

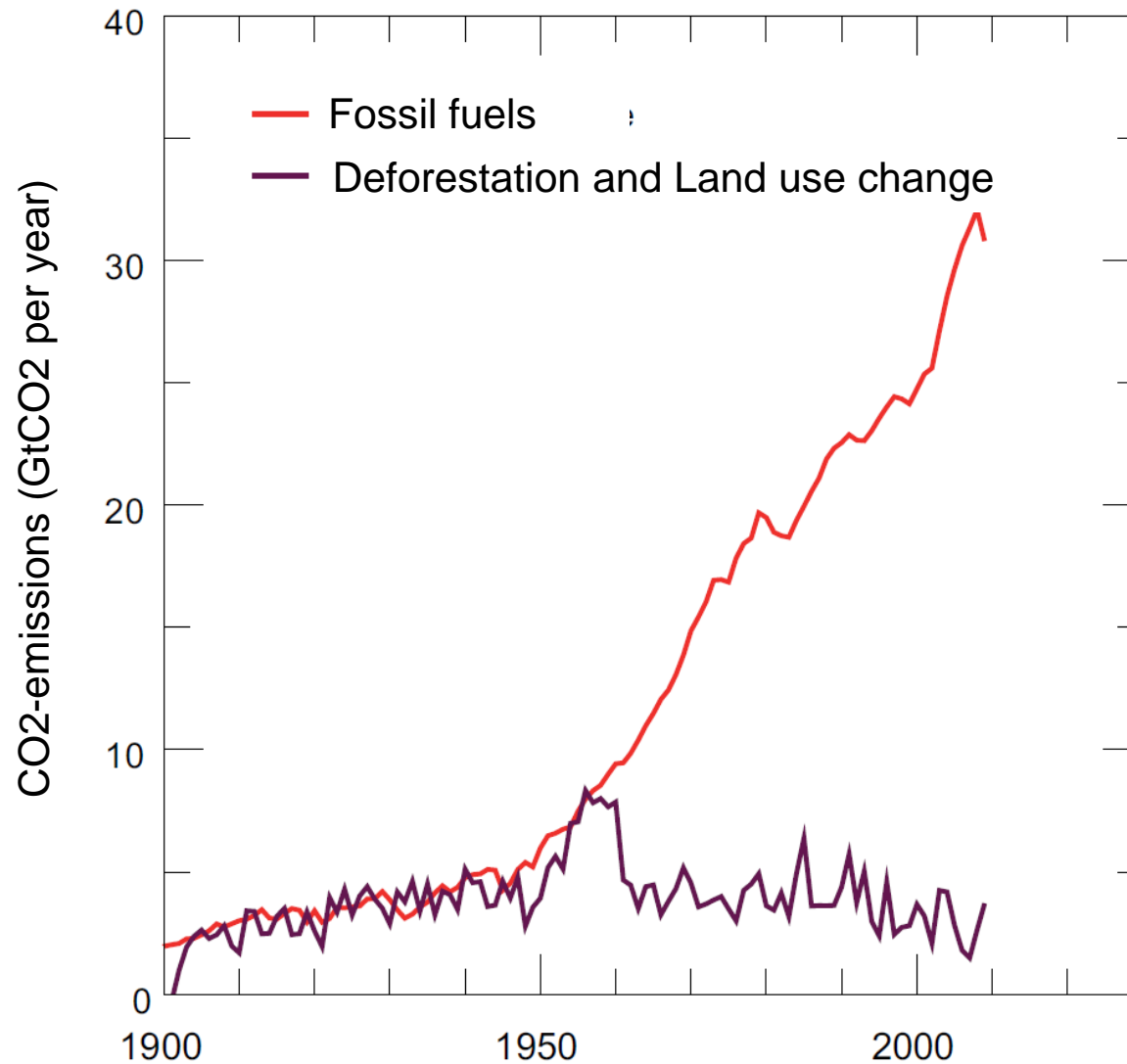
The Economics of Climate Change

Lecture 10: Swiss Climate Policy

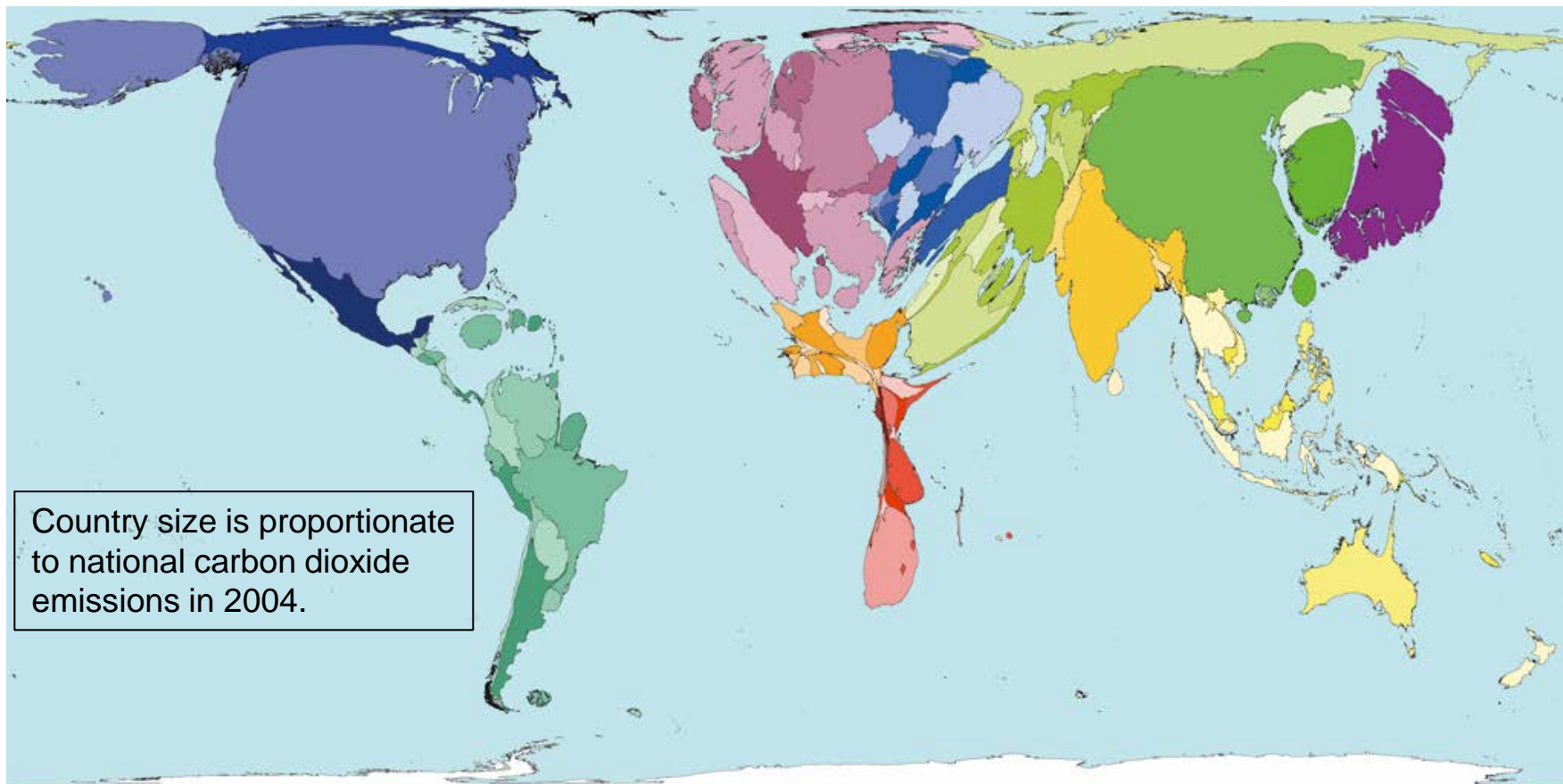
Markus Ohndorf



Swiss CO₂-Emissions over time



The world in terms of GHG emissions in 2005 – Switzerland as a small player



Worldmapper.org

GHG trends and projections in Switzerland

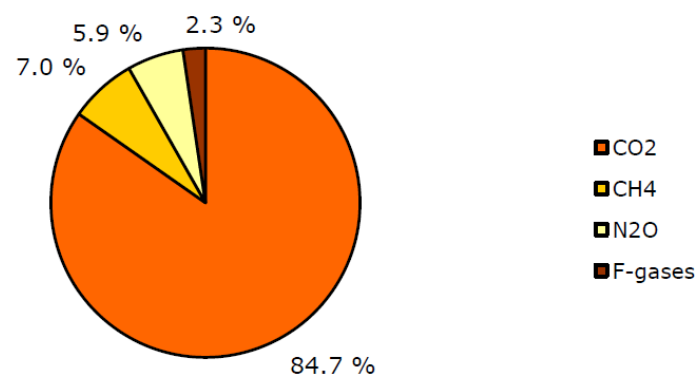
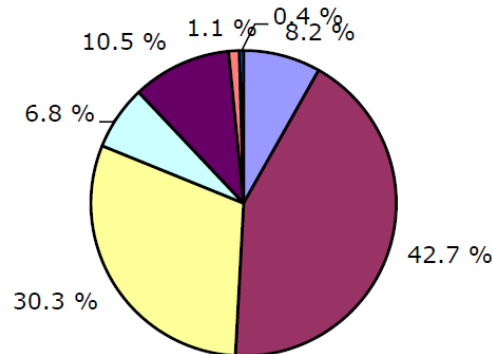
European Environment Agency



Key GHG data ⁽¹⁾	1990	2008	2009	2010	2011 ⁽²⁾	2012	1990–2011	2010–2011 ⁽²⁾
Average 2008–2012 target under the Kyoto Protocol (Mt CO ₂ -eq.)		48.6	48.6	48.6	48.6	48.6		
Total GHG emissions (Mt CO ₂ -eq.)	53.1	53.8	52.5	54.2	50.1	n.a.	-5.6%	-7.6%
GHG from international bunkers ⁽³⁾ (Mt CO ₂ -eq.)	3.2	4.3	4.1	4.3	n.a.	n.a.	n.a.	n.a.
GHG per capita (t CO ₂ -eq. / capita)	8.0	7.1	6.8	7.0	6.4	n.a.	-19.9%	-8.6%
GHG per GDP (constant prices) ⁽⁴⁾ (g CO ₂ -eq. / euro)	210	164	163	164	149	n.a.	-29.2%	-9.3%

Share of GHG emissions (excluding international bunkers) by main source and by gas in 2010 ⁽¹⁾ ⁽⁸⁾

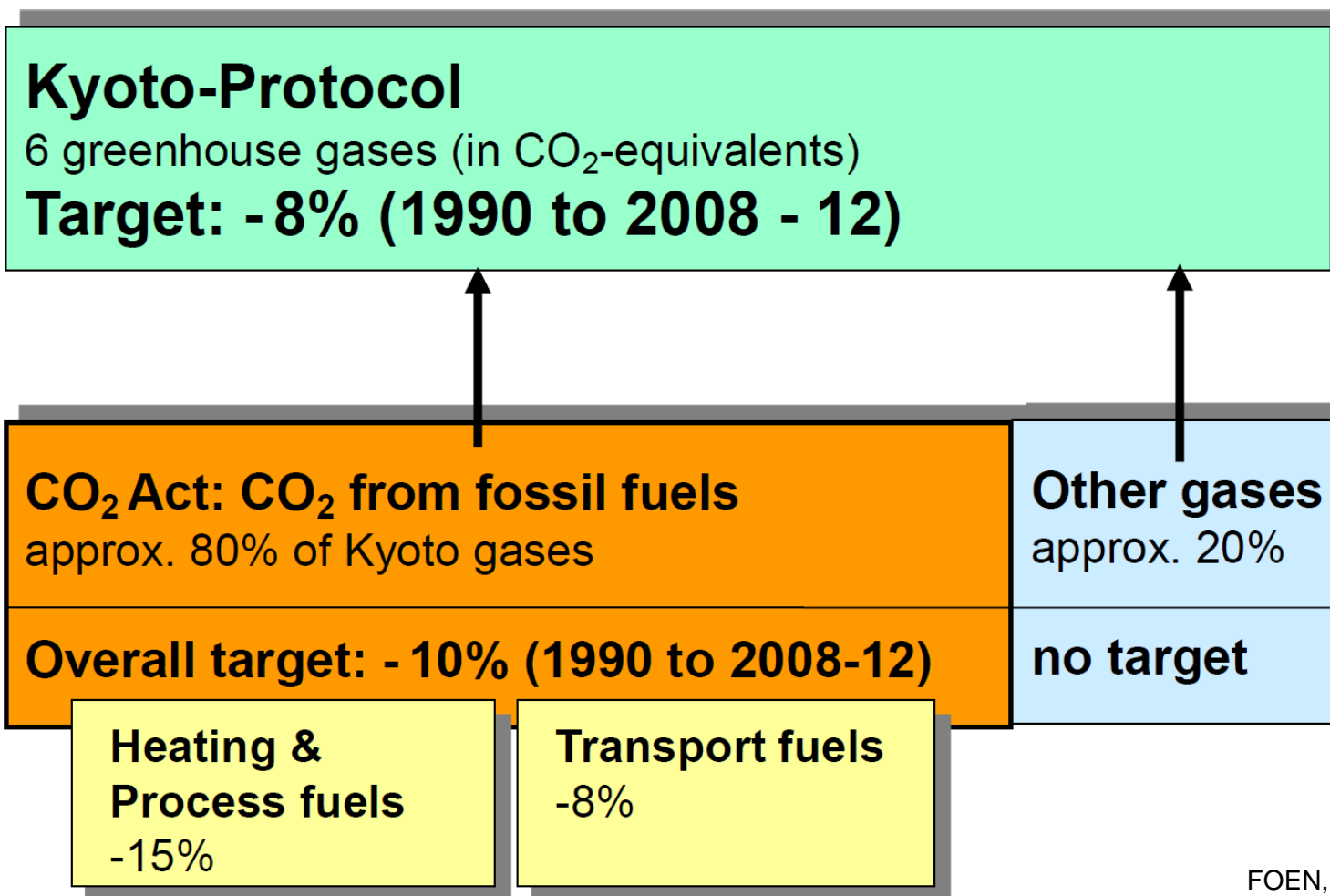
- Energy supply
- Energy use (excluding transport)
- Transport
- Industrial processes
- Agriculture
- Waste
- Other



The Kyoto Protocol: Reminder

- Adopted 1997 in Kyoto, in force since 2005
- Covering 6 gases: CO₂, CH₄, N₂O, HFCs, PFCs, SF₆
- Reduction targets for 39 developed countries
- CH target: minus 8 % compared to 1990 (as EU)
- Commitment period 2008-2012
- Flexible mechanisms

Swiss Reduction targets 2008-2012

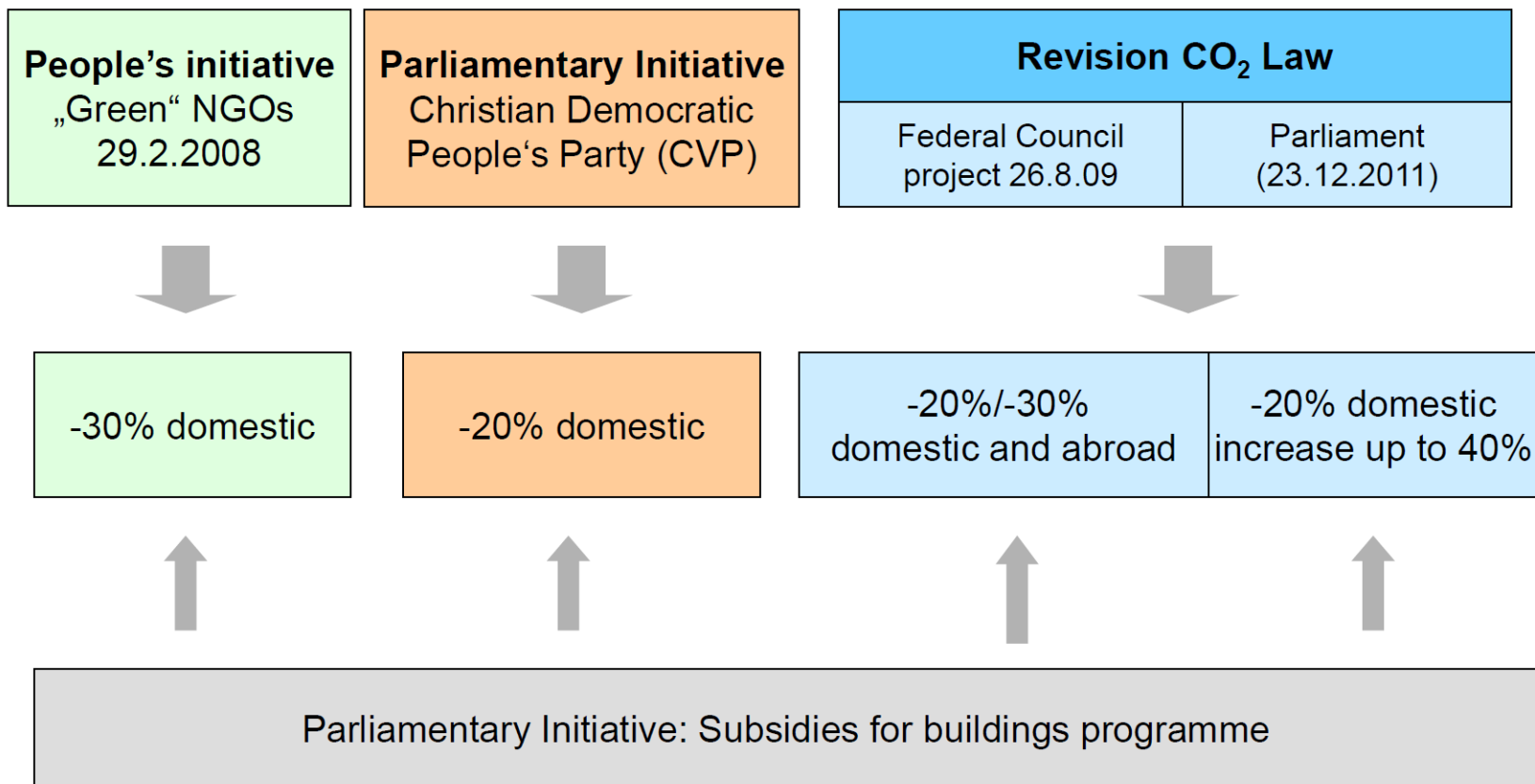


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History of the Swiss CO2 Law

- 1990: Consultations on a CO2 tax fall short because of industry's opposition
- 1992/93: Earth summit in Rio / Framework Convention on Climate Change ratified by Switzerland
- 1996: Submission of CO2 Law giving priority to voluntary action, CO2 tax only subsidiary
- 1997: Kyoto Protocol adopted
- 1999: CO2 law approved by Parliament, entry into force on Mai 1st 2000
- 2003: Kyoto Protocol ratified by Switzerland

Driving forces for regime post 2012



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Reduction target till 2020

CO₂ Law post 2012

6 greenhouse gases + possibly others according to post Kyoto regime

Target: -20% (-40%)

Energy related CO₂

ca. 75%

Other

CO₂

ca. 10%

Other

GHG

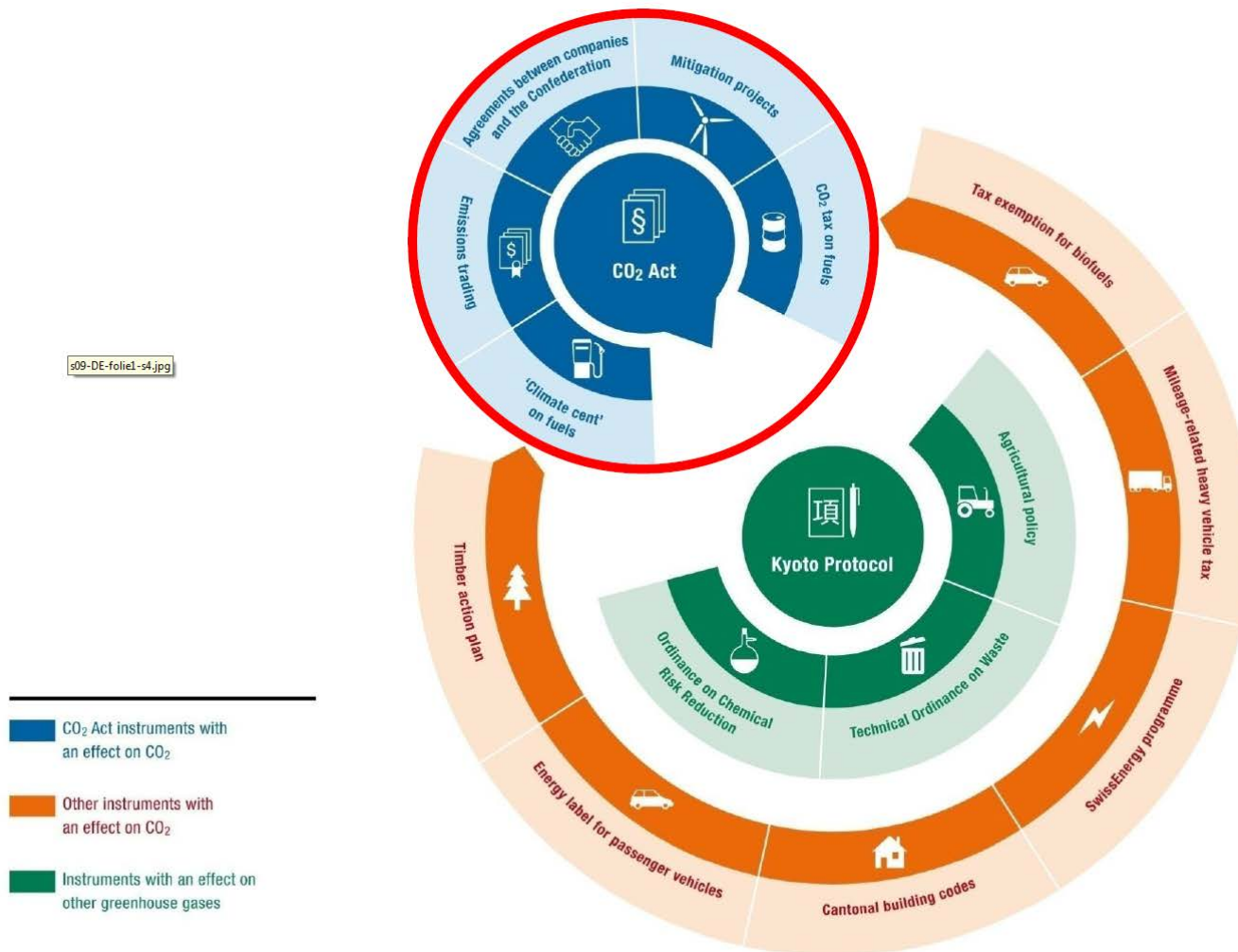
ca. 15%

Transport

Housing

Industry

Swiss Climate Policy instruments



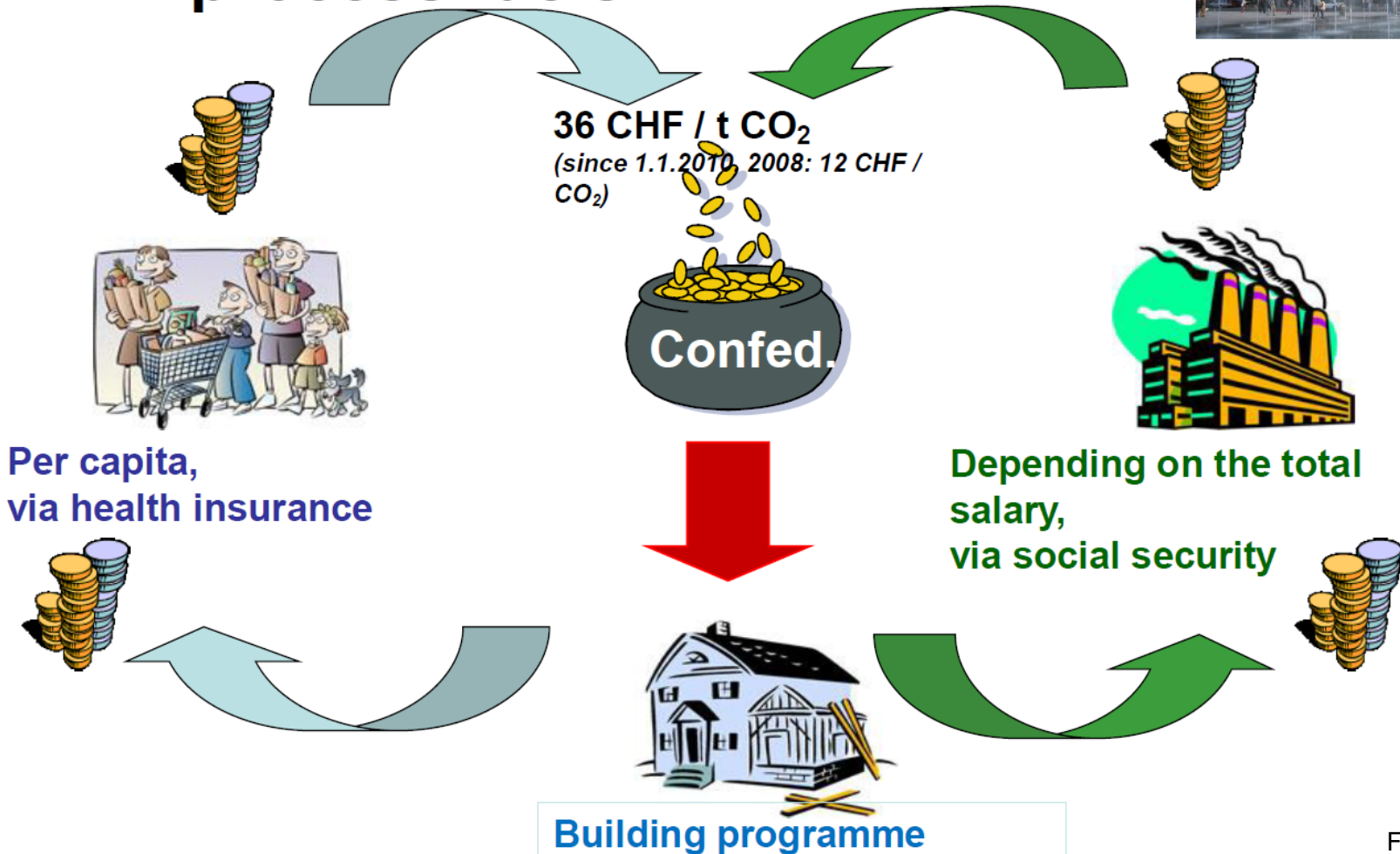
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Instruments within the Swiss CO₂ Act

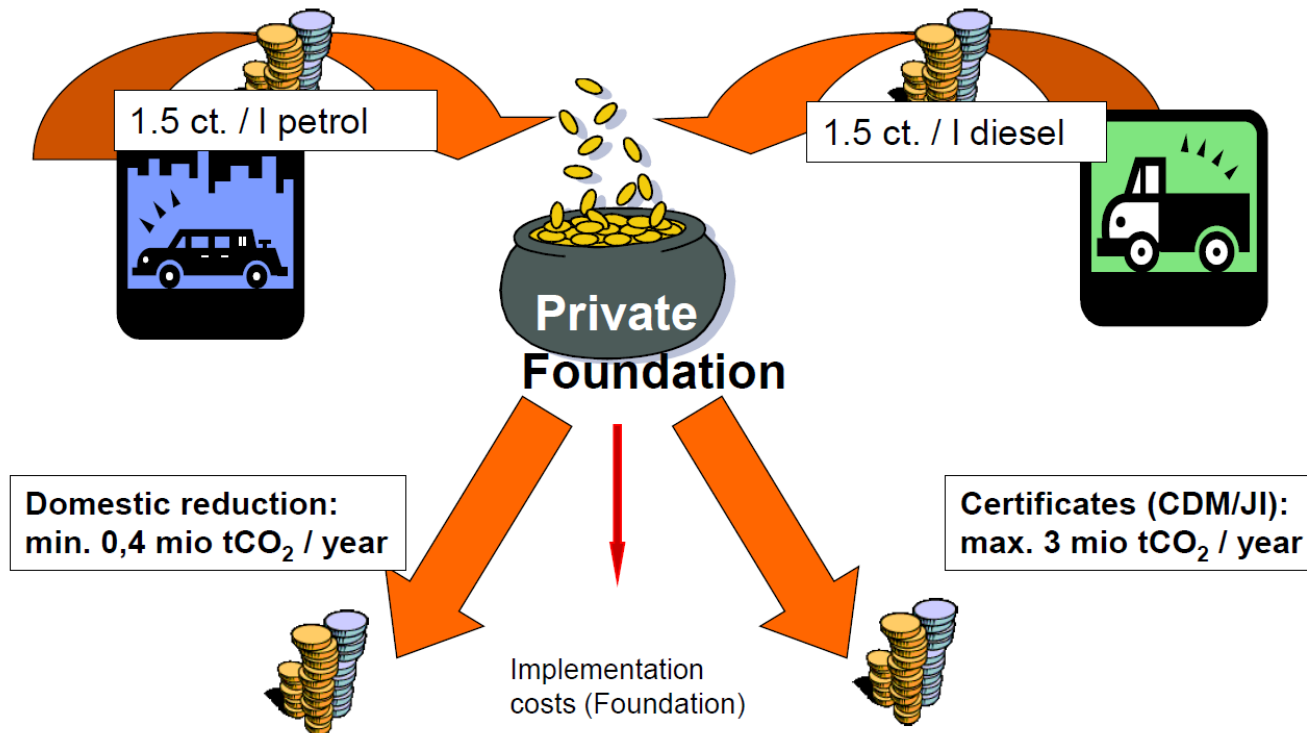
- **Subsidiary CO₂ levy** (“CO₂-Lenkungsabgabe”) on fossil fuels
- **Voluntary action**
 - Since 2001: ~1900 companies participate in action programme mainly to reduce emissions from heating and process fuels; voluntary target with CO₂ levy exemption
 - 2008-2012: „Climate cent“ for transport fuels
- **Emissions Trading Scheme** (cap and trade)



CO₂ levy on heating and process fuels

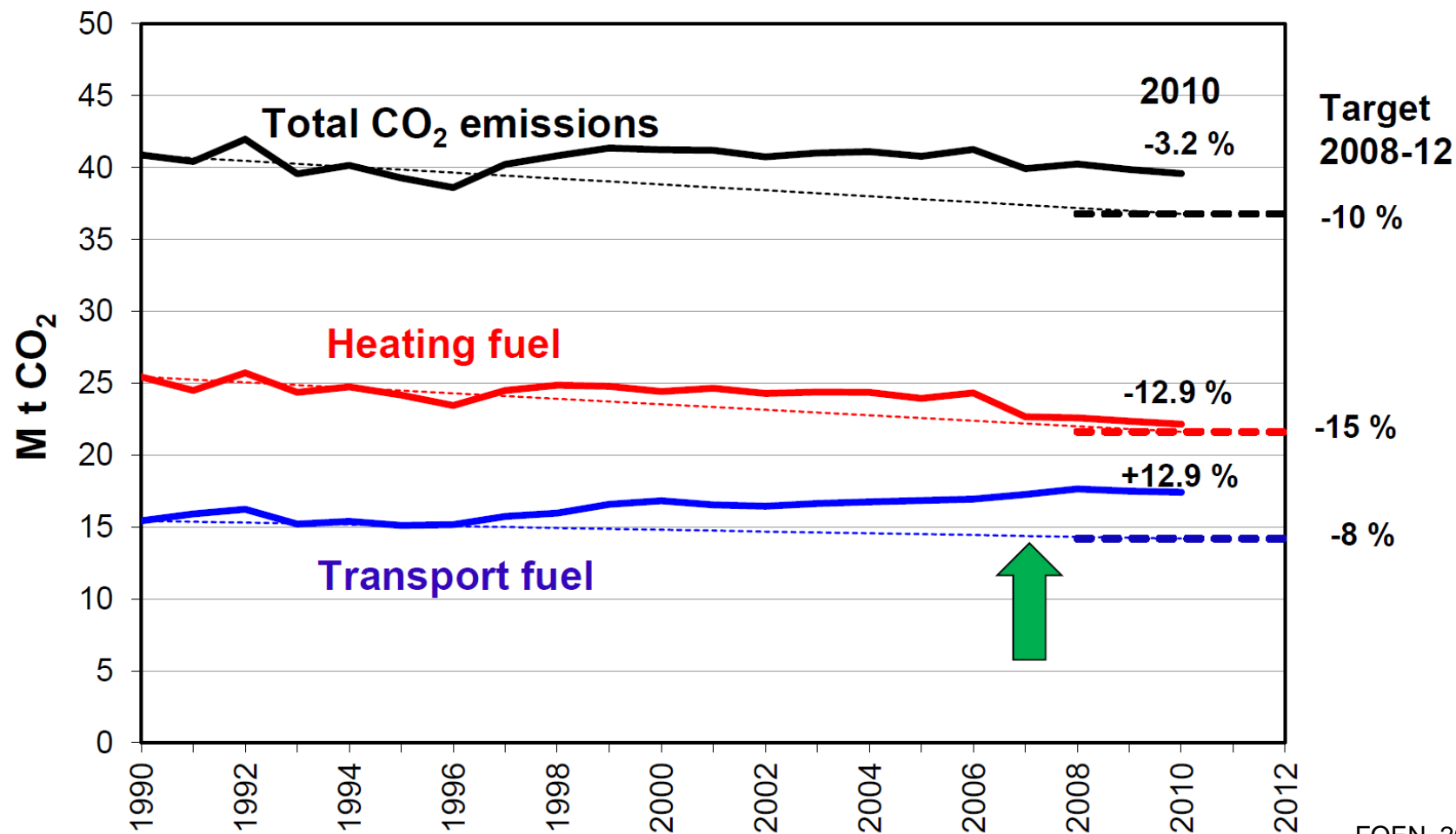


Voluntary action: Climate Cent on Transport Fuels (up to 2012)



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CO2 Law (-10%) until 2012: statistics / targets



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New situation from 2013

- Since 2013: All reductions are to be domestic
- Emission limits for new passenger cars
 - Agreement with car importers to lower specific emissions of new cars
 - On average 130 g CO₂ / km, corresponding to fuel efficiency of about 5,0 l/100 km Diesel and 5,6 l/100 km gasoline
- Swiss offset market:
 - Full compensation of emissions for gas power plants (50% domestically)
 - Obligation to partially offset CO₂ emissions from transport (max. 5 cent per Litre)

From Climate Cent Foundation to KliK

New Foundation for Climate Protection and Carbon Offset (KliK)

- Mandatory compliance for motor fuel importers
- Target: offset average of 5% of emissions from domestic transport
- KliK fulfills obligation on behalf of incumbent importers
- Importers pay KliK cost-covering fee

The Swiss offset market from 2013

- Mainly driven by KliK
- Increasing offset target:
~6.5 Mt up to 2020
- No obligation nor mandate to comply after 2020

Year	Mt CO2
2013	0
2014	0.35
2015	0.35
2016	0.8
2017	0.8
2018	1.25
2019	1.25
2020	1.5

Potential supply of domestic offsets

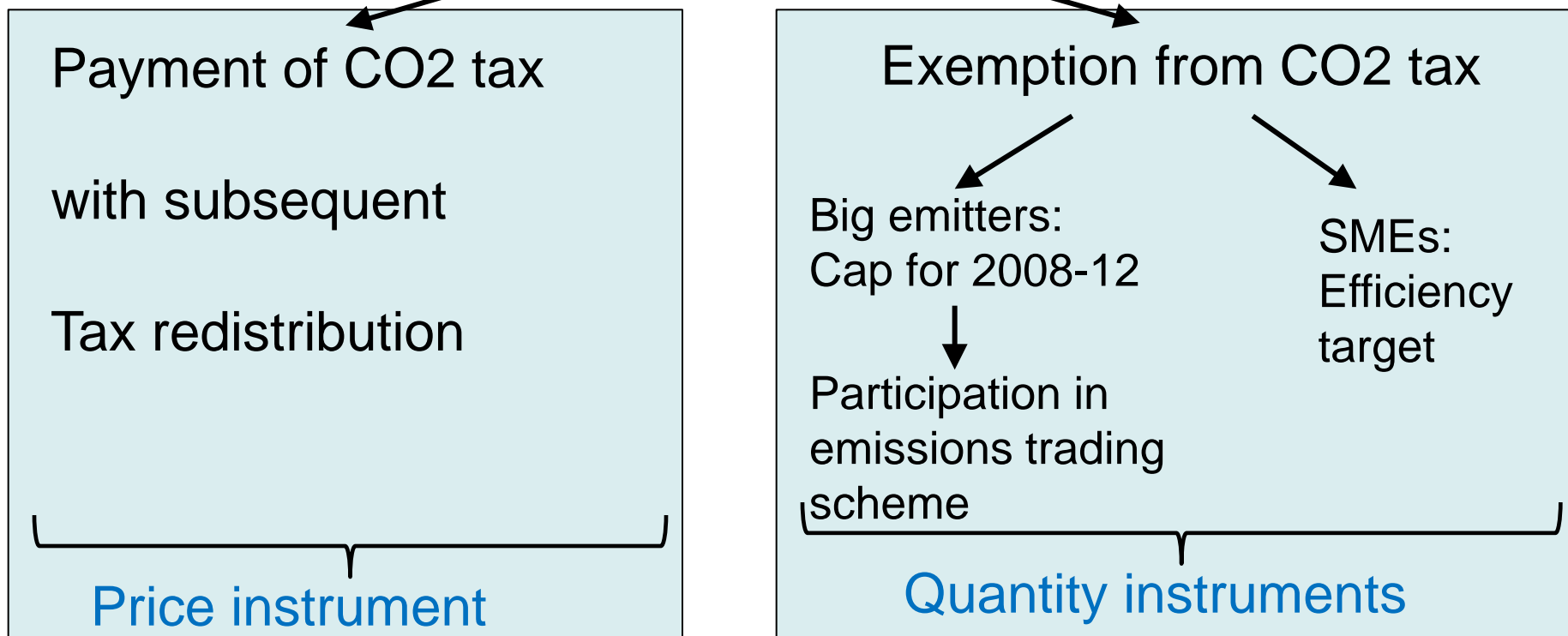
Project type	Potential in 2020 (in tonnes CO ₂ e)	Purchase channel
Individual projects	200'000	Intermediaries
Biofuels	50'000	Programme
Car efficiency	125'000	Programmes
Enterprise heat	100'000	Intermediaries, programme
Road transportation sector	50'000	Programme
Building efficiency	50'000	Programmes
Agriculture	50'000	Programmes
Other GHG	50'000	Intermediaries, programmes
Building timber sink	75'000	Programme
TOTAL	750'000	

Expected prices

- Increasing from 100 Fr./t CO₂ to 150 Fr./t CO₂
- Transaction costs ~ 10 Fr./t CO₂
- Implicit price cap: Sanction for non-compliance
→ 160 Fr./t CO₂ and purchase of CERs/ERUs
on the international market
- Expected cost ~ 1 billion Fr. for compensation
between 2013 and 2020

Swiss Hybrid approach: Tax and Quantity Regulation

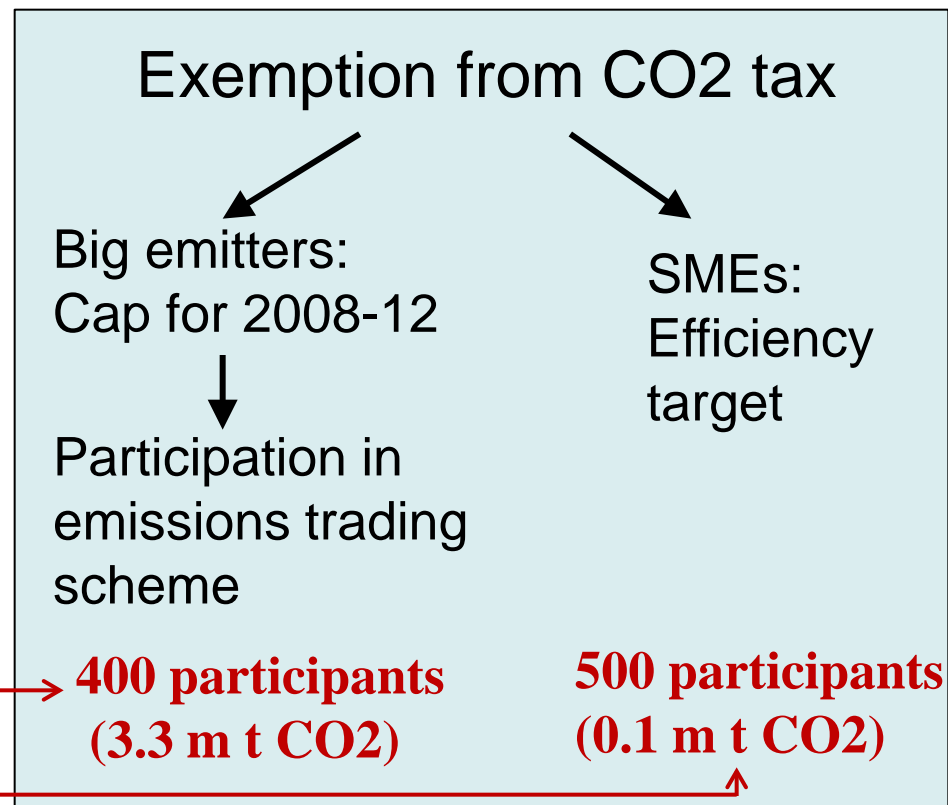
Choice for Businesses



Effects of the Swiss voluntary quantity Regulation

Since 2001:
1'900 voluntary
agreements to reduce
CO₂ emissions

From these 900 are
expected to qualify for
tax exemption



Swiss Emissions Trading Scheme I

- Allocation of allowances (Swiss Units) free of charge according to the agreed reduction target
- Every year the companies must surrender emission allowances according to the emissions of the previous year
- A surplus of emission allowances can be sold or banked for the next commitment period after 2012
- If a company has a shortage of emission allowances, the company must buy the missing allowances
- Sanction in case of non-compliance: retroactive payment of the CO₂ tax for each tonne emitted since exemption was granted

Emissions Trading Scheme II

- Companies can use CDM / JI certificates for their compliance
- Up to 8% of their reduction target is allowed
- Free choice by companies on the acquisition of certificates
- Direct investment in a project
- Fund or Broker
- On an exchange or through a trader

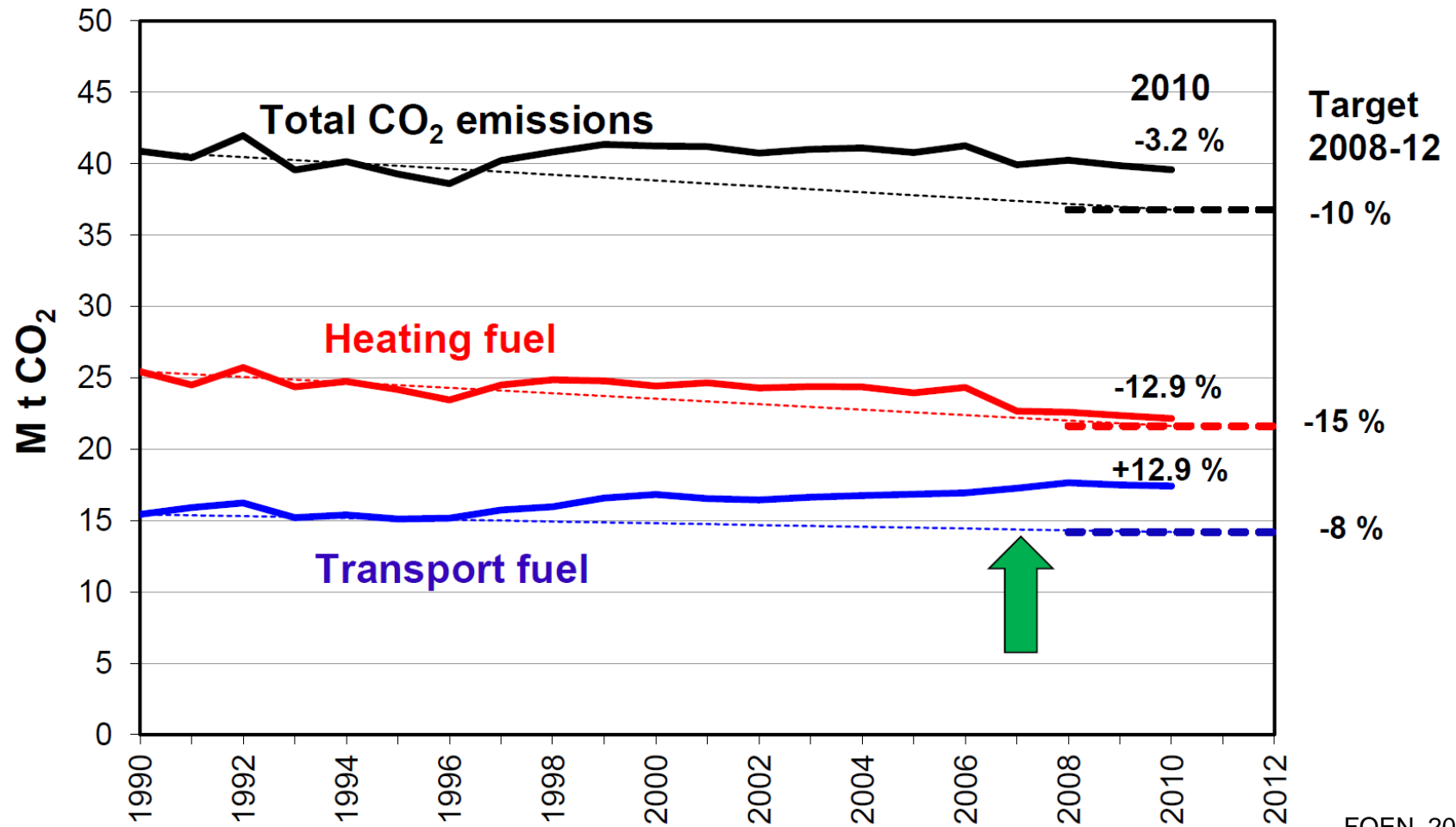
Emissions Trading Scheme III

- Currently about 375 companies are included in the Swiss ETS
- Primarily companies from energy-intensive sectors like cement, glass, ceramics, pulp and paper, steel, etc. have joined the ETS.
- A total of approx. 3.3 mio. emission allowances has been allocated per year
- Very small ETS with very low market activity.
- Linking with the European Union Emissions Trading Scheme as per 2014 is under consideration.

Building programme (since 2010)

- About 40% of Switzerland's CO₂-emissions are emitted in the building sector
- 1.5 Mio. Buildings are in urgent need of refurbishment but only 1% of the buildings are re-furbished yearly
- Constraints: investment costs, administrative costs, lack of knowledge etc.
- High potential for CO₂ reductions + energy reductions
- Funds: 200 [300 after 2012] Mio. / year + cantonal budgets (~100 Mio.)
- CO₂-reduction 2020: 2,2 Mio. t of CO₂eq

CO2 Law (-10%) until 2012: statistics / targets



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