

Towards a Net Zero Economy: The role of LCA and Rebound Effects

Opening remarks LCA Forum 2020





Six theses

1. **We need to reach net zero by 2050 - and we will.**
2. Carbon removal technology will set carbon price.
3. Relevance of rebound effect decreases to net zero.
4. **Embodied emissions (and LCA) increase in relevance.**
5. Products will increasingly inform about their footprint.
6. Policies will shift from direct to embodied emissions.

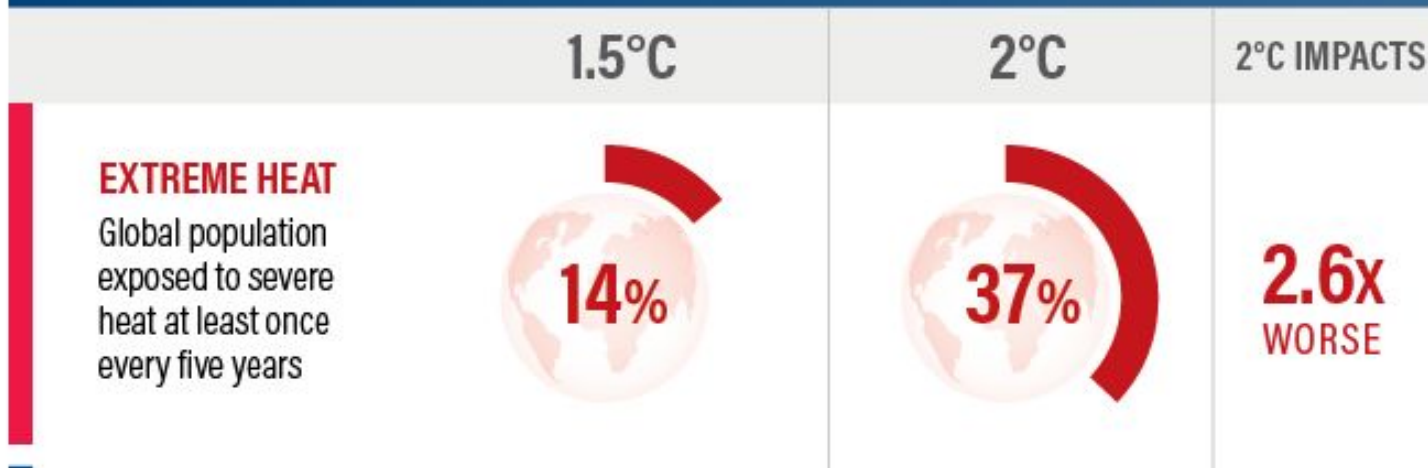
1) We need to reach net zero by 2050...





HALF A DEGREE OF WARMING MAKES A BIG DIFFERENCE:

EXPLAINING IPCC'S 1.5°C SPECIAL REPORT



**SPECIES LOSS:
VERTEBRATES**

Vertebrates that lose at least half of their range



2x
WORSE

**SPECIES LOSS:
PLANTS**

Plants that lose at least half of their range



2x
WORSE

**SPECIES LOSS:
INSECTS**

Insects that lose at least half of their range

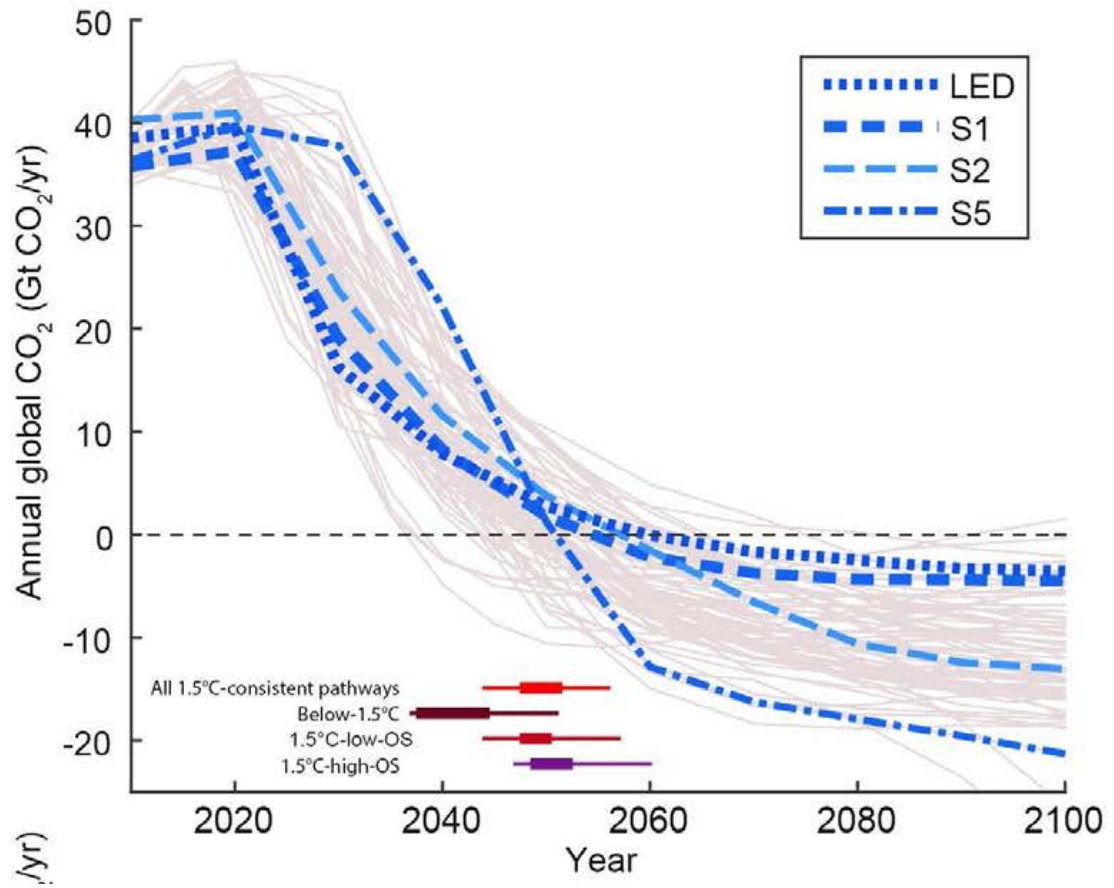


3x
WORSE

CORAL REEFS
Further decline in coral reefs

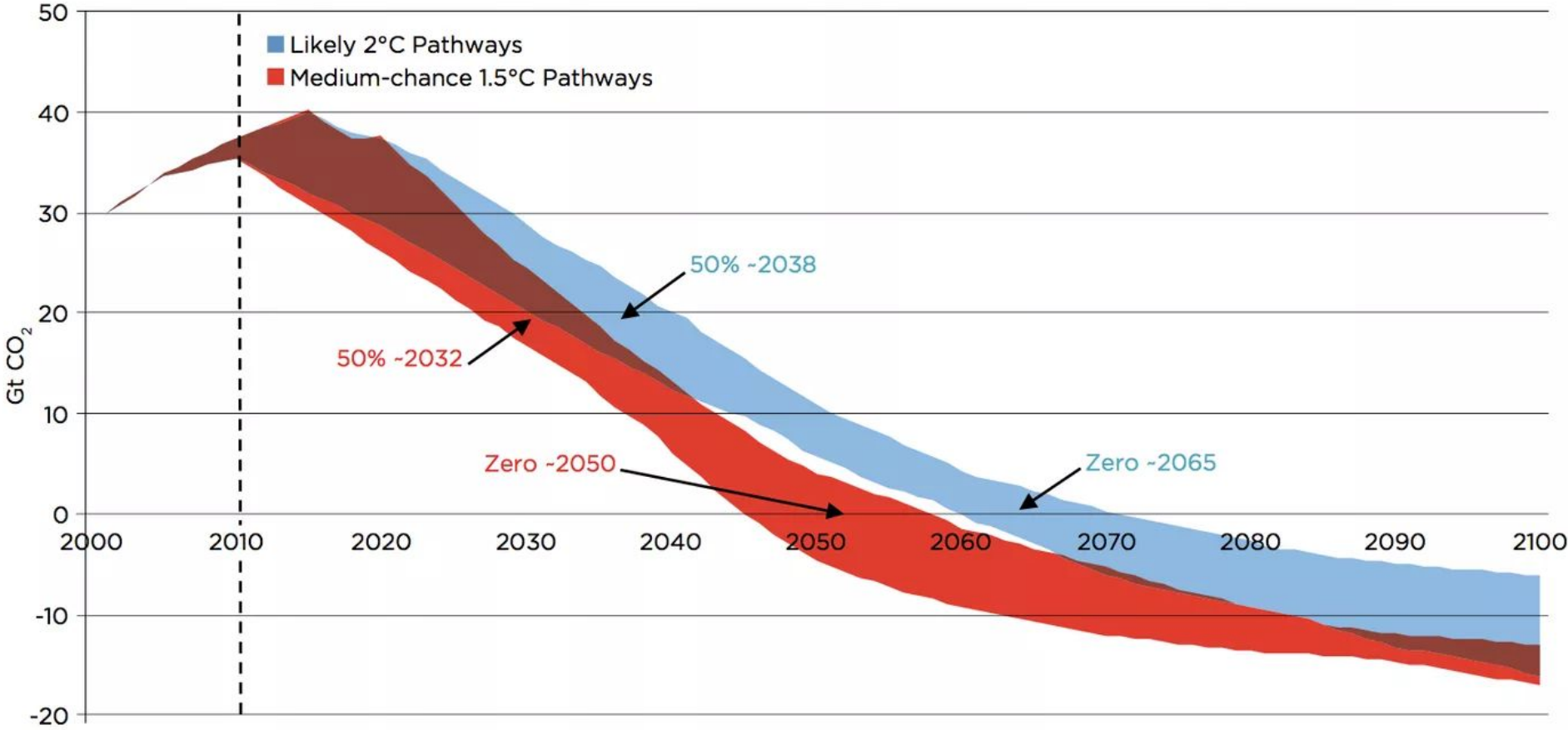


UP TO
29%
WORSE



Source:
https://www.ipcc.ch/sr15/c_hapter/chapter-2/2-3/2-3-2/2-3-2-1/figure-2-5/

Figure 1: Range of Global Emissions Pathways in Scenarios Consistent with Likely Chance of 2°C or Medium Chance of 1.5°C¹⁸

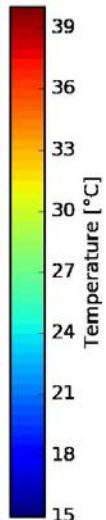
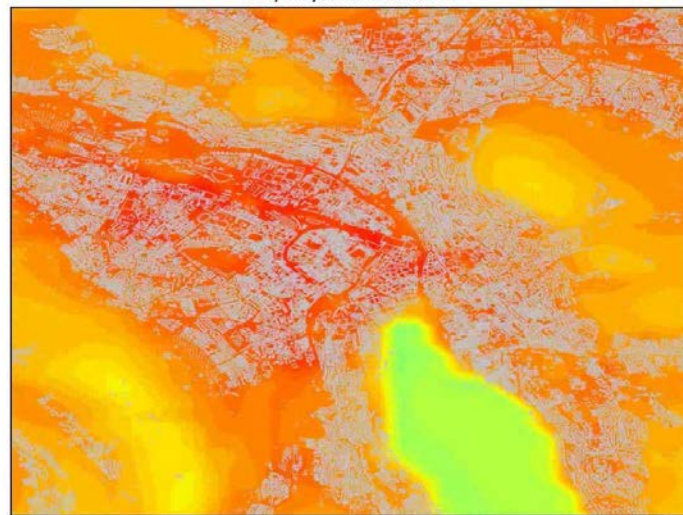
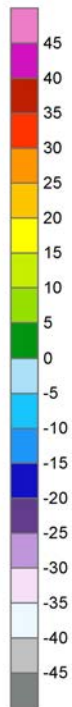
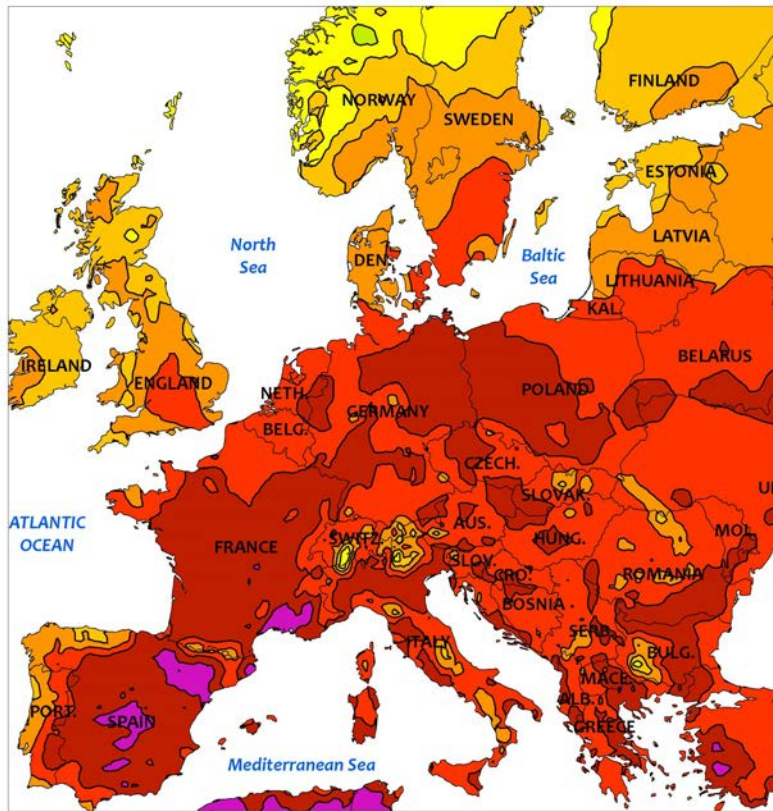


Sources: Joeri Rogelj et al

1) We need to reach net zero by 2050 and we will.



EUROPE
Extreme Maximum Temperature (°C)
June 23 - July 6, 2019









INDUSTRIE
ZUR
VERANTWORTUNG
ZIEHEN

SYSTEM
CHANGE
NOW!

WIR FORDERN DEN
KLIMANOTSTAND

REVOLUTIONÄRE
KONZEPTION

SCHLUSS MIT
ZERSTÖRUNG

WIR FORDERN
TUN BIS

KLIMASTRE
BÄRN

OUR AMBITION
STOP EMISSION

THERE IS
NO PLANET
B

TASCHUT!

STOPPT
den Klimakoch

STOPPT
den Klimakoch

CHANGE
OT
CHANGE

KOPF
LASS UNS
VON DEN
ELDEN
ZÖGEN

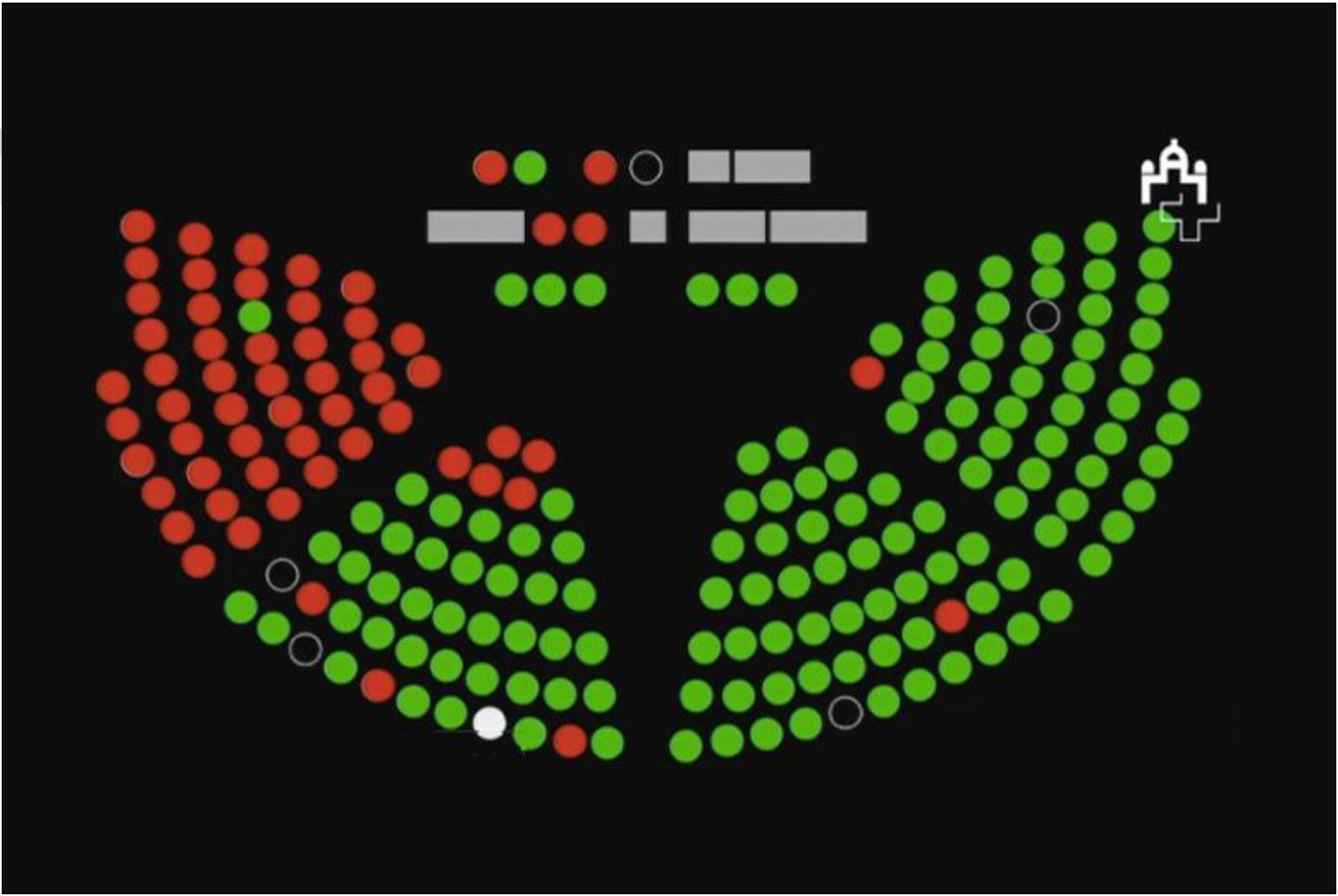
WIR
KÖNNEN
NICHT
WARTEN

WIR
KÖNNEN
NICHT
WARTEN

SKLIMAKOCH
MICH
MEMBER
S

HE HALLO HOH
KLIMAWANDU
S

KURHAUS BERN
GRAND CASINO
HOTEL ALLEGRI



All companies

805
Joined SBTi

30+
join per month

330
approved



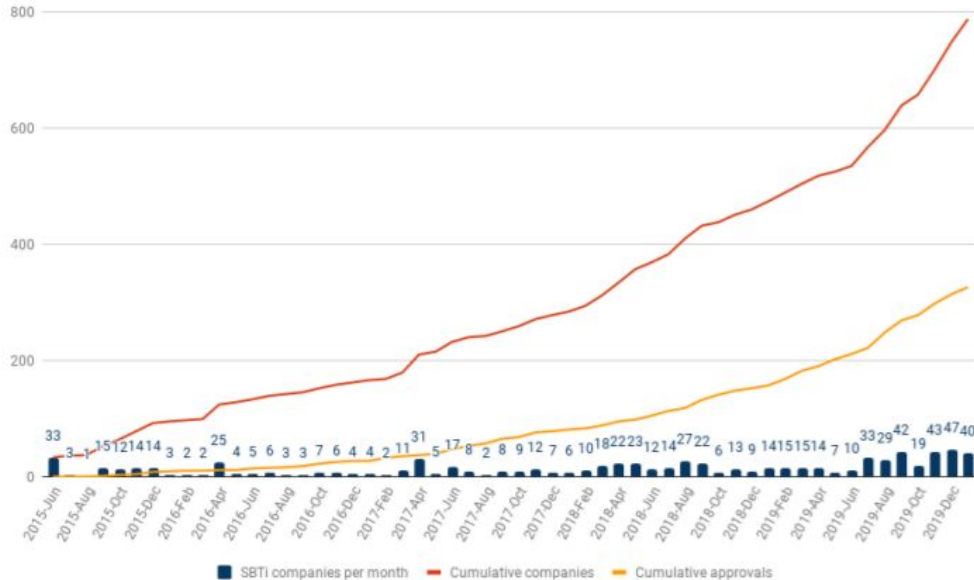
SCIENCE
BASED
TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

PARTNER ORGANIZATIONS



Number of companies that have set or committed to set SBTs since June 2015



Example of committed companies:

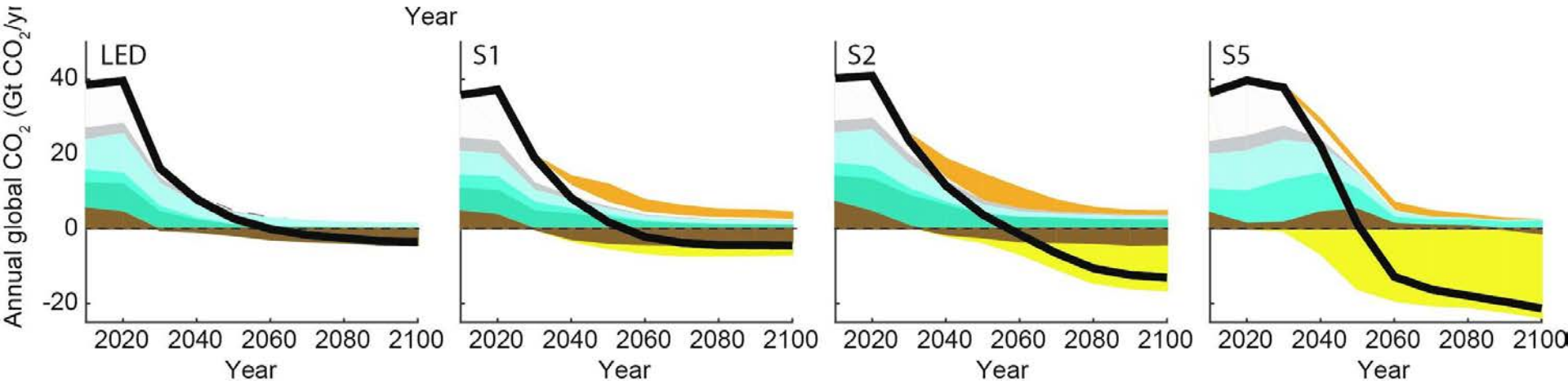
SONY



TESCO

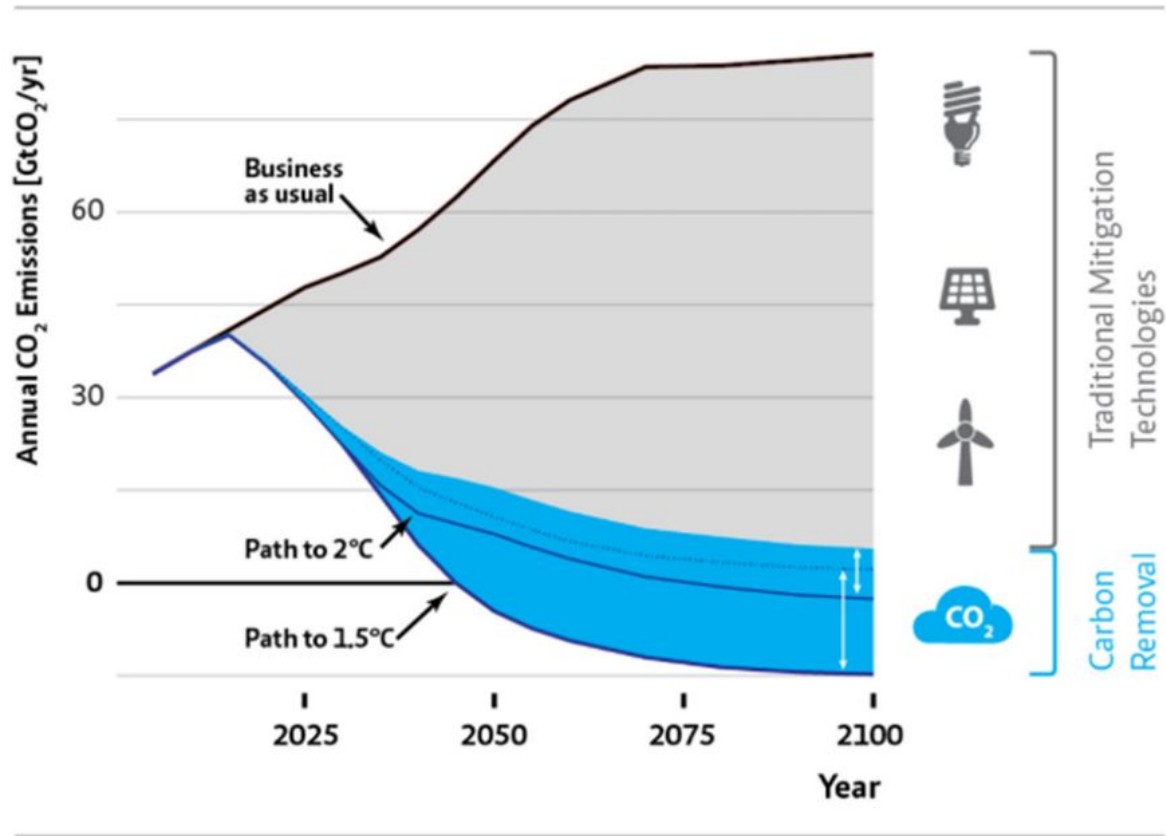
**2) Carbon
removal
technology
will set the
carbon
price.**





LED: Low Energy Demand, no CCS.

Source:
https://www.ipcc.ch/sr15/c_hapter/chapter-2/2-3/2-3-2/2-3-2-1/figure-2-5/





“If it’s your job to **eat a frog**, it’s best to do it first thing in the morning.” (Mark Twain)



HOW CAN WE SCALE UP CCS IN SWITZERLAND? OUR VISION FOR 2030

If we want to reach the 2050 net-zero target we need to get a detailed understanding of the options as soon as we can - including technical feasibility, costs, financing mechanisms, risks and required regulations.

The technology is available - but there are many open questions. One of the major bottlenecks that emerged from our current projects is transporting large volumes of CO₂ across Europe. So we are starting with feasibility studies for pipeline networks.

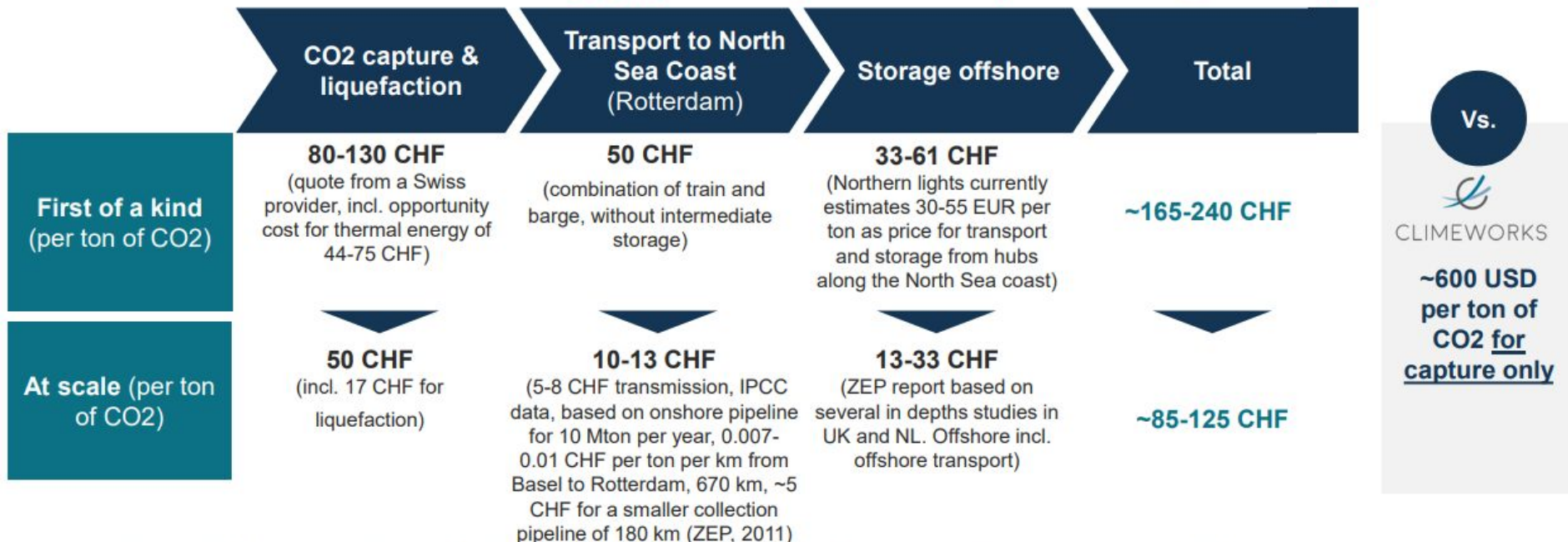
Learn more about our [vision for 2030](#). Please be aware that this document is work in progress and will be updated as we learn more through our projects.

More:

<https://www.suslab.ch/vision-for-scale-up-by-2030>

Costs per ton of CO2 are likely to fall below 150 CHF (the current domestic marginal abatement costs) once the CCS chain is operated at scale in EU

Example cost calculation for full cost per ton of CO2 from Switzerland to storage under the North Sea
Please note that cost estimates are highly preliminary and will be updated throughout or project

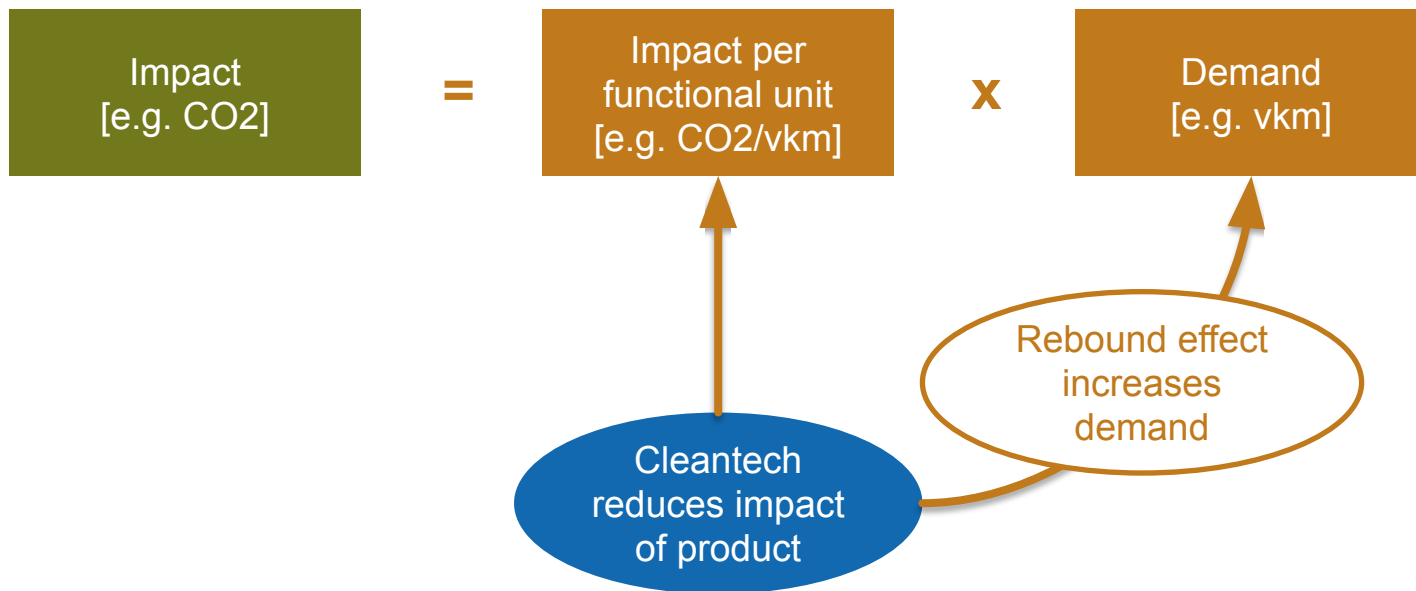


Sources: Messer, VTG, Northern Lights, IPCC Special Report on Carbon Dioxide Capture and Storage, 2018, Global CCS Institute: Waste-to-Energy with CCS: A pathway to carbon-negative power generation, 2019; Marginal cost: Kosten und Potential der Reduktion von Treibhausgasen in der Schweiz, Bericht des Bundesrates, 2011

3) Carbon rebound effect goes towards net zero



What is the Rebound Effect?



Net Zero Products have Net Zero Rebound...

Impact [CO₂]

=

Impact per
functional unit

X

Demand
[vkm]

Case 1: Product has zero emissions:

0

=

0
[CO₂/vkm]

X

Demand
[vkm]

Case 2: Removal credit is combined with product:

0

=

10g CO₂ footprint - 10g CO₂ removal
vkm

X

Demand
[vkm]

Case 3: Product is carbon negative

0

>

-10 gCO₂/vkm

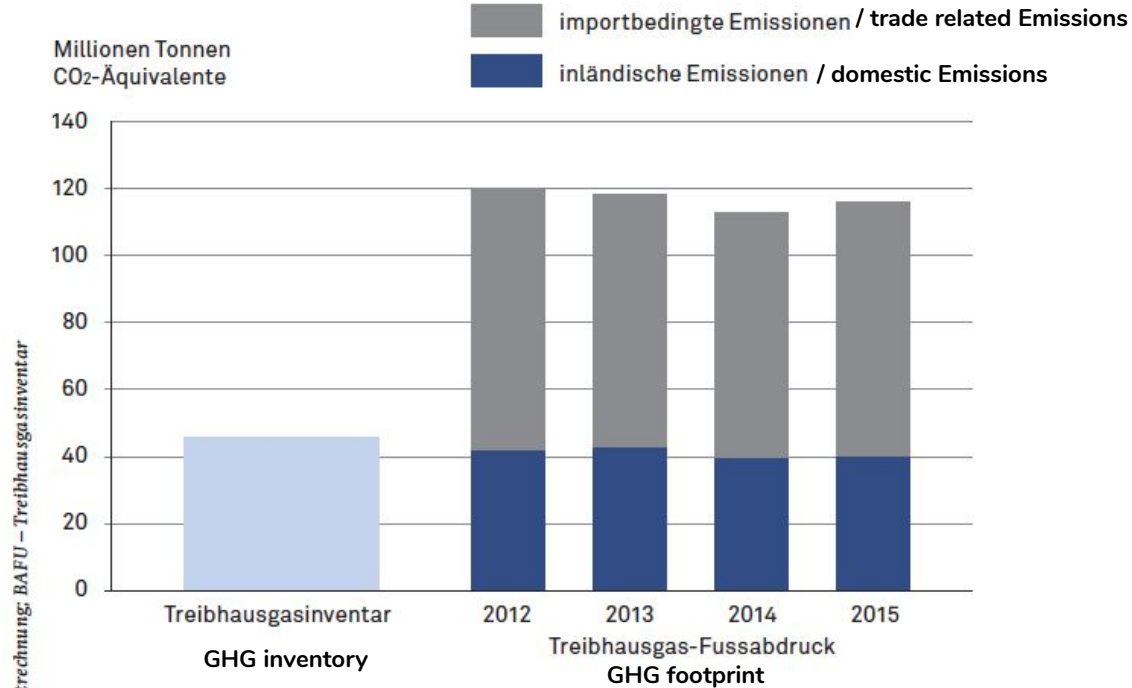
X

Demand
[vkm]

4) Considering embodied emissions (LCA) becomes increasingly relevant.



Treibhausgasemissionen der Schweiz



Grafik: Treibhausgasinventar, das im Rahmen der Umsetzung des Kyoto-Protokolls erstellt wird (links) im Vergleich mit dem Treibhausgas-Fussabdruck der Jahre 2012 – 2015 (rechts). Das Treibhausgasinventar entspricht den Emissionen, die auf dem Schweizer Staatsterritorium anfallen. Der Fussabdruck entspricht den Treibhausgasemissionen aufgrund der Schweizer Endnachfrage und berücksichtigt die Importe.

Quellen: BFS – Umweltgesamtrechnung; BAFU – Treibhausgasinventar

CO₂

CH₄

N₂O

HFCs

PFCs

SF₆

NF₃

Scope 2
INDIRECT

Scope 1
DIRECT

Scope 3
INDIRECT

Scope 3
INDIRECT

purchased goods and services

purchased electricity, steam, heating & cooling for own use

leased assets

company facilities

transportation and distribution

investments

capital goods

fuel and energy related activities

transportation and distribution

waste generated in operations

business travel

employee commuting

company vehicles

processing of sold products

use of sold products

end-of-life treatment of sold products

franchises

leased assets

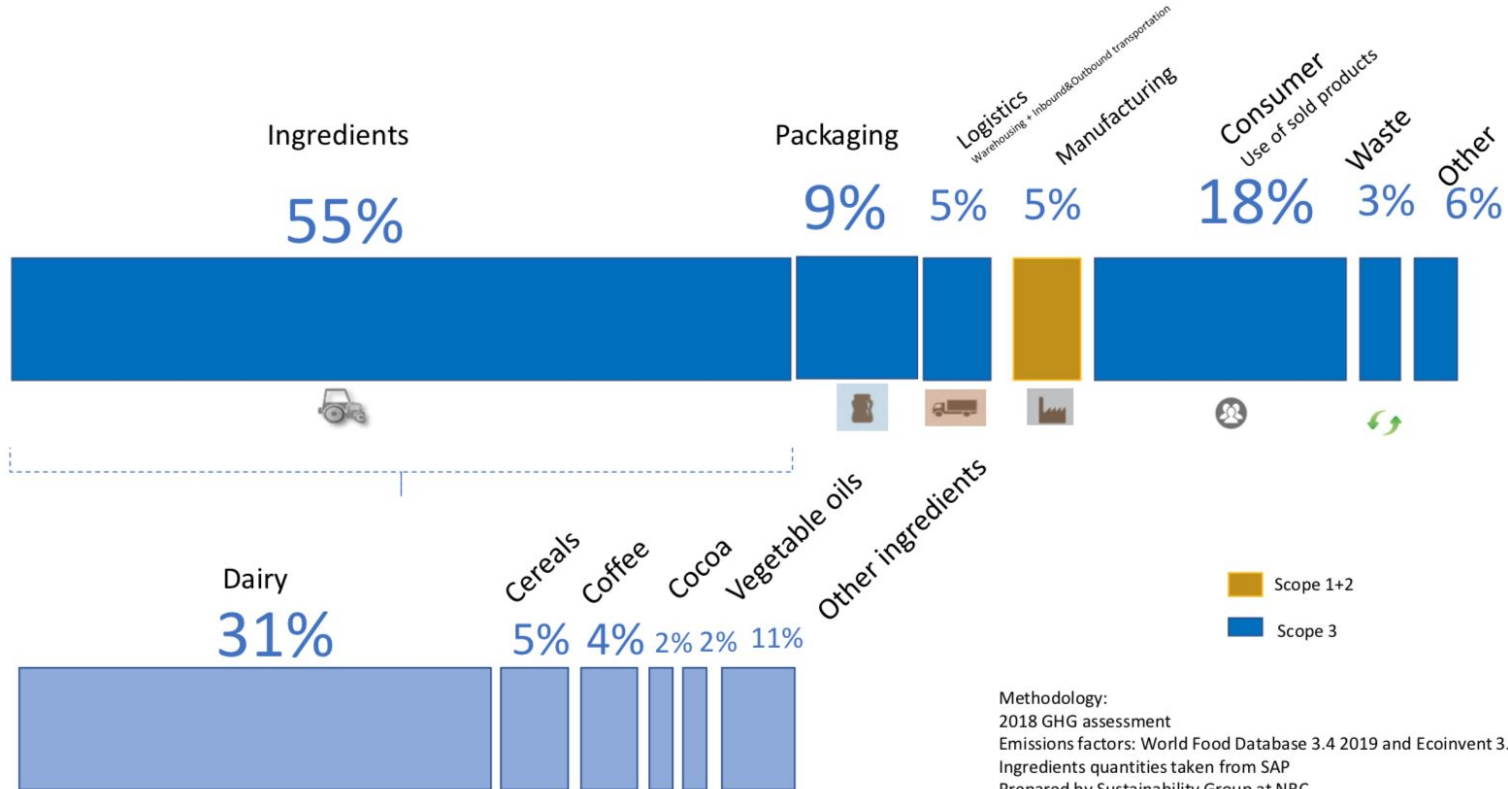
Upstream activities

Reporting company

Downstream activities

Emissions from a large consumer goods company

Most emissions from food & beverage companies occur upstream (S3)



Methodology:
2018 GHG assessment
Emissions factors: World Food Database 3.4 2019 and Ecoinvent 3.5 2018
Ingredients quantities taken from SAP
Prepared by Sustainability Group at NRC

5) Products will increasingly inform about their footprint.



Communication, Carbon Reduction Label



reducing with
the Carbon Trust

We have committed to
reduce the carbon footprint
of this product

carbon-label.com

- On Pack
- Point of Sale
- Brochure / Consumer Education
- Website
- CSR Report or Press



16:52

www.galaxus.ch

Memo

Suche

Bearbeiten

3. Bestellübersicht

Beschreibung / Verfügbarkeit	Menge	Total
Fairphone 3 664GB, Dark Translucent, 5.65", Dual SIM + SD, 12MPxj	1	514.-
6 Stück abholbereit		

CO₂-Kompensation

Ich möchte die CO₂-Emissionen
meines Einkaufs für CHF 3,10
vollständig kompensieren.
Sowohl die Produktion wie auch
der Transport werden dabei
berücksichtigt. Mehr erfahren

3,10

Nettobetrag
MwSt.
Gesamtbetrag

480.35
36.75
517.10

Logitech to roll out carbon labelling

17 June 2020, source [edie newsroom](#)

Electronics giant Logitech is set to introduce labels communicating the carbon footprint of its entire portfolio, starting this year.

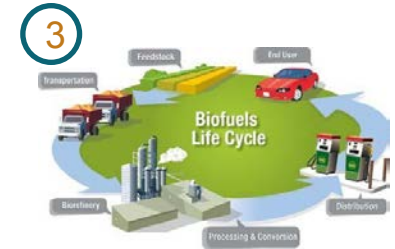


6) Policies will take embodied emission and LCA more and more into account.



An increasing number of policies addresses embodied environmental impacts

- 1 Regulation (92/880/EEC), on the eco-label award scheme, aims at promoting the design, production, marketing, and use of products with “reduced environmental impact during their entire life cycle.”
- 2 Directive on electricity market (03/54/EC) sets rules for guarantees of origin and obligates suppliers to provide information material on the environmental impact of their energy production—e.g. CO₂ emissions.
- 3 Fuel quality directive (09/30/EC) asks fuel suppliers to monitor and report life-cycle GHG emissions.
- 4 The Timber Regulation (10/EC/995) prohibits wood products from illegally harvested timber or derivative products. To guarantee the implementation, operators who place timber and timber products on the market must fulfill “due diligence” requirements.



Source: Girod, B. (2005) Product-oriented climate policy: Learning from the past to shape the future. *J. Clean. Prod.*

Debatte im Nationalrat, 12.09.2019

Handelsverbot für illegal geschlagenes Holz unter Dach

Illegal gefälltes Holz darf in der Schweiz nicht mehr gehandelt werden. Der Nationalrat hat die Änderung des Umweltschutzgesetzes bereinigt, mit der Handelshemmnisse gegenüber der EU abgebaut werden sollen.

Die Räte gingen bei dieser Revision des Umweltschutzgesetzes weiter als der Bundesrat vorgeschlagen hatte. Dieser hatte beantragt, dass Händler dokumentieren müssen, von wem sie Holz gekauft haben und wem sie diese weitergegeben haben.

Deklarationspflicht bleibt

Das Parlament schrieb zusätzlich die Weiterführung der Deklarationspflicht für Holz den Konsumenten ins Gesetz. Zuletzt umstritten war, ob dies für "Holz" in der Ständerat eingefügt hatte. Der Nationalrat übernahm am Donnerstag die Holzdeklaration.

Die Holzdeklaration ist ein Anliegen von Umwelt- und Konsumentengruppen. Bruno Manser Fonds untermauerten die Forderung mit einer Studie. Umweltministerin Simonetta Sommaruga hatte sich einverstanden erklärt.

Palm oil items

The Federal Council may also set requirements for placing on the market for raw materials and products other than wood. The prerequisite for this is that cultivation, dismantling or production significantly pollute the environment or that natural resources are endangered.

Palmöl-Artikel

Auch für andere Rohstoffe und Produkte als Holz kann der Bundesrat Anforderungen für das Inverkehrbringen festlegen. Voraussetzung ist, dass Anbau, Abbau oder Herstellung die Umwelt erheblich belasten oder natürliche Ressourcen gefährdet sind.

Dieser vom Nationalrat eingebrachten Ergänzung schloss sich der Ständerat an. Die Ergänzung zielt auf das umstrittene Palmöl. Umweltministerin Simonetta Sommaruga hielt dazu fest, der Bundesrat werde bei der Festlegung von Anforderungen an weitere Produkte und Rohstoffe als Holz mit Zurückhaltung und in Absprache mit den betroffenen



Mehrheit

^{2bis} Emissionsvermindernngen im Ausland, die nicht an das Ziel nach Absatz 1 angerechnet werden und die einen Beitrag dazu leisten, den globalen Temperaturanstieg im Sinne von Artikel 1 zu begrenzen, sollen möglichst den von der Schweiz im Ausland mitverursachten Emissionen entsprechen.

Minderheit (Egger Mike, Imark, Knecht, Müri, Page, Rösti, Ruppen, Tuena, Wobmann)

^{2bis} *Streichen*

2bis Emission reductions abroad that are not certified shall correspond - if possible - to Switzerland's emissions caused abroad.



Six theses and some conclusions

1. **We need to reach net zero by 2050 - and we will.**
 2. Carbon removal technology will set carbon price.
 3. Relevance of rebound effect decreases to net zero.
 4. **Embodied emissions (and LCA) increase in relevance.**
 5. Products will increasingly inform about their footprint.
 6. Policies will shift from direct to embodied emissions.
- Design and evaluate climate action required in an accelerated path to net zero.
 - Develop net zero materials and products (that are accountable under international standards, ie. GHG- Protocol)
 - Develop suggestions on how policy could reinforce carbon footprinting activities and incentivize reduction of embodied emissions.

**Thanks for
attention!**



Questions?

