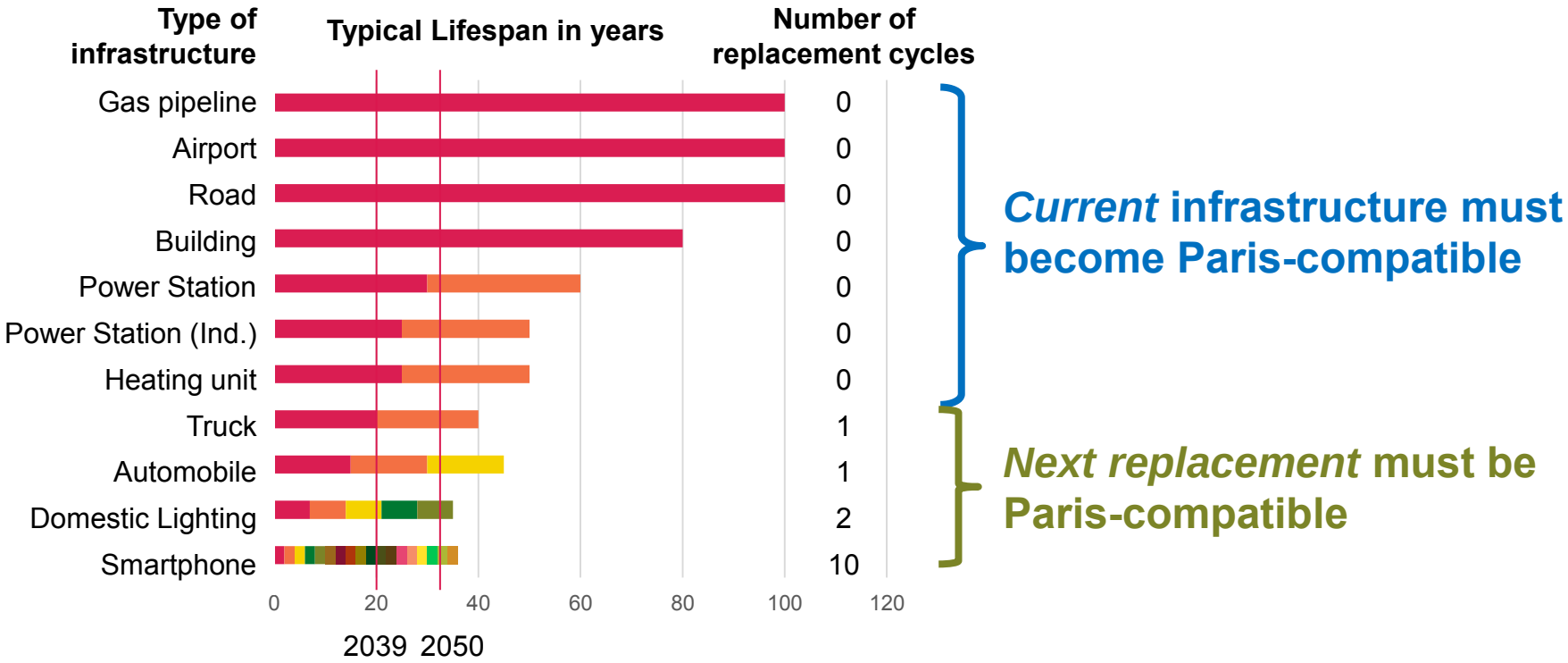
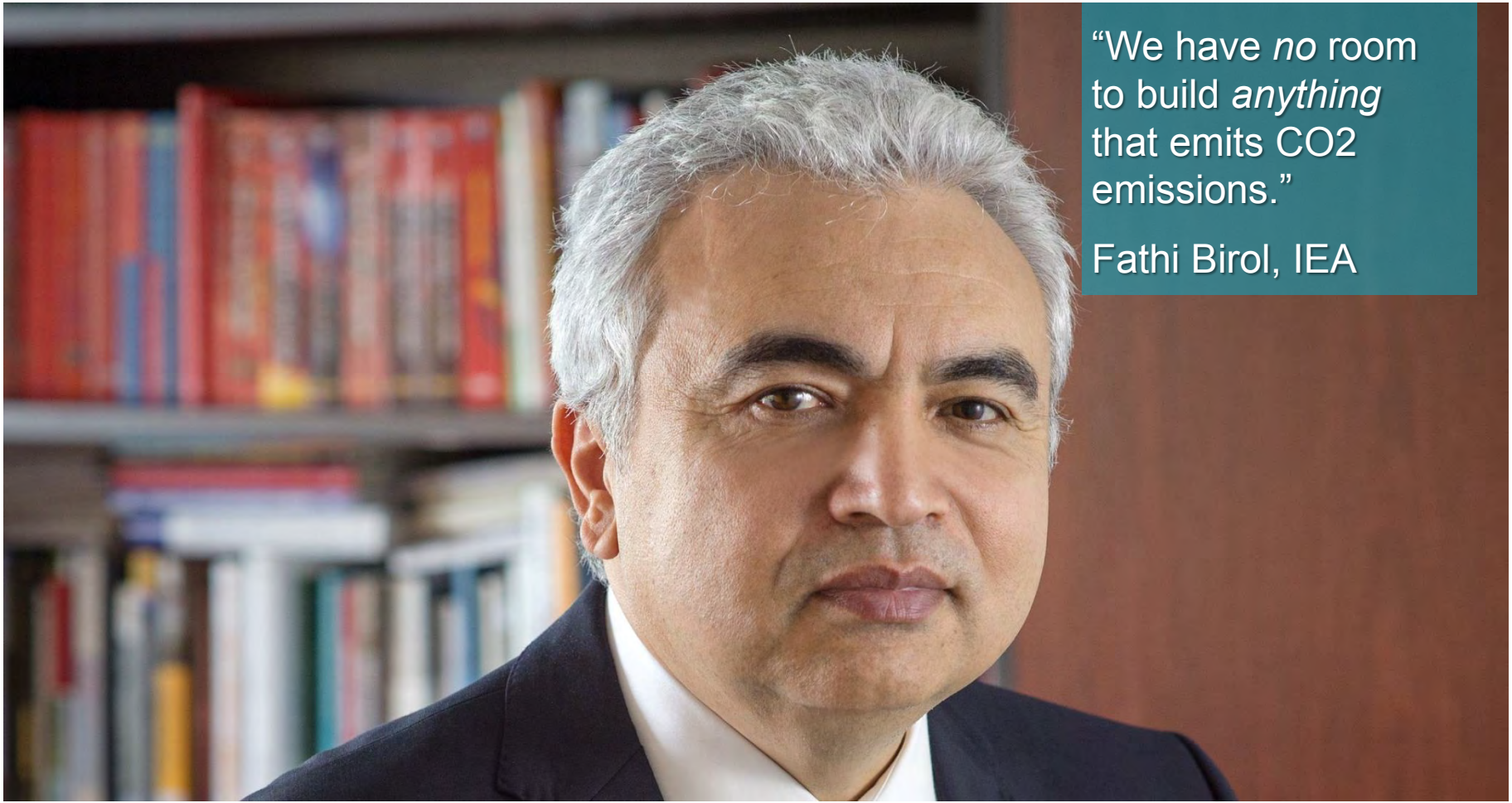
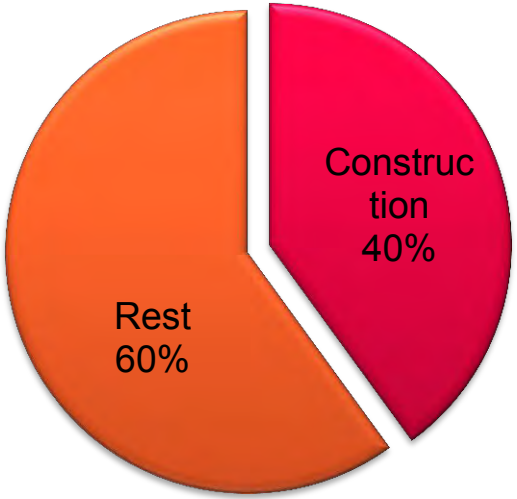
Lifespan of Infrastructure is Crucial




“We have *no* room to build *anything* that emits CO2 emissions.”
Fathi Birol, IEA

Why is the Construction Sector Relevant?

High share of global energy-related CO2 Emissions



IEA. Perspectives for the Clean Energy Transition. IEA. Paris. 2019

(Most of the) construction sector is comparatively easy to decarbonate

- Buildings are immovable
  → subject to exclusive domestic regulation without carbon leakage
- Energy need for space heating can technically be reduced to nearly zero
- CO2-free technologies are available and cost-competitive, already today
- Decarbonisation of *construction phase* (grey emissions from cement, steel etc.) is still a challenge
- Emission reduction rate of 6% p.a. – compared to 4% p.a. for most sectors

The Decarbonisation of Construction as a Special Challenge

- Cement and steel consumption for construction of buildings account for roughly 5% of global CO2 emissions
  - and the floor area is expected to nearly double by 2050 globally…

➢ Reduce steel and cement demand from buildings by

- switching to low-carbon building frames such as wood or biosourced materials
- material-oriented optimisation in building design
- extending building's lifetime through modular design
- reusing / recycling materials

➢ Decarbonise steel and cement production

IEA. Perspectives for the Clean Energy Transition. IEA. Paris. 2019
The Energy Transitions Commission. Mission Possible. 2018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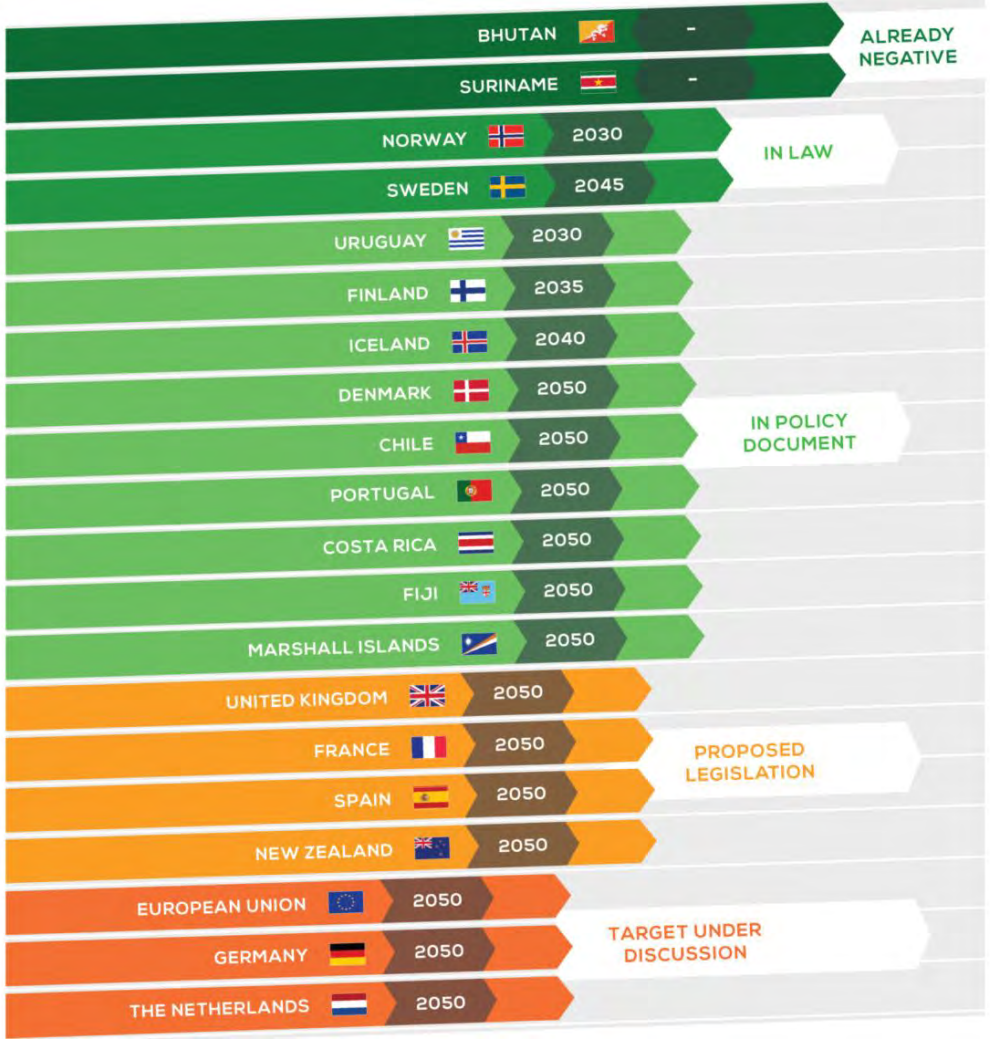
What is the *Swiss* pathway to Paris?

Basis and Assumptions

- Paris-Agreement as a legally binding instrument:
  «… aims to … holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels" (Art. 2)
- Global carbon budget for 33% likelihood of remaining below 1.5°C (IPCC AR 5)
- Historical emissions are only accounted for since 1990 (publication of IPCC AR 1)
- Global carbon budget from 1990 onwards is divided up equally per capita
- Each country is assigned a carbon budget accordingly, taking into account only CO2 emissions within its territory

Vieli, B.; Fussen, D.; Müller M. CO2-Budget der Schweiz. Zollikon, 2017.



Switzerland is hesitating,
but other countries have moved forward: on the net-zero-emissions race…

Energy and Climate Intelligence Unit. 2019.

CO_2 reduction rate per year

1% p.a.

Swiss CO2-law domestic 2020-2030 (draft)

4% p.a.

According to **Paris** Agreement

6% p.a.

Derived for **construction sector**

IEA. Perspectives for the Clean Energy Transition. IEA. Paris. 2019

1.25% p.a.

Switch **Oil** → **Gas**-fired heating (lifespan 20 years)

Global Effects – but in Europe? In Switzerland?

The Glaciers are melting away (Gauli Glacier, CH)

And the Edelweiss (Leontopodium alpinum)?