




## Transformation Pathways to Sustainability

Swiss Sustainability Science Forum 2021  
Thomas Vellacott, WWF

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### Transformation pathways to sustainability



- 
1. Transformation to sustainability
  2. No transformation without science
  3. No science without transformation

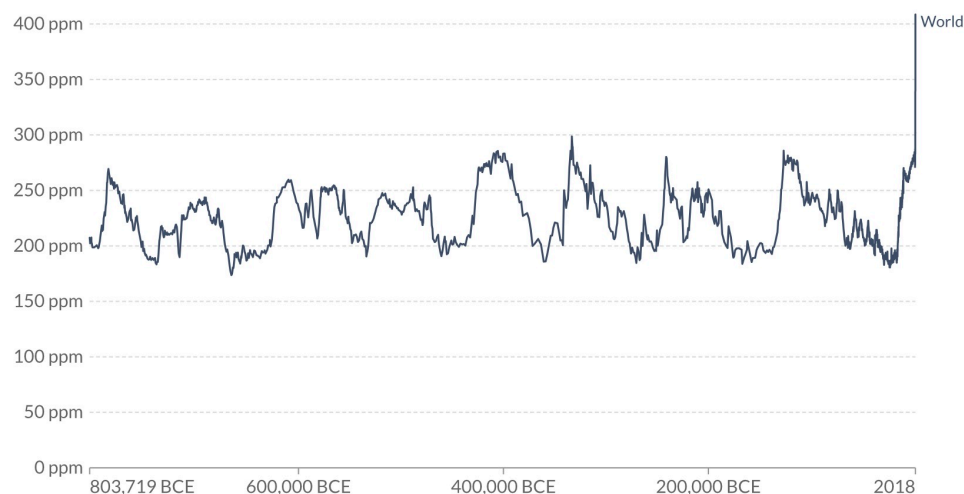
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## The challenge: To overcome the climate and biodiversity crisis by transitioning to sustainability (1/2)



Global average long-term atmospheric concentration of carbon dioxide (CO<sub>2</sub>), measured in parts per million (ppm). Long-term trends in CO<sub>2</sub> concentrations can be measured at high-resolution using preserved air samples from ice cores.



Source: EPICA Dome C CO<sub>2</sub> record (2015) & NOAA (2018)

OurWorldInData.org/co2-and-other-greenhouse-gas-emissions • CC BY

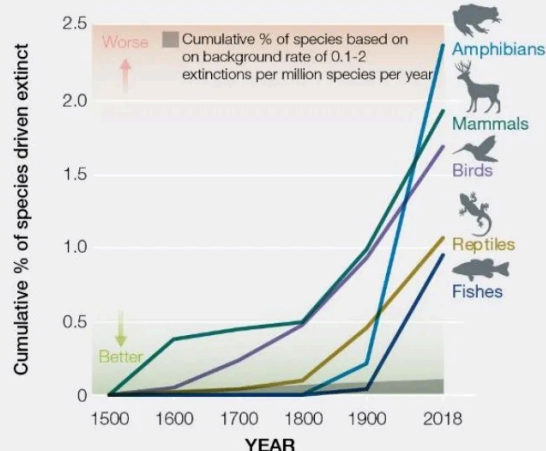
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## The challenge: To overcome the climate and biodiversity crisis by transitioning to sustainability (2/2)



### B Extinctions since 1500



Source: IPBES

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5 Bild: Waldbrände in Bonneville, Washington  
Queller: NZZ Geschichte, Herbst 2021

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## Business is beginning to recognise the existential crisis posed by the climate and biodiversity crisis



### TOP RISKS BY LIKELIHOOD



### TOP RISKS BY IMPACT



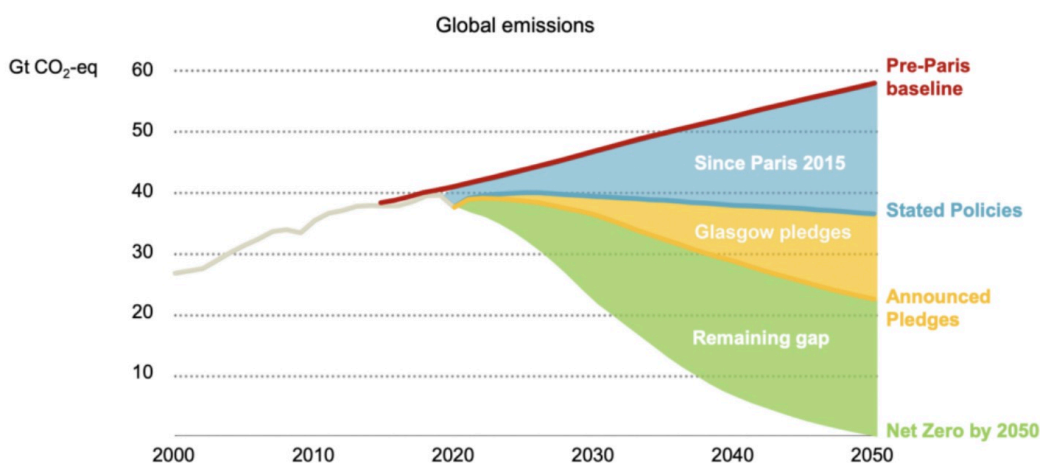
■ Economic ■ Environmental ■ Geopolitical ■ Societal ■ Technological

Source: World Economic Forum Global Risks Perception Survey 2020

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## Governments are beginning to recognise the need for action – although a big gap remains



Sources: Carbon Tracker, IEA, 2021

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## Transformation pathways to sustainability



1. Transformation to sustainability
2. **No transformation without science**
3. No science without transformation

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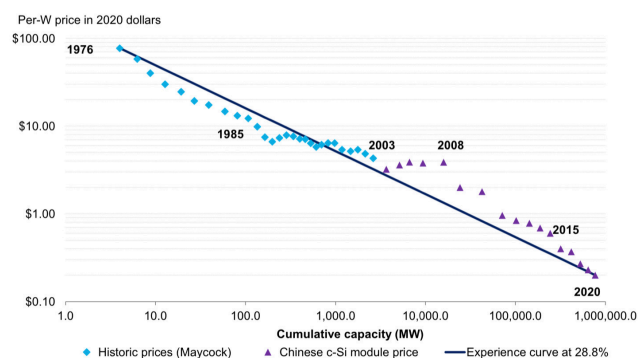
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## Science enables economies of scale, which are making sustainable technologies competitive (1/3)



The photovoltaic experience curve is 28.8%

PV module experience curve (2020\$/W, MW)



Source: Paul Maycock, BloombergNEF

Forbes

Dec 3, 2018, 07:40am EST

**Plunging Prices  
Mean Building New  
Renewable Energy Is  
Cheaper Than  
Running Existing  
Coal**

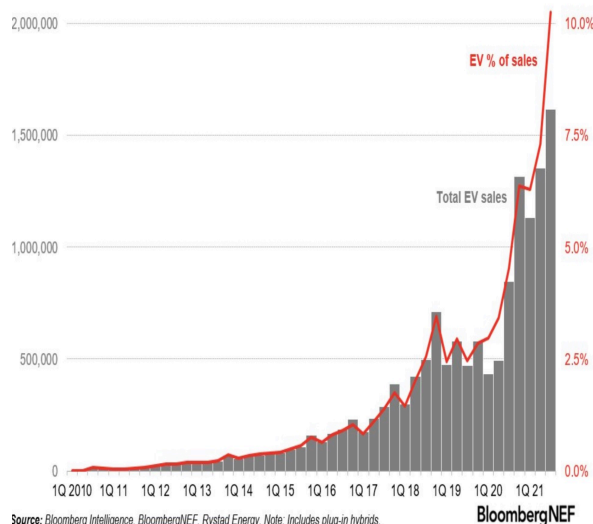
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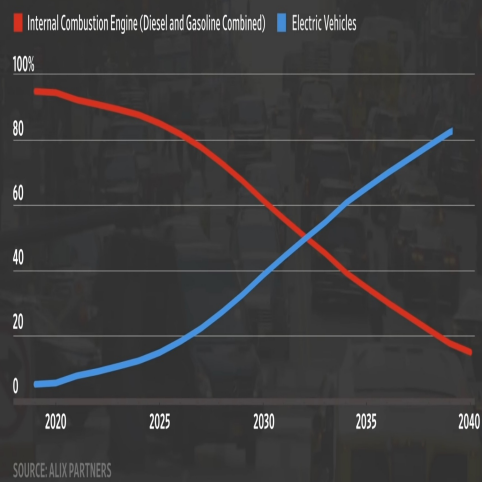
## Science enables economies of scale, which are making sustainable technologies competitive (2/3)



Quarterly electric passenger vehicle sales and % of total sales



DRIVETRAIN SALES FORECAST



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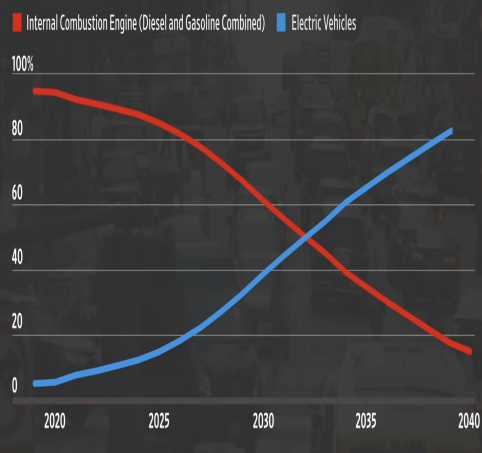
## Science enables economies of scale, which are making sustainable technologies competitive (3/3)



Figure 5. Market Share  
Car vs Horse (%)



DRIVETRAIN SALES FORECAST



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## Science increasingly informs decision makers' actions



Source: portaprotocol.com

**IPCC Report inspires  
collective leadership from  
industry leaders**

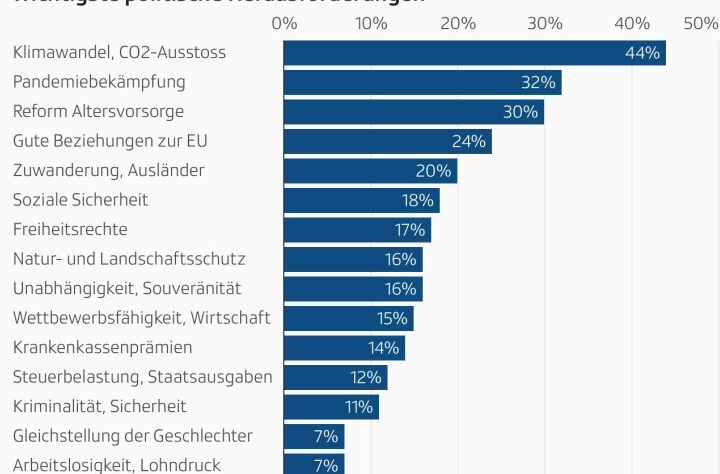
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## Science informs public opinion



### Wichtigste politische Herausforderungen



Frage: «Welches sind Ihrer Meinung nach gegenwärtig die wichtigsten politischen Herausforderungen in unserem Land? (Maximal 3 Antworten)»

Quelle: SRG Wahlbarometer 2021, Methodik siehe Box

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## Science forms the foundation for WWF's work in nature conservation



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## Transformation pathways to sustainability



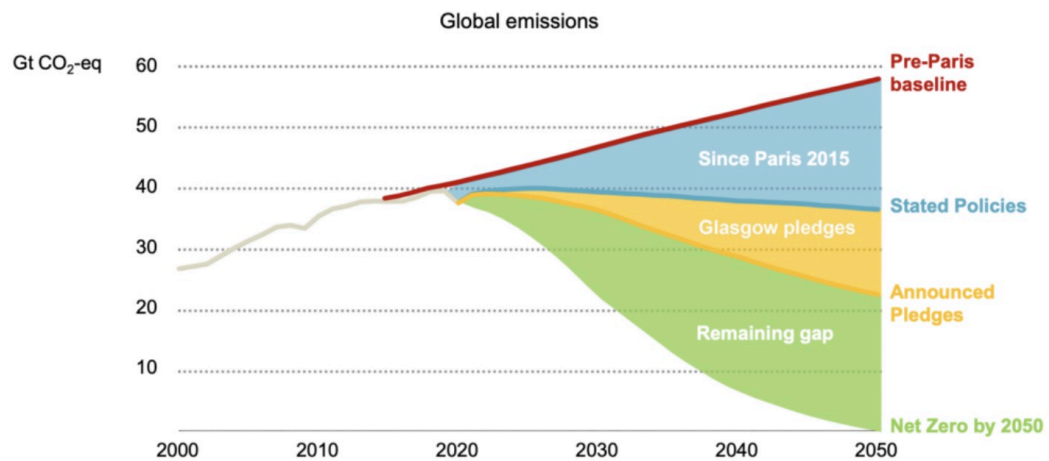
1. Transformation to sustainability
2. No transformation without science
- ▶ 3. **No science without transformation**

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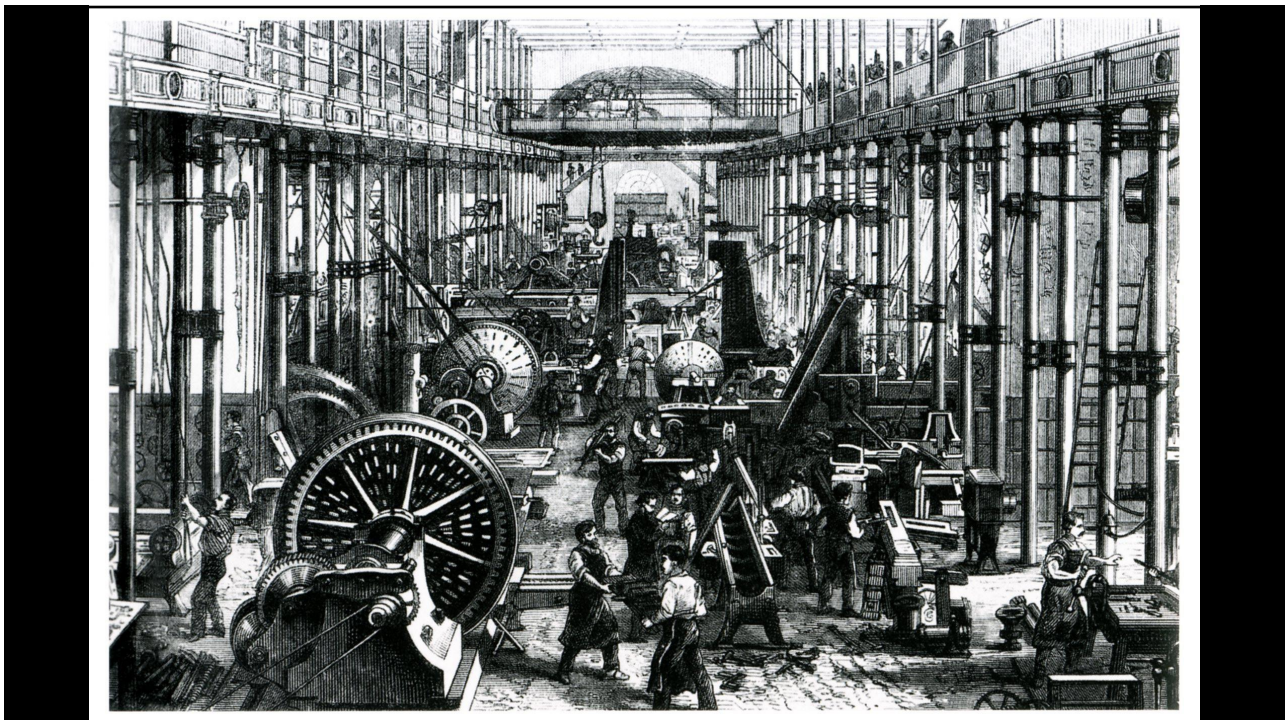
## The transformation to sustainability will not happen with business as usual



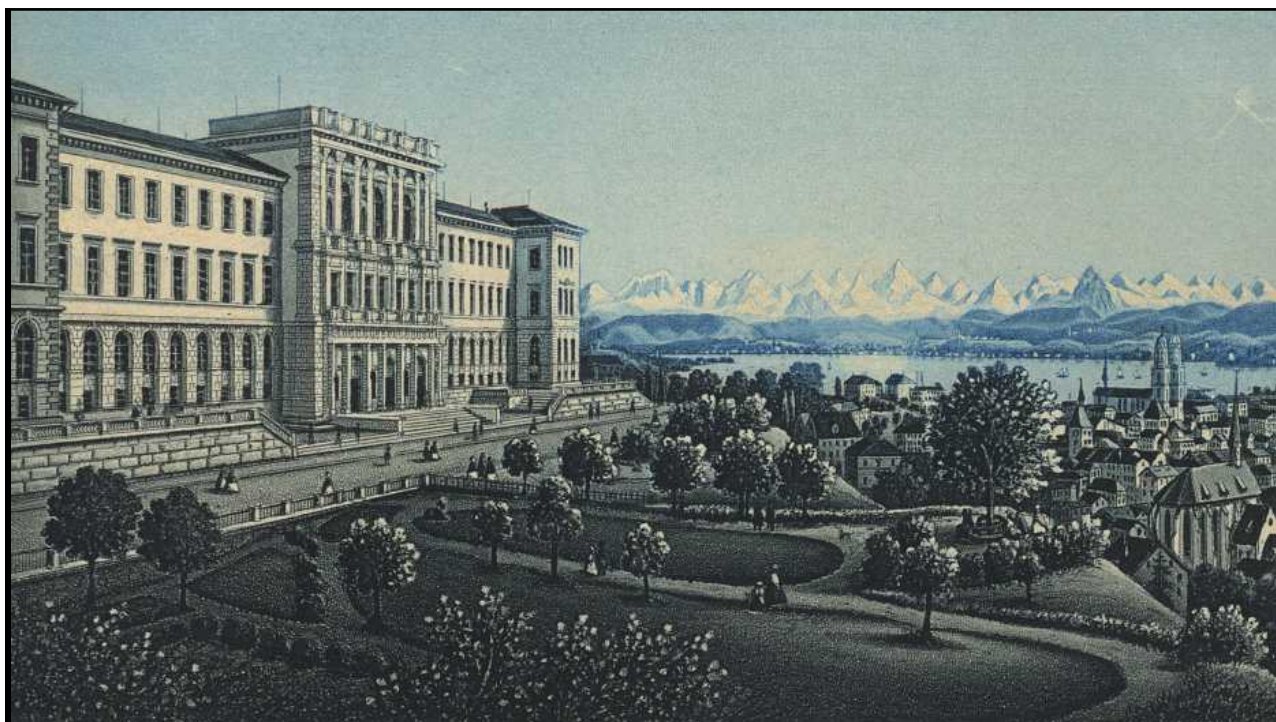
Sources: Carbon Tracker, IEA, 2021

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## Transformation knowledge is key to overcoming the climate and biodiversity crisis



p.ex. CO<sub>2</sub> sources  
and sinks, actors  
and relationships ✓

Knowledge Concerning  
the Current Situation:  
**Systems Knowledge**

Knowledge Concerning  
the Target Situation:  
**Target Knowledge**

1.5 °C or  
net zero ✓

Implementation

Shaping the transition  
from the current  
to the target situation:  
**Transformation  
Knowledge**

How to transform  
business models,  
policies, laws,...?

Biggest Gap!

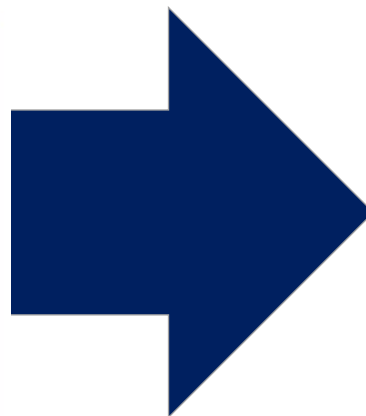
Sources: ProClim, WWF

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## Priority Themes for Swiss Sustainability Research is an important step in the right direction



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## 1. Make a real difference on the most relevant challenges



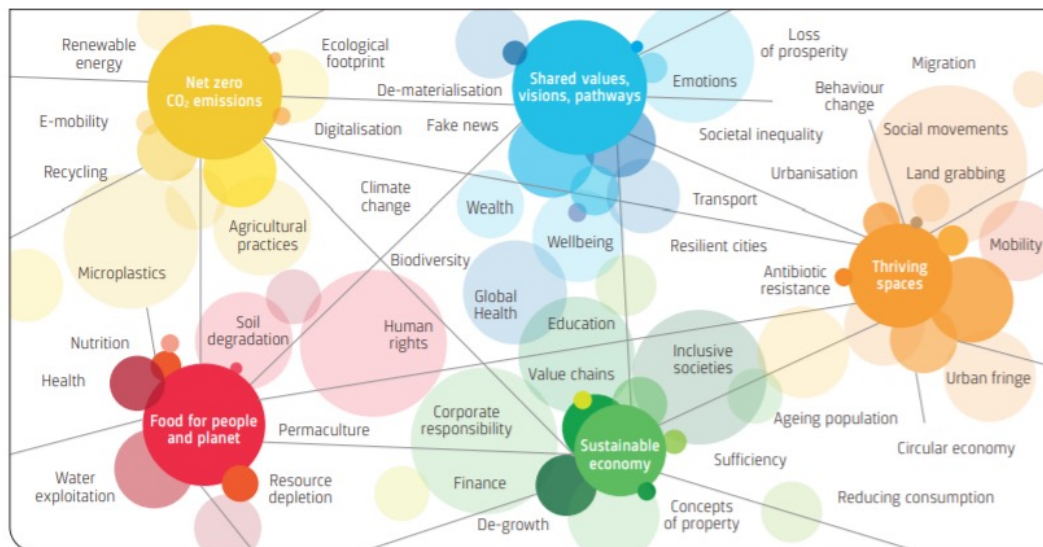
### SUSTAINABLE DEVELOPMENT GOALS



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## 2. Integrate approaches from different disciplines

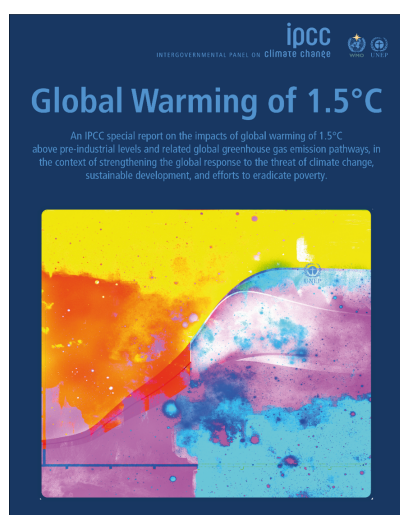


Source: swiss academies 2020

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## Example: From knowledge about climate change to climate action

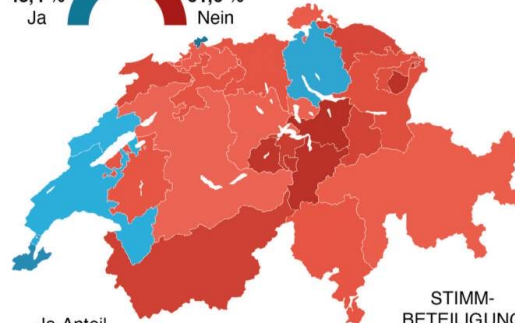


### CO2-Gesetz

Eidgenössische Volksabstimmung vom 13. Juni 2021

VOLKSMEHR

48,4 % Ja 51,6 % Nein



STIMM-  
BETEILIGUNG  
59,7 %

Ja-Anteil  
0 % 100 %

Grafik: Keystone-SDA, Quelle: GFS Bern

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### 3. Reach beyond academia



Tanke Wissen und vernetze dich

**Wir fördern Pioniere, die ressourcenleichte Lösungen  
für die Welt von morgen entwickeln.**

Zu unserem Angebot

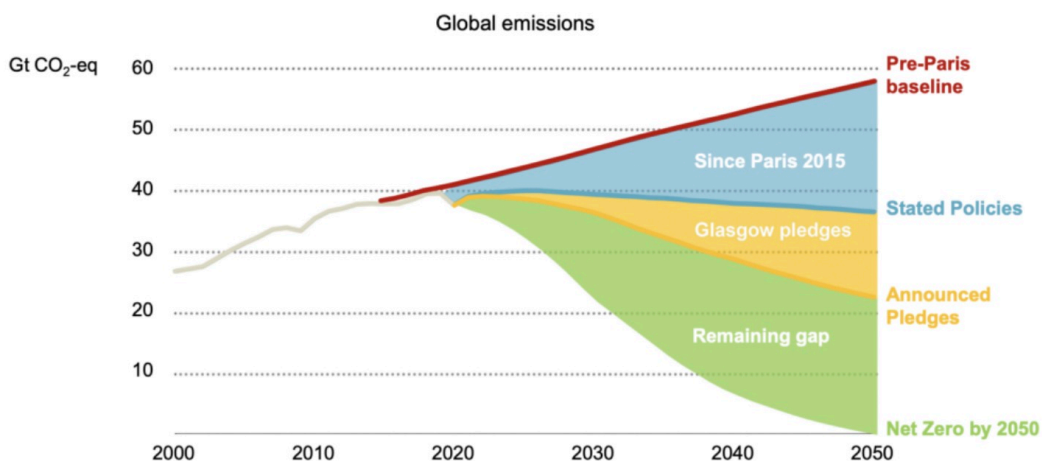


Source: one-planet-lab.ch

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### The need for speed



Sources: Carbon Tracker, IEA, 2021

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## The need for courage



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together possible™



Working to sustain the natural world for the benefit of people and wildlife.

together possible. panda.org

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