

Swiss climate policy

Geneva, January 26, 2005



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Outline

- Why reduce Switzerland's GHG emissions?
- History of Swiss climate policy
- Instruments of Swiss climate policy
- Assessment of Swiss climate policy



WHY REDUCE SWITZERLAND'S GHG EMISSIONS?

Swiss GHG emissions are negligible

0.3% of Annex I countries' emissions
< 0.2% of world GHG emissions

At first analysis, it is economically irrational for Switzerland to reduce its GHG emissions alone

- Garrett Hardin's "Tragedy of the commons" (*Science* 1968)
- Overgrazing / Pollution haven / Race to the bottom

5 reasons why Switzerland should reduce its GHG emissions without waiting for worldwide policies

1. A more efficient economy
2. Cleaner air and other co-benefits
3. Developing exportable solutions
4. Prompting an international response
5. Stewardship

A more efficient economy

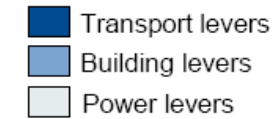
Our various simulations show:
Switzerland can reduce its GHG
emissions by over 50% by 2050 at
costs between 1 and 2% of national
consumption



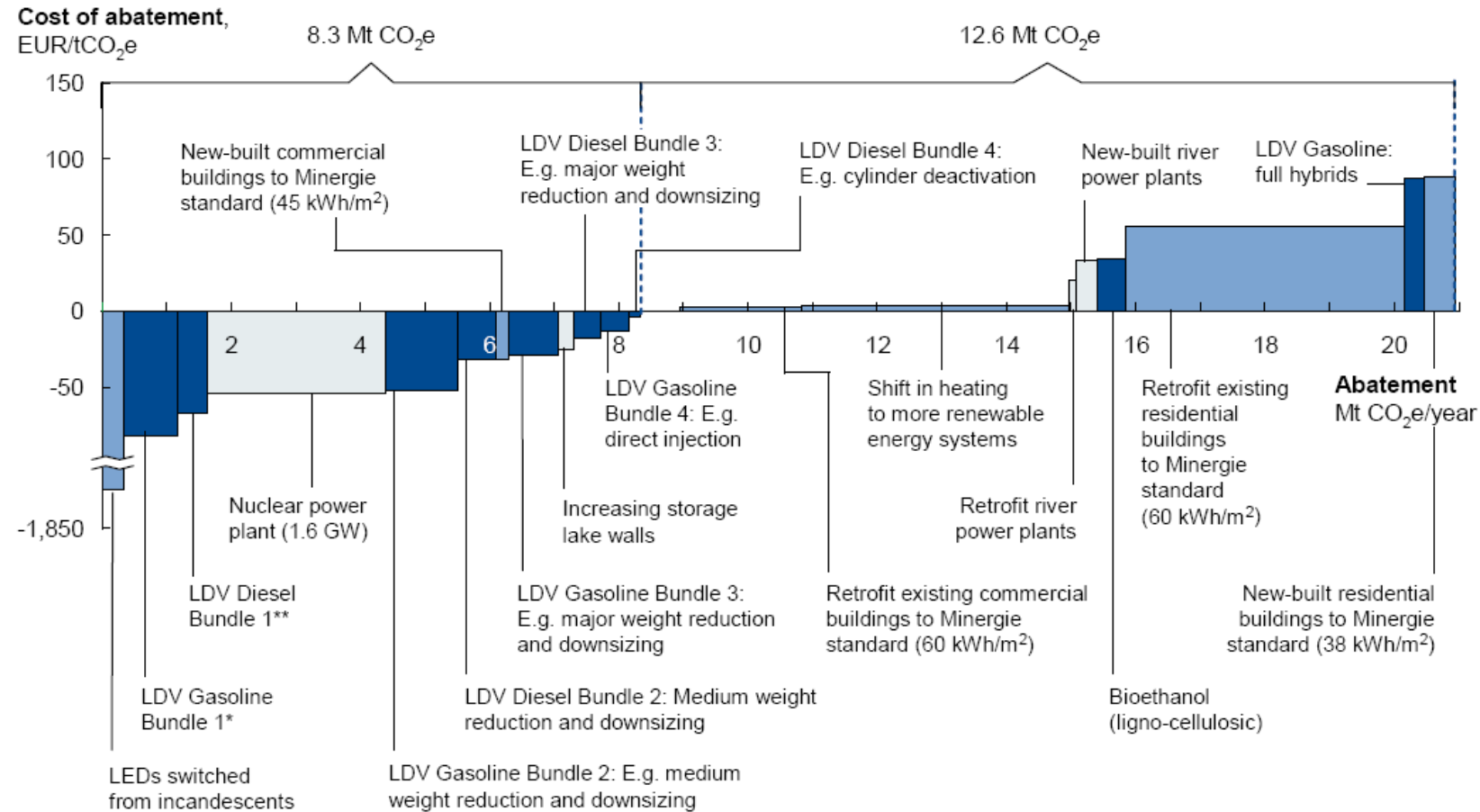
A more efficient economy

Overall Swiss GHG abatement cost curve: base case

2030, measures with costs below €100 per tonnes of CO₂



McKinsey, Swiss Greenhouse Gas Abatement Cost Curve, 2009



* LDV Gasoline Bundle 1: Including variable valve control, engine friction reduction (mild), low rolling resistance tires, tire pressure control system, mild weight reduction

** LDV Diesel Bundle 1: Including Torque oriented boost, engine friction reduction, low rolling resistance tires, tire pressure control system, mild weight reduction

Cleaner air and other environmental co-benefits

Stefan Felder and Reto Schleiniger (2002):
The difference between domestic benefits and costs is maximised in 2010 if Switzerland reduces its CO₂ emissions by 30 to 50% relative to 1990



Developing exportable solutions

- President Leuenberger proposed a World CO₂ tax at COP 12 in Nairobi (2006)
- Show how efficient climate policy works
- Develop energy and abatement solutions and export the know-how (*clean tech*)

Swiss Green Embassies



<http://www.swisscleantech.ch>

How can Switzerland help?

- **"International cooperation is a critical enabler** for developing countries and vulnerable regions to strengthen their action for the implementation of 1.5°C-consistent climate responses, including through enhancing access to finance and technology and enhancing domestic capacities, taking into account national and local circumstances and needs (*high confidence*)" (SR15, SPM D.7.3)
- Switzerland can help with technological but also organizational know-how

Prompting an international response

- The Montreal Protocol on Substances that Deplete the Ozone Layer is "perhaps the single most successful international agreement to date" (Kofi Annan)
- At the end of the 1970s, USA, Canada and Scandinavian countries had banned CFC propellants; in 1987, 24 countries signed the treaty; today: 196 countries!



Stewardship

GHG emissions of Swiss population:
5.8 tCO_{2eq}/hab. (2016)

About 12 tCO_{2eq} with imports

Thus, the 39 MtCO_{2eq} emitted **in**
Switzerland (2016) become 100 Mt when
emissions **for** Switzerland are estimated

World average: 6.8 tCO_{2eq}/hab. (2014)

But we could pay for reductions abroad...



Image: <http://projectgreenstar.info/?p=302>

Stewardship

We tend to underestimate how we are observed by those who we also expect to mitigate their emissions

Yet Malawians are not just angry at their government. “There is so much hypocrisy around climate change,” says Isaac Ali, an official in Zomba. “Donor countries give us money to plant some trees, but they keep polluting.” It is too much to expect Malawi to carry the burden for changes it did not cause, he argues. “They’re using poor countries to cleanse their own sins.” ■

The Economist 21.09.2019. p.46



FIRST STEPS OF SWISS CLIMATE POLICY (1990-1999)

History (I)



The Energy 2000 program

- Program launched in 1990
- Goals: to reduce the dependence on imports of fossil fuels and to reduce energy consumption
- Means: recommendations, financing of research, pilot and demonstration projects, encouragement of labels and ISO 14001 certification, subsidies for energy conservation investments and for the production of renewable energy

Success! Decrease of share of fossil energies in total energy use and stabilization of CO₂ emissions

History (II)

1994 project of a CO₂-tax law:

- A carbon tax to be introduced in 1996, on all fossil fuels imported and used as motor, heating or process fuels
- Goal: to meet Switzerland's Rio 1992 pledge
- Gradual tax: CHF 12/ton CO₂ in 1996, CHF 24 in 1998, CHF 36 from 2000 (CHF 44, CHF 89 and CHF 123/ton carbon)
- Exemption of industries with high fossil energy consumption
- 1/3 of revenues for subsidies to environmentally friendly measures, 2/3 recycled (3/4 to households, 1/4 to businesses)

Project withdrawn under strong opposition from the major political parties and economic sectors

Critiques: the macroeconomic consequences of the tax (international competition); the impact on different income groups; and the mode of revenue recycling (against subsidies)

History (III)

1997 project of a CO₂ law:

- Goals: to reduce CO₂ emissions by 10% in 2008-2012 relative to 1990 (process/heating fuels: -15%, motor fuels: -8%)
- Voluntary measures first, supplementary CO₂ levy, if necessary, at the earliest in 2004
- Different CO₂ levy rate for process/heating fuels and motor fuels
- Introduction of levy is decided by Federal council, but its rates are approved by Parliament
- Possibility to take into account: results achieved, economic situation, price of fossil fuels
- Maximum: 210.-/tCO₂ (770.-/tC, 6× more than in 1994 project!)
- Full recycling of revenues, prorata of households' and firms' contributions
- No exemption without negotiated agreement

This project is approved almost without difficulty: law of 1999, in force from 1st May 2000 till 31st December 2012

History (IV)

- The project sailed through consultation and Parliament without much opposition; no referendum
- The economy had participated in the preparation of the Law, including the differentiated targets
- The debate focussed on how much time should be granted for VAs before deciding on the CO₂ tax and who would take the decision to implement the tax and set its rate – Government or Parliament?
- Parliament is presumably more sensitive to the interests of the economy, but its interference reduces the credibility of the tax ‘threat’



FIRST PERIOD (2000-2012)

History (V)

Energy law of 1998:

- Goals: (1) to guarantee safe, diversified and environmentally friendly supply of energy, (2) to conserve energy, (3) to promote domestic renewable energy sources
- Implemented through the SwissEnergy program
- More stringent measures are possible if the results are insufficient: regulation, economic instruments
- Subsidiarity with local authorities and private organizations, in particular the Agencies of the economy

History (VI)

SwissEnergy program:

- Launched in 2001
- Goals for 2010: (1) to lower fossil energy consumption and CO₂ emissions by 10% relative to 1990, (2) to slow down the growth of electricity consumption to 5% relative to 2000, (3) to raise the share of renewable energies, (4) to prevent the decline of the share of hydropower
- Mainly to increase the energy efficiency of appliances and vehicles
- If the efficiency gains are insufficient, the Federal Council may impose requirements on products

Conventions vs formal commitments

- Target conventions are promises made to the Confederation before the introduction of the CO₂ tax, designed to avoid its introduction. Legal basis: Energy law (SwissEnergy)
- Formal commitments are negotiated with the Confederation after the introduction of the CO₂ tax, designed to get exemption. Legal basis: CO₂ law

Voluntary Approaches in Climate Policy

Andrea Baranzini and
Philippe Thalmann

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Voluntary Approaches in Climate Policy



Edited by
Andrea Baranzini and Philippe Thalmann

NEW HORIZONS IN
ENVIRONMENTAL
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Terminology Swiss

Freely consented measures

Target conventions

Formal commitments

Energy programs

International

Voluntary approaches

Self regulation

Negotiated agreements

Public voluntary programs

Main characteristics of target conventions

- Written promises to reduce one's energy use
- Any firm or group of firms may sign a convention
- Target for energy efficiency (= ratio of energy use to an activity indicator) by 2010, with a path
- Target sensitive to individual conditions and possibilities, after audit
- Annual report with audit
- No penalty if target is not met

Large participation for target conventions

- Over 1,600 firms signed target conventions
- Three large conventions signed by 2004: car importers, cement industry, and six groups of 120 firms through Energy Agency of the Economy
- The target conventions were not painful
- But administrative costs were huge

Target convention with car importers

- 1st convention, between association of car importers (*Auto Schweiz*) and Federal counselor Leuenberger, February 2002
- Pledge: to reduce mean fuel consumption of imported cars from 8.4 l/100km in 2000 to 6.4 l/100km by 2008
- This could reduce CO₂ emissions by 12 to 24% (depending on share of diesel)
- Diesel cars emit 15% less CO₂, but dangerous PM (without filters)
- Concerns only new cars; no consideration for growing mileage of car drivers
- Could at best stabilize CO₂ emissions at the 2000 level, which was 7.8% above 1990

Not convincing at all !

Context of the convention with *Auto Schweiz*

- 1995 Federal Ordinance on fuel efficiency of cars : if specific fuel consumption of newly registered cars does not decrease by 15% by 2001, the target becomes a ceiling and the federal council introduces regulation
- Result: decrease from 8.95 l/100 km in 1996 to 8.29 l/100 km in 2001, i.e. -7.5%
- Reaction: EnergyLabel introduced on 1.1.2003 and the target convention with *Auto Schweiz*
- On 7 September 2004, the Federal Office of the Energy announces proudly: « The EnergyLabel for cars – a great success and many winners! »

A rather accomodating label !



La catégorie d'efficacité (valeur auxiliaire pour la consommation):

A	B	C	D	E	F	G
Excellent	Très bon	Bon	Moyen	Insuffisant	Mauvais	Très mauvais

Émissions de CO2:

l'UE et l'industrie automobile entendent limiter les émissions de CO2 à **140 g/km**
 En ce qui concerne les véhicules à **gaz monovalents** et les véhicules **bivalents**, seules les performances de consommation pour le gaz sont indiquées - consommation de gaz naturel en m3 (CNG) / 100 km

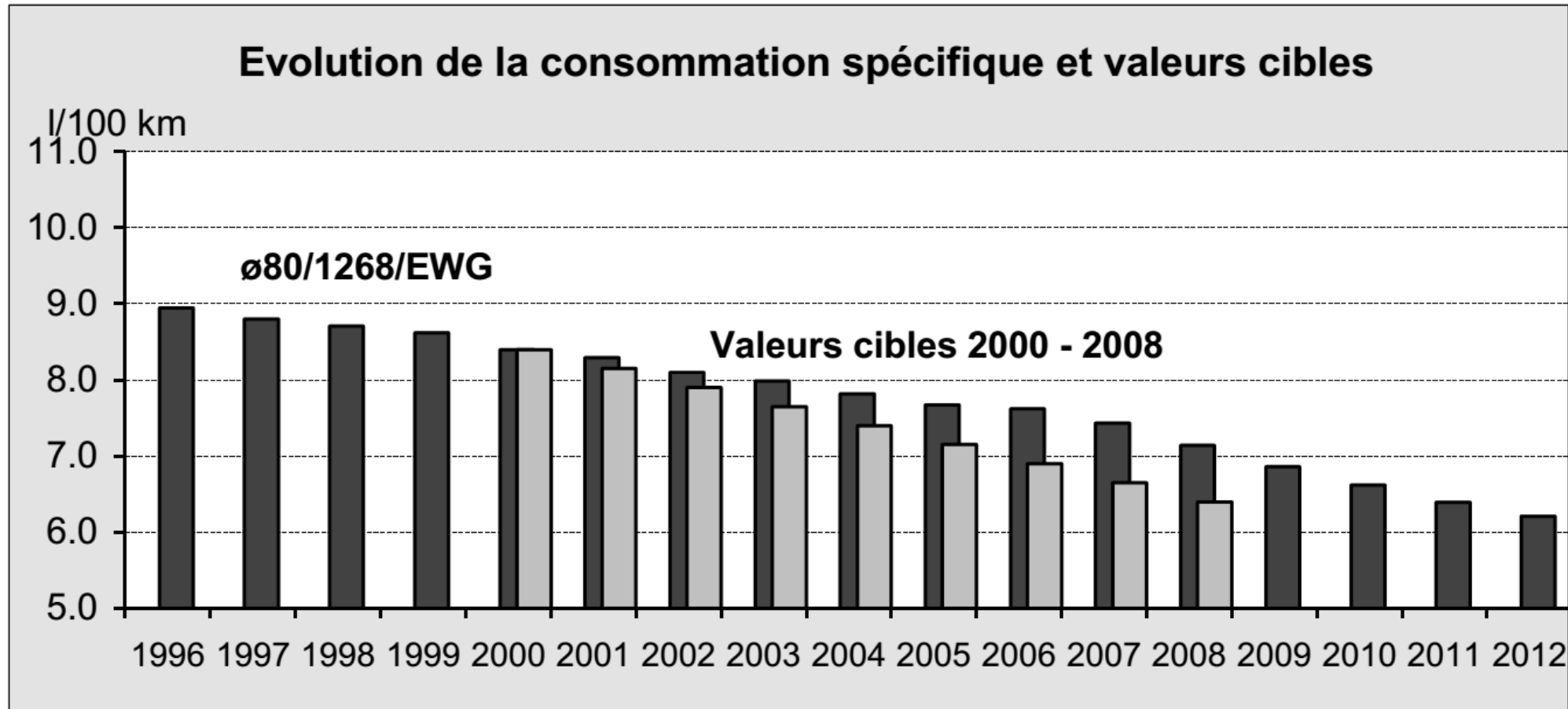
Marque	Modèle	Version	Consom- mation [l/100km] resp. [m3/100km]	effi- cience	CO2 [g/km]	Filtres à parti- cules
KIA	SORENTO	2.5 CRDI Family	7.7	A	204	Non
KIA	SORENTO	2.5 CRDI EX	7.7	A	204	Non
LAND ROVER	DISCOVERY	2.7d V6 S	9.4	A	249	Non
LAND ROVER	DISCOVERY	2.7d V6 SE	9.4	A	249	Non
LAND ROVER	DISCOVERY	2.7d V6 HSE	9.4	A	249	Non

The limits of VAs based on information and persuasion

New car registrations

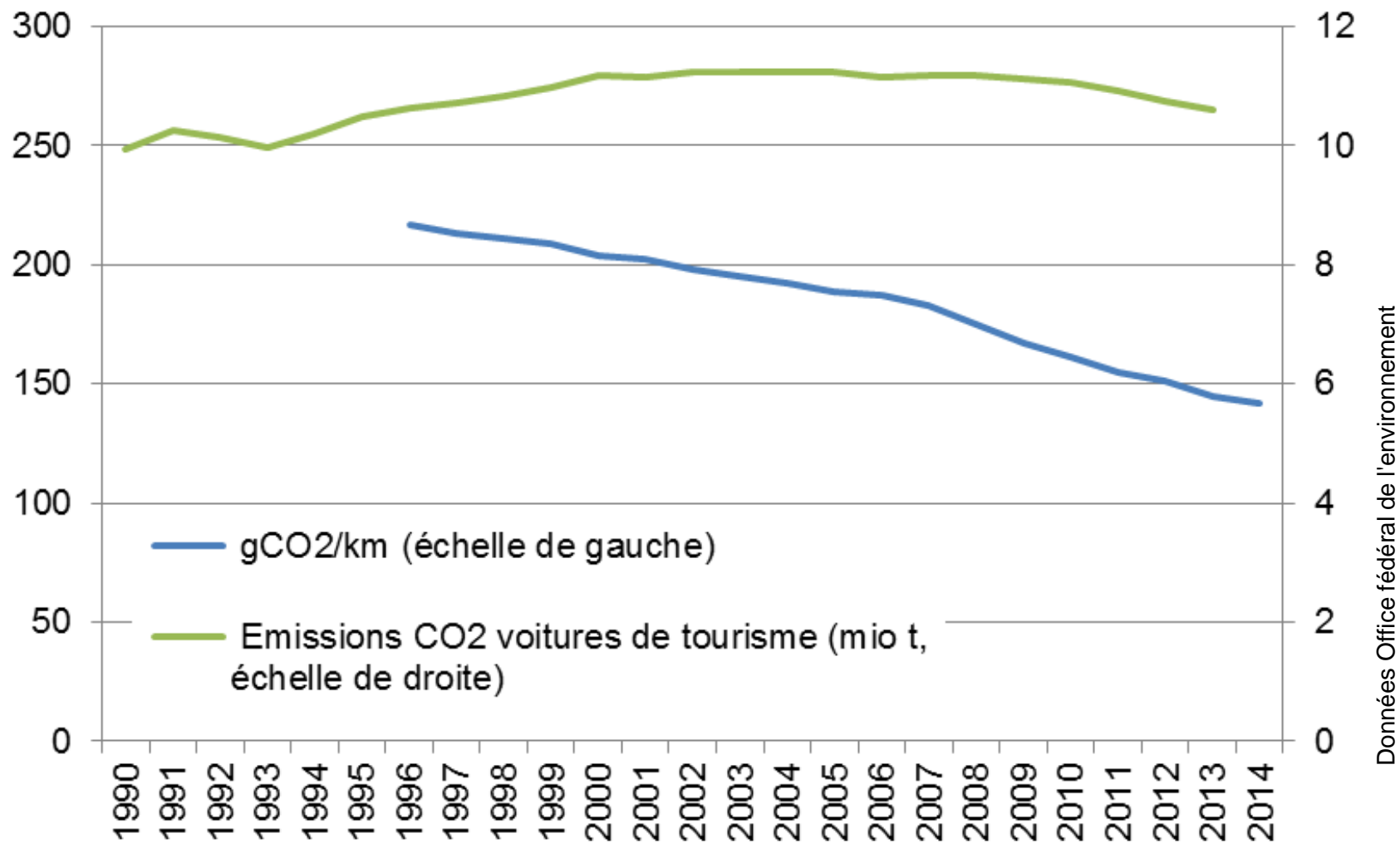
	% diesel	% 4x4	% 2'500+ cm ³	% label A or B
2002	17.8	19.0	14.2	
2003	21.5	20.0	15.4	
2004	25.9	20.7	15.5	
2005	28.4	21.8	15.0	52.6
2006	30.0	24.8	16.3	51.1
2007	32.5	26.0	15.7	42.6
2008	32.4	24.9	13.6	44.5
2009	29.6	26.0	11.6	53.4
2010	30.5	27.9	10.4	49.7
2011	33.3	28.9	9.7	54.8
2012	37.4	33.7	10.1	32.4

The target keeps getting missed



Auto-suisse, 17ème rapport sur la réduction de la consommation normalisée de carburant des voitures de tourisme 2012 dans le cadre de l'Ordonnance sur l'énergie, Berne, juin 2013

Incidence on CO₂ emissions



Target convention with cement industry

- 2nd convention, between Cemsuisse and Federal counselor Leuenberger, February 2003
- Pledge: to reduce CO₂ emissions from burning fossil fuels by 44.2% in 2010 compared to 1990
- How? By replacing coal and oil by wastes, whose combustion is not counted as a source of CO₂ under the law
- This industry already reduced its emissions by more than 35% between 1990 and 2000

Two birds killed with one stone: less waste to incinerate and less burning of fossil fuels

The target conventions organized by the Energy Agency of the Economy

- 3rd convention, between EAE and federal council, in April 2004
- 45 groups of some 600 firms emitting 2.4 mio t CO₂ signed conventions with the EAE by 2004
- Pledge to reduce emissions by 13.1% in 2010 relative to 1990
- Their emissions represent 6.3% of Swiss CO₂ emissions in 1990
- This convention plus that of Cemsuisse: 40% of CO₂ emissions by industry, which accounts for a about one fourth of CO₂ emissions from heating and process fuels

Very far from the 15% reduction for process and heating fuels

Long and tedious process

Why did firms sign target conventions ?

- High administrative costs vs. little direct gain
 - no greater threat of tax than on free-riders
- So why did they sign ?
 - stewardship
 - subsidies for energy audits
 - coordination by energy agencies
 - targets set to be economically feasible
 - no penalties for non compliance (cheap signals)
 - best position for tax exemption should the tax come

A constituency for the CO₂ levy !

History (VII)

- By 2004, it was obvious that the targets would not be met, particularly for motor fuels
- There was no way individual pledges to reduce emissions by 15% would lead to an overall reduction of emissions by 15%
- Huge administrative costs with the individual target conventions
- A constituency for the carbon tax?
- The Federal council delayed preparation of the CO₂ tax; it was only approved by Parliament in December 2006, too late for 2007

History (VIII)

- CO₂ tax: 12.-/ton since 1.1.2008; 24.- in 2009 if 2007 emissions declined by less than 10% relative to 1990; 36.- since 2010 if 2008 emissions declined by less than 13.5%, then 14.25% for following years
- Actual: 12.- in 2008 and 2009, 36.- in 2010-2012
- 36.-/t CO₂ = 9.5 ct./liter heating oil, whose price was 87 ct./l on average in 2010-2013 (incl. CO₂ tax), so it was a 15% increase
- 36.-/t CO₂ = 0.71 ct./kWh methane, whose price was 9.7 ct./kWh on average in 2010-2013 (incl. CO₂ tax), so it was a 12.6% increase
- The revenues of the 36.- tax allow redistributing 50.-/head and 1.10/1,000.- salaries to firms
- Tax on heating and process fuels only; for motor fuels: 'climate cent'

The 'climate cent'

- In 2004, the Swiss Oil Association proposed the 'climate cent' as a last-minute 'target convention'
- 1.5 ct/l gasoline and diesel from 1st October 2005 until 31st August 2012 to feed a fund that buys cheap CERs abroad and subsidises energy conservation and substitution inland
- Goal: to offset the excess emissions from motor fuels
- This nearly killed the CO₂ tax, particularly as Parliament was about to decide a 'climate cent' on heating fuels and keep the tax for industry fuels only (with many exemptions)
- Government and Parliament accepted the 'climate cent' even though it was clearly not a target convention (no reduction of emissions from motor fuels), contrary to the spirit of the Kyoto protocol (too much foreign abatement), and a sort of 'private tax'

The influence of (temporarily) high world oil prices

- Strong rise in oil prices on world markets in the summer of 2005
- That gave momentum to long-time opponents of a CO₂ tax (in effect, of any climate policy), who could claim that the higher fuel prices would lead to sufficient energy conservation and CO₂ abatement
- Brief discussion of a CO₂ tax with variable rate, depending on world oil prices, but legal barriers prevent that

Main characteristics of formal commitments (I)

- Formal contract, trading a set reduction in CO₂ emissions against total exemption from the tax
- Reserved for large firms or groups of firms emitting at least 250,000 tons CO₂ per year or for which the tax would exceed 1% of sales revenues
- Target for mean 2008-2012 CO₂ emissions, with reduction path
- Target sensitive to individual conditions and possibilities, growth perspectives and prior efforts
- Not necessarily the same effort as under the tax, but some correspondence

Main characteristics of formal commitments (II)

- Annual report, with audit
- Possible revision after change in activities → relative target (like energy efficiency) and not absolute as in CO₂ law
- Target must be met by signing association; if it is not, it is verified for each member; those who did not keep their commitment, without due justification, must pay the CO₂ tax on all their emissions since signing the formal commitment
- Emissions certificates are possible, even with international trading

Utilisation of formal commitments

- More than 1000 companies exempt from the CO₂ tax thanks to a formal commitment between 2008 and 2012
- 440 under ETS regime ("energy model", see below)
- The others (smaller) participated in the simplified "enterprise" or "SME" models
- The "ETS" companies received certificates free of charge for 16.6 million tonnes of CO₂; they emitted 13.6 million tonnes
- About 80% of "ETS" companies did better than their targets and ended up with excess certificates
- More than 85% of companies outside the ETS achieved their objectives
- Companies that did not meet their objectives were able to buy certificates from others very easily

History (IX)

- **TEP**: national register for companies exempted by formal commitments, 2008-2012 (<https://www.national-registry.ch>); 440 participants; unlisted trading platform organised by the Bern Cantonal Bank since November 2009 (very little used)
- **Buildings Program**: CHF 133 million per year since 2010, from CO₂ tax revenues + various cantonal contributions totaling CHF 280-300 million, to encourage the energy renovation of the building envelope and the use of renewable energy

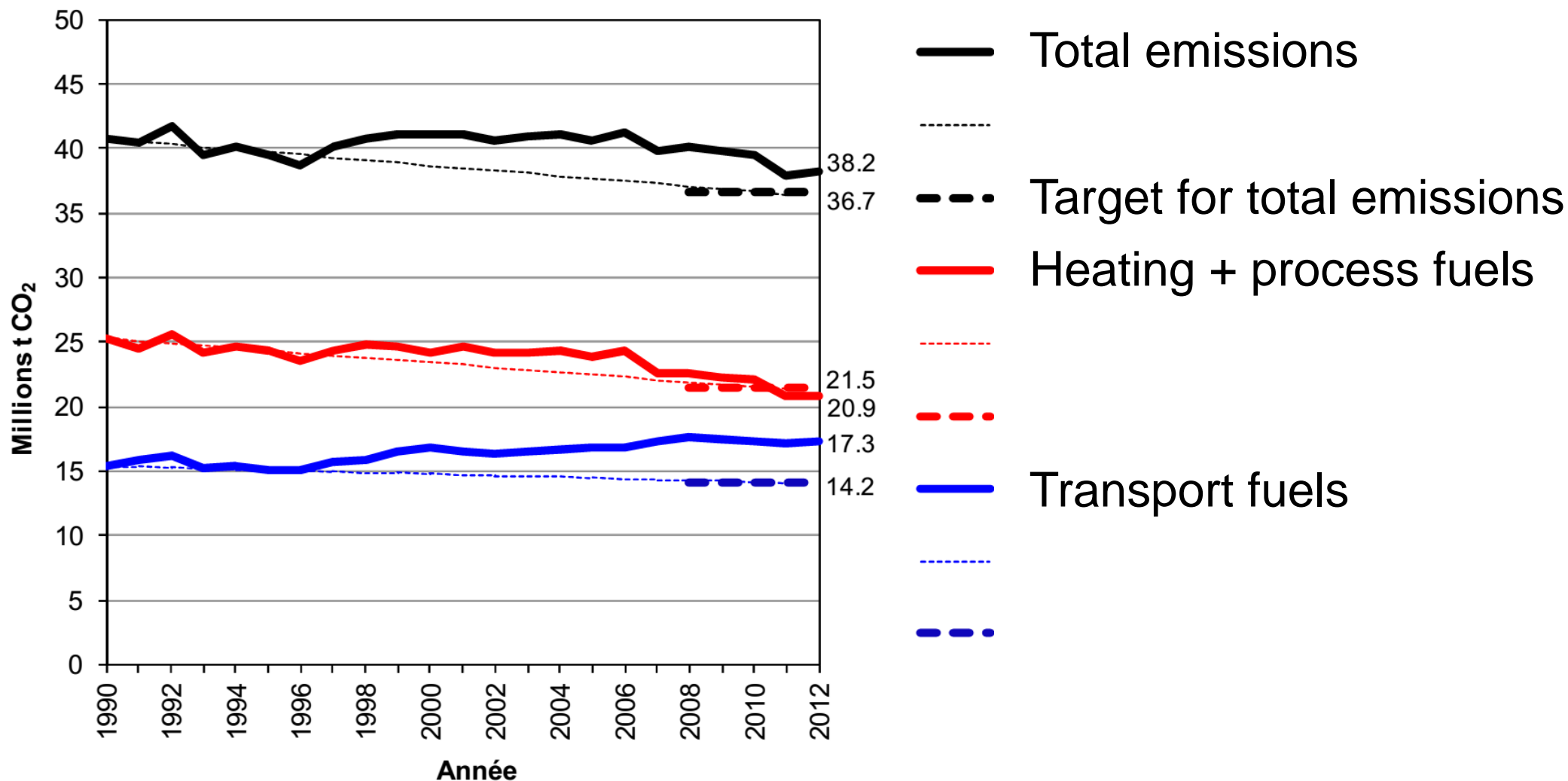
Main measures of Swiss climate policy in brief

- Energy conservation programs (since 1990): information and encouragement; cooperative approach, trust building, learning-by-doing
- Energy law (1998) and CO₂ law (1999): first free pledges, then tax on heating and process fuels (2008); to demonstrate that voluntary approaches are not sufficient and to create support for the CO₂ levy
- International activity: COPs, CDM, JI
- Targeted revenue recycling since 2010 for energy improvement of buildings (with cantons)

ASSESSMENT OF FIRST PERIOD



Effectiveness: targets and reality compared



Fed. Office of Env., Emissions according to CO₂ law and to Kyoto Protocol, last actualisation: 03.07.2013

Effectiveness: targets barely met, thanks to offsets

Domain	Target in CO ₂ law (relative to 1990)	Reality (mean 2008-2012)	Including purchased certificates
Heating and process fuels	- 15%	- 14.1%	- 14.5%
Transport fuels	- 8%	+ 13.0%	- 6.4%
Total	- 10%	- 3.8%	- 11.4%

Fed. Office of Env., Emissions according to CO₂ law and to Kyoto Protocol, last actualisation: 10.04.2014

NB: the sectoral objectives of the law would have led to a total decrease of 12.4%, not 10%.

Effectiveness

- Even if the overall objective has just been achieved, 60% of it is due to reductions purchased abroad
- It is mainly in transport fuels that the target was completely missed
- A sustained rise in oil prices and economic stagnation helped meet the targets
- Also important contributions from measures in other areas/for other reasons (transport, energy, spatial planning, agriculture, waste, etc.)
- A great deal of time was lost in the political process (at least 12 years); this destroyed goodwill and technology leadership and now makes it harder to meet future targets

Cost-efficiency (1)

- Cost-efficiency means that pollution is reduced at the lowest cost
- The choice of target must already be efficient
- Negotiating targets by sector, even if they are the same, does not lead to the reduction of CO₂ emissions at the lowest cost
- Nor does setting arbitrary and different targets for heating/process fuels and transport fuels
- The uniform CO₂ tax on heating/process fuels could have led to equal marginal abatement costs – but there were the many exemptions
- Nearly no tax on transport fuels

Cost-efficiency (2)

- For companies exempt from the CO₂ tax, how cost-effective the effort allocation is depends on the targets set out in the agreements
- There is no guarantee in the agencies' approach that this allocation was cost-efficient
- It is even less so since a large proportion of the emitters did not even participate in the conventions

Equity

- Motorists were spared: concern to levy a high CO₂ tax on commuters who have few opportunities to reduce their fossil fuel consumption
- Tenants (60% of households) have the same problem, but they have not been spared; however: Buildings program, starting in 2010, to encourage energy renovations and reduce their cost

Feasibility (1)

- Voluntary and regulatory approaches generate large administrative costs and yield inefficient outcomes, but are politically necessary
- Thanks to the architecture of the CO₂ Act, more than a third of the Swiss economy has made serious commitments to reduce its emissions
- The circle of companies that support an effective climate policy has grown (without their 'old' organisations)

Feasibility (2)

- To be credible, the exercise of the sanction must be automatic when a quantifiable intermediary target is missed
- The Parliament used any means to postpone and limit the CO₂ tax (climate cent 'silver bullet' and the 'safety valves' of the CO₂ Law)
- Where governments cannot credibly commit, policies built on threat must be replaced by gradually building a consensus for tough measures
- Some political damage
- What happens in the world is crucial (oil price, economic activity, international climate policy, particularly European Union)

Feasibility (3)

Is full revenue recycling for an incentive tax required?

- Most households would get more tax revenue back than the increase in what they would pay on heating and motor oil, but that is not sufficient to generate strong political support
- Analysis of the votes on three energy-tax proposals in September 2000 shows that the acceptance of green taxes is little sensitive to the mode of revenue recycling (Thalmann, 2004)
- If anything, voters rather accept a tax when its revenues are redistributed to many different beneficiary groups in exchange for environmental efforts

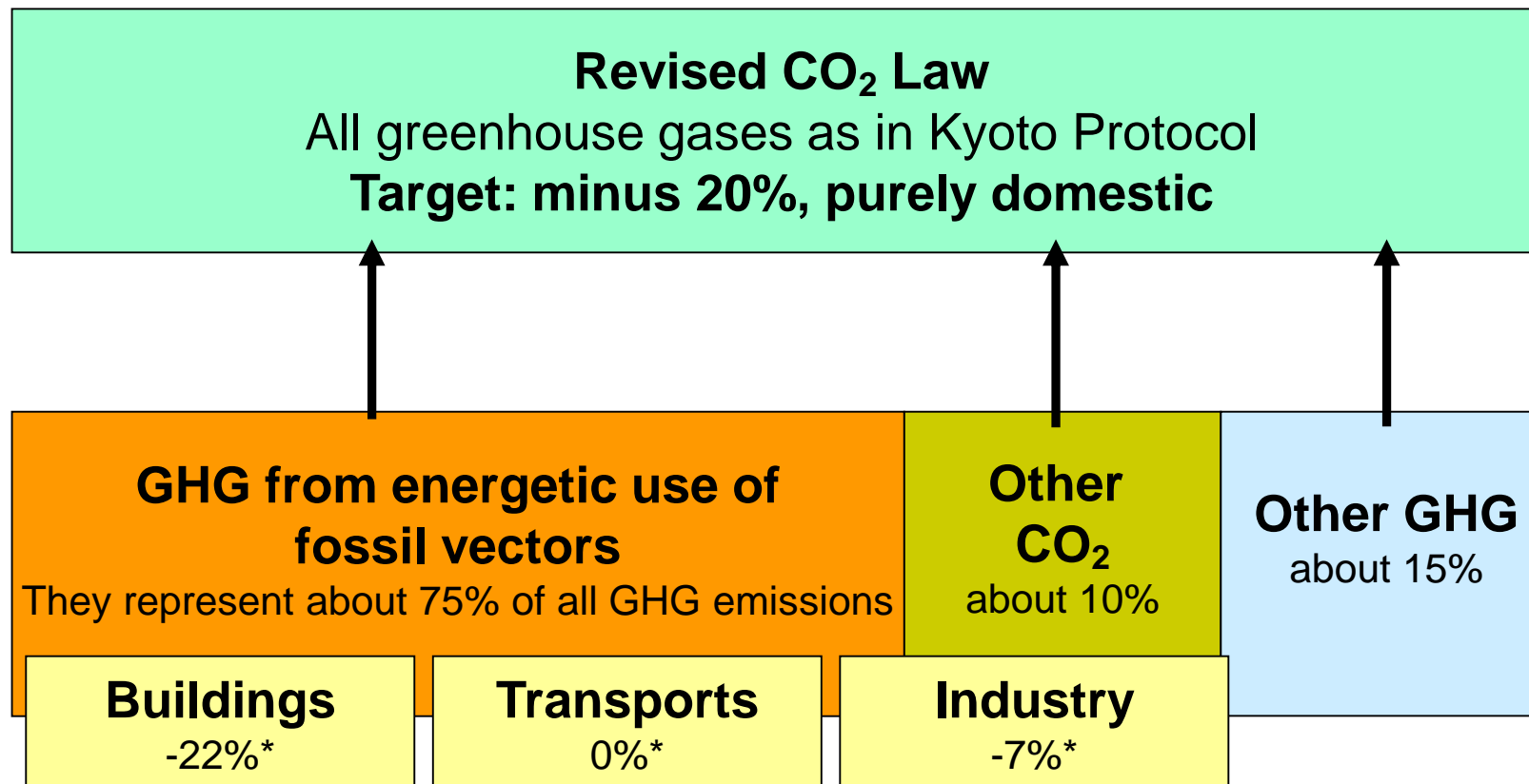


SECOND PERIOD (2013-2020)

Reference points for update of CO₂ Law

- At least CO₂ emissions are stabilized and ¼ to ⅓ of economy is well on its way to reduce its CO₂ emissions
- Non-CO₂ GHG are taboo (agriculture)
- A solution must be found for the transportation sector
- Update of CO₂ Law for 2012-2020 period, what the government wanted:
 - Clear link between Swiss targets and worldwide commitments (Copenhagen 2009): -20% or -30%
 - No immediate change of CO₂ tax (36.-/t), but revenue used largely to promote energy conservation in buildings
 - Big emitters should be allowed to participate in EU ETS
 - Transport fuels: importers must compensate 1/4th; binding CO₂ target for new cars (equal to EU); if not sufficient, CO₂ tax

Revised CO₂ Law (2011, in force since 2013)



*Intermediary objectives for 2015, variation relative to 1990: they have not been updated ! Emissions from transports were still 5.7% above 1990 in 2015.

Policy measures in the 3 main areas...

Transports

- Prescriptions on specific CO₂ emissions of new cars (target: 130 gram CO₂/km from 2015 on)
- Required compensation by importers of transport fuels (max 10% of implicit emissions for max 5 ct/litre)

Buildings (housing and services)

- CO₂ tax on heating and process fuels (60 CHF/t in 2014-15, 84 CHF/t in 2016-17, 96 CHF/t in 2018-20, i.e. 25.6 ct/litre heating oil)
- Buildings Refurbishment Program

Industry

- Tradable emissions permits (CH-ETS)
- Exemption from tax in exchange for commitment (non-ETS)

Impact in 2020:
~ 3 million tons CO₂

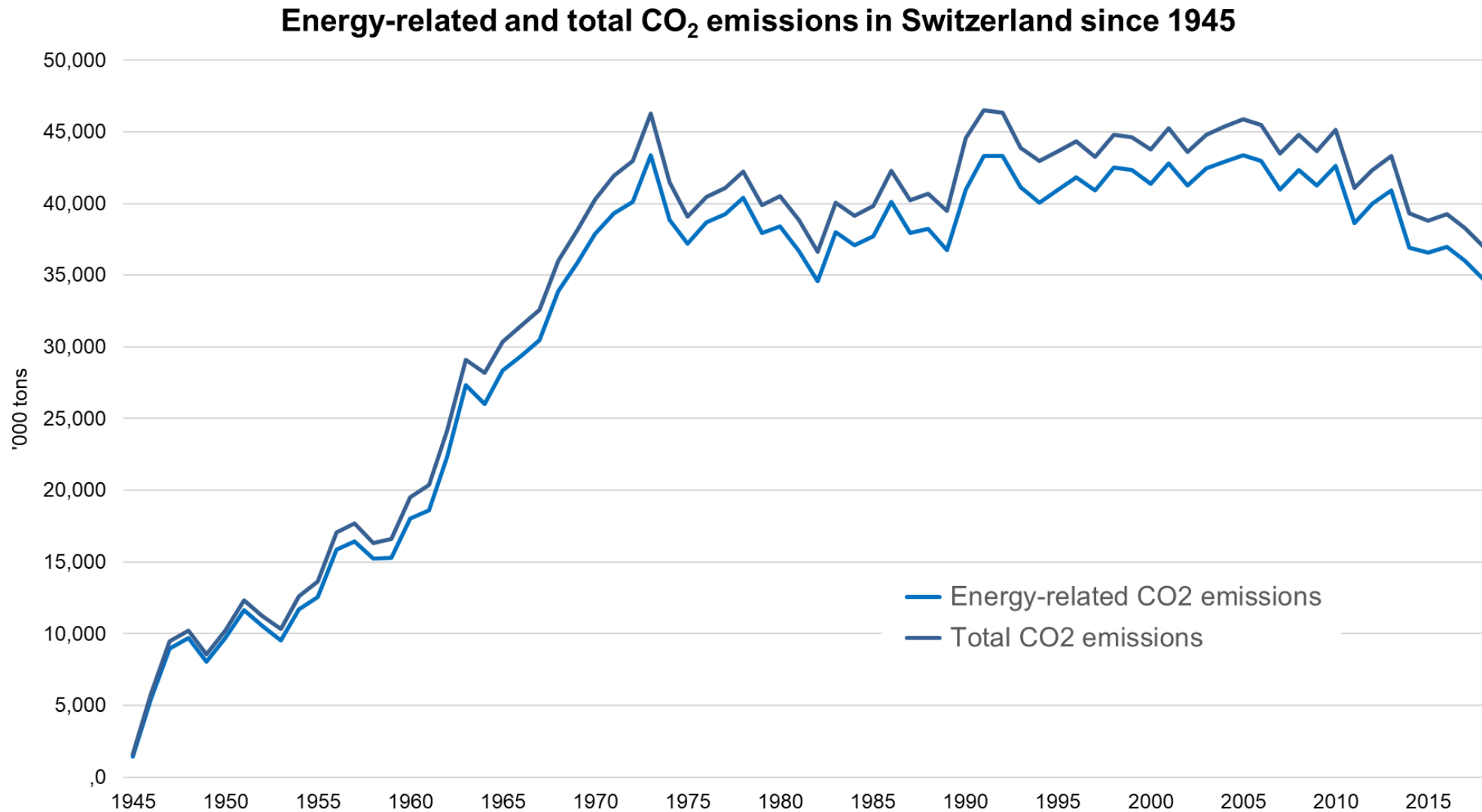
Impact in 2020:
~ 4,9 million tons CO₂

Impact in 2020:
~ 0,8 million tons CO₂

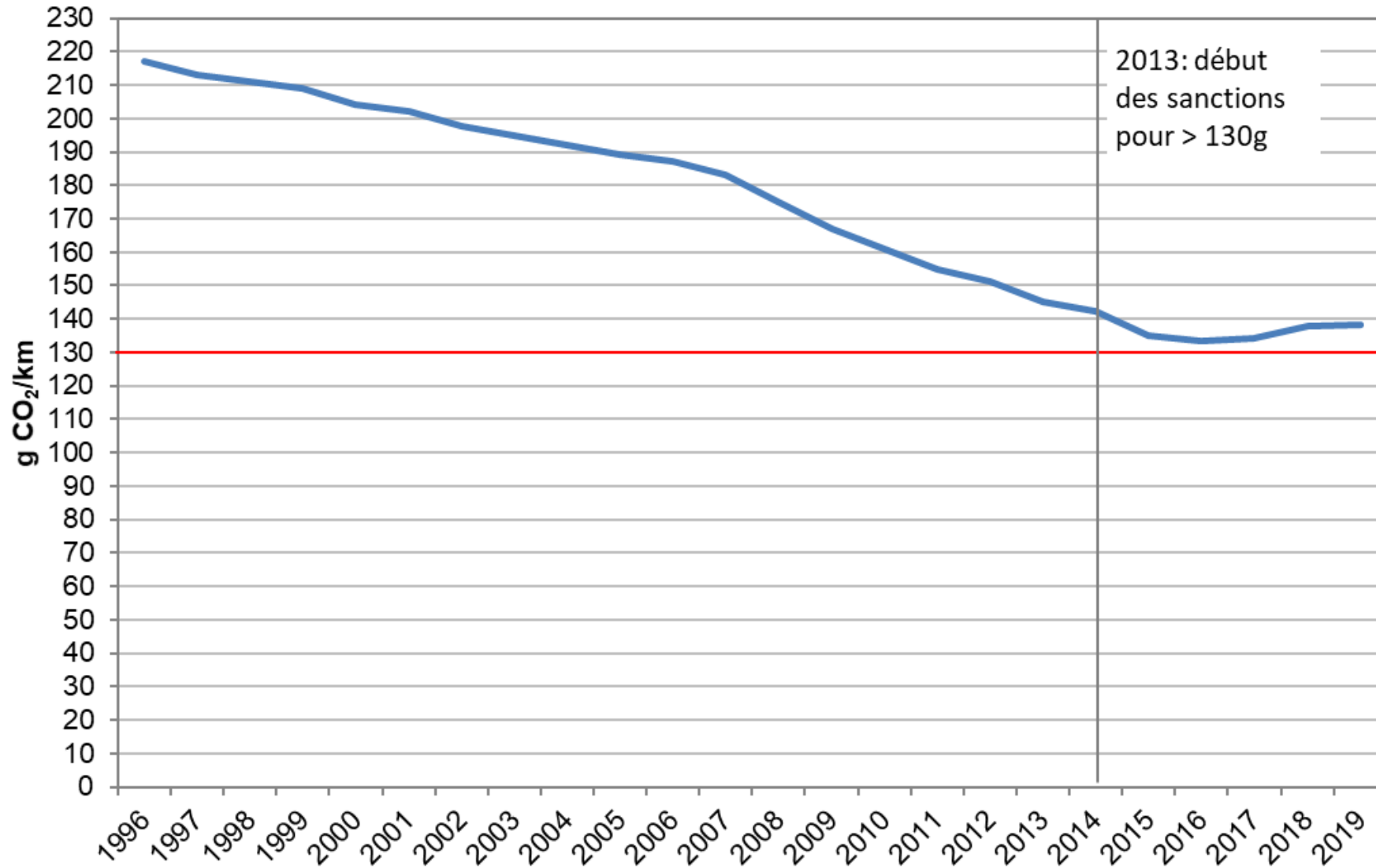


PRELIMINARY ASSESSMENT OF SECOND PERIOD

Emissions are declining in Switzerland but very slowly and only since 2010



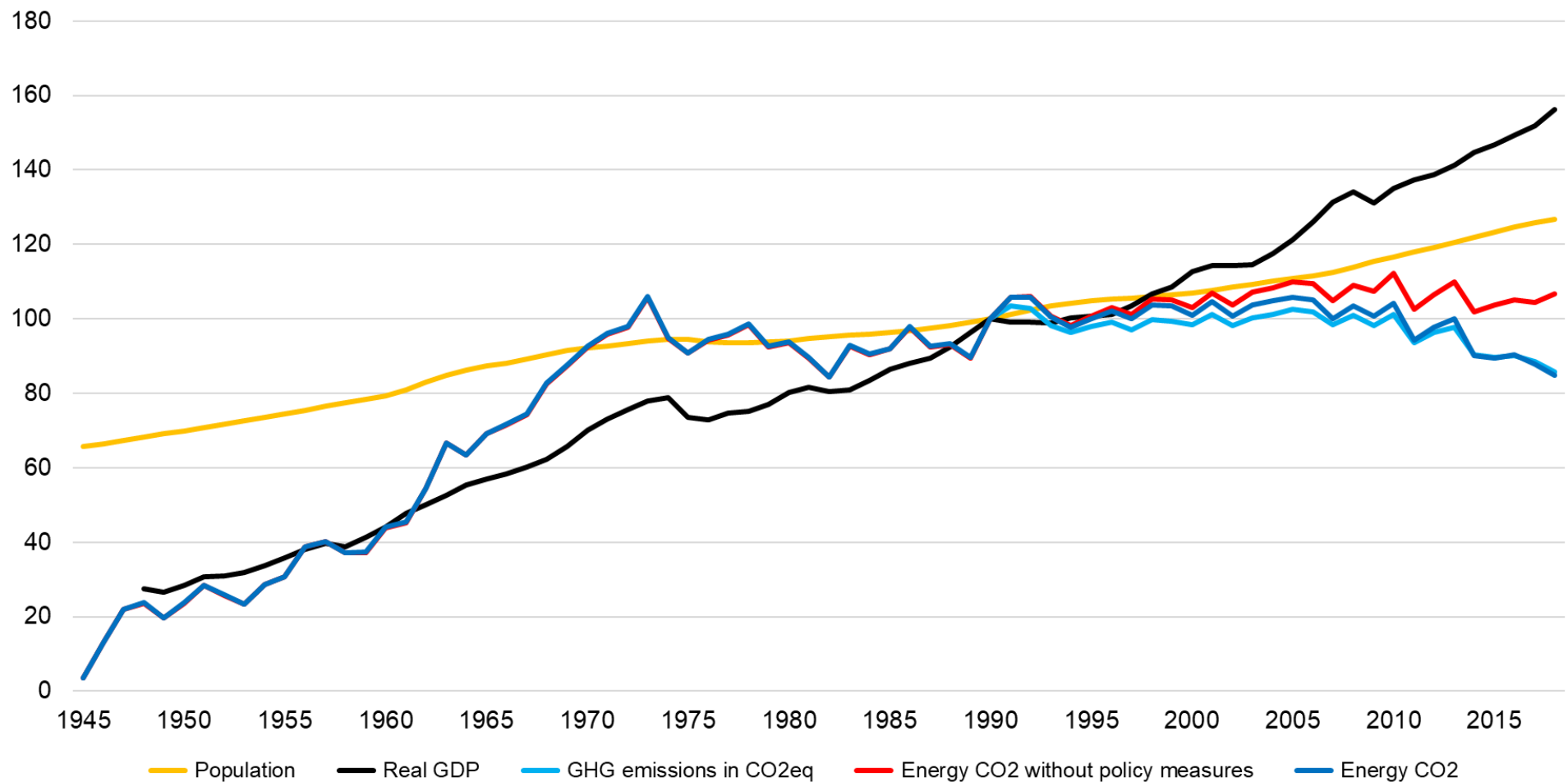
Evolution of specific CO₂ emissions from newly registered passenger cars



Data: SFOE

Switzerland barely stabilized its CO₂ emissions (which is quite good)

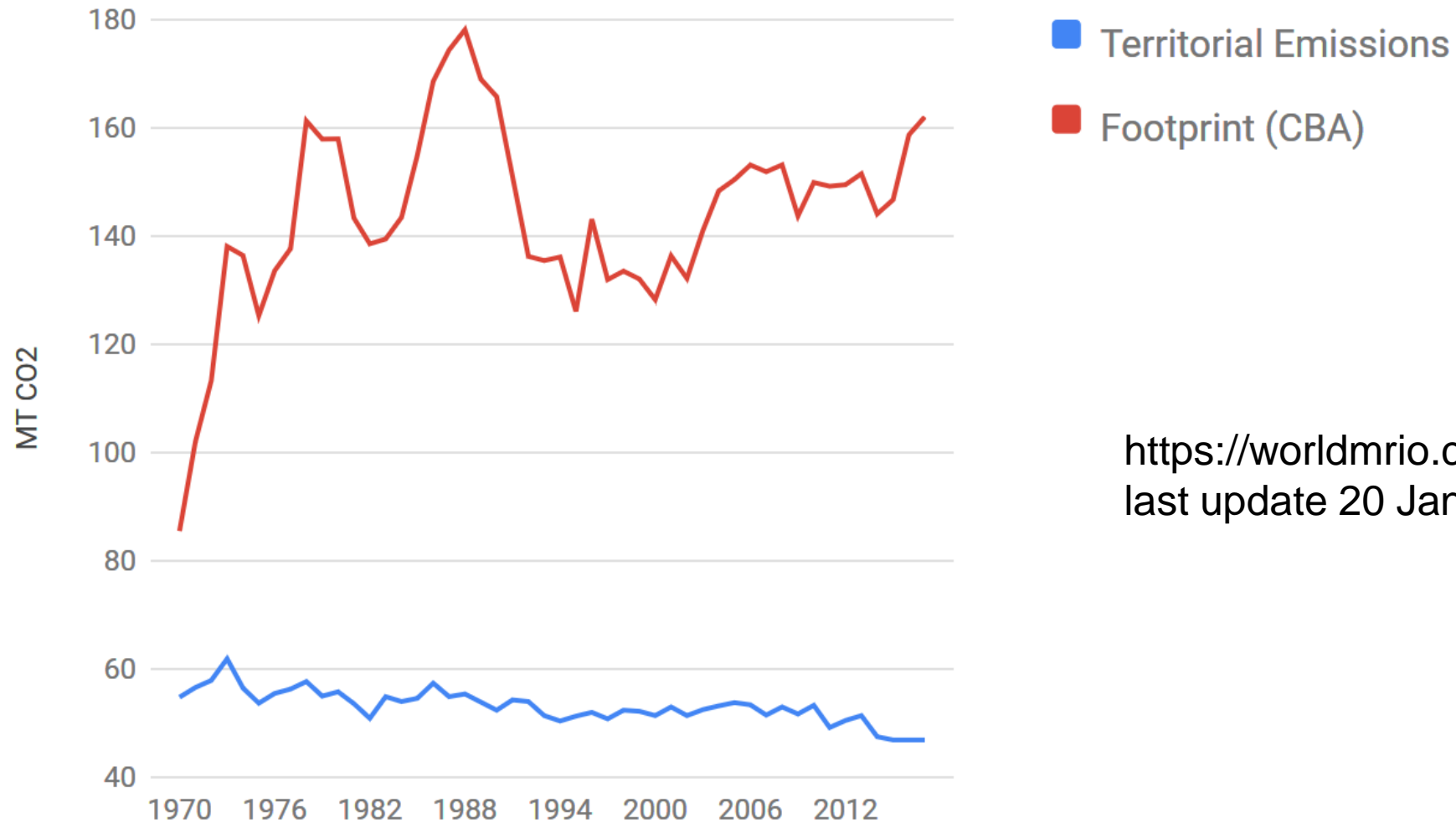
Energy-related CO₂ and GHG emissions, population and real GDP
(1945-2018, 1990=100)



Source of data: SFOS, FOEN

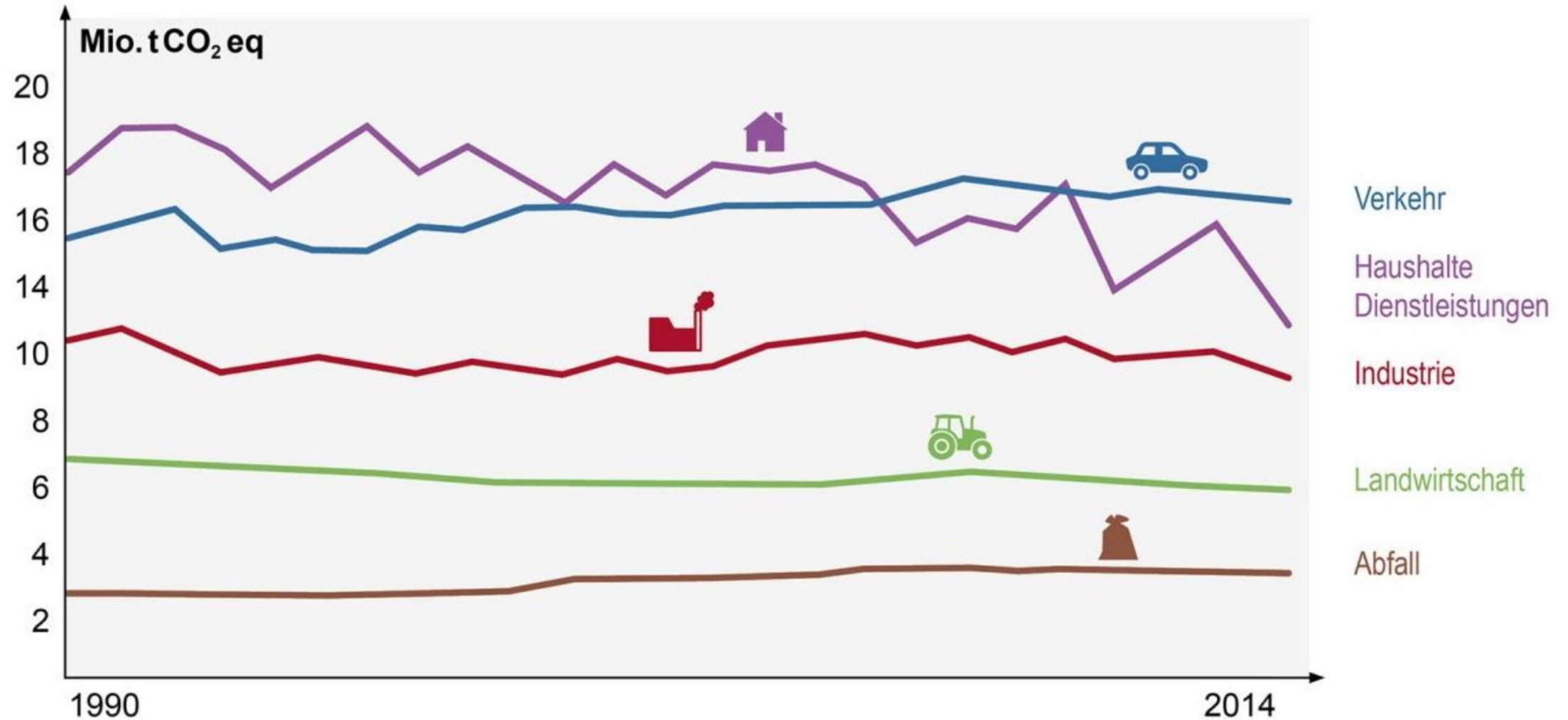
Decoupling obtained by globalisation (2)

Carbon Footprint for Switzerland (1970-2017)



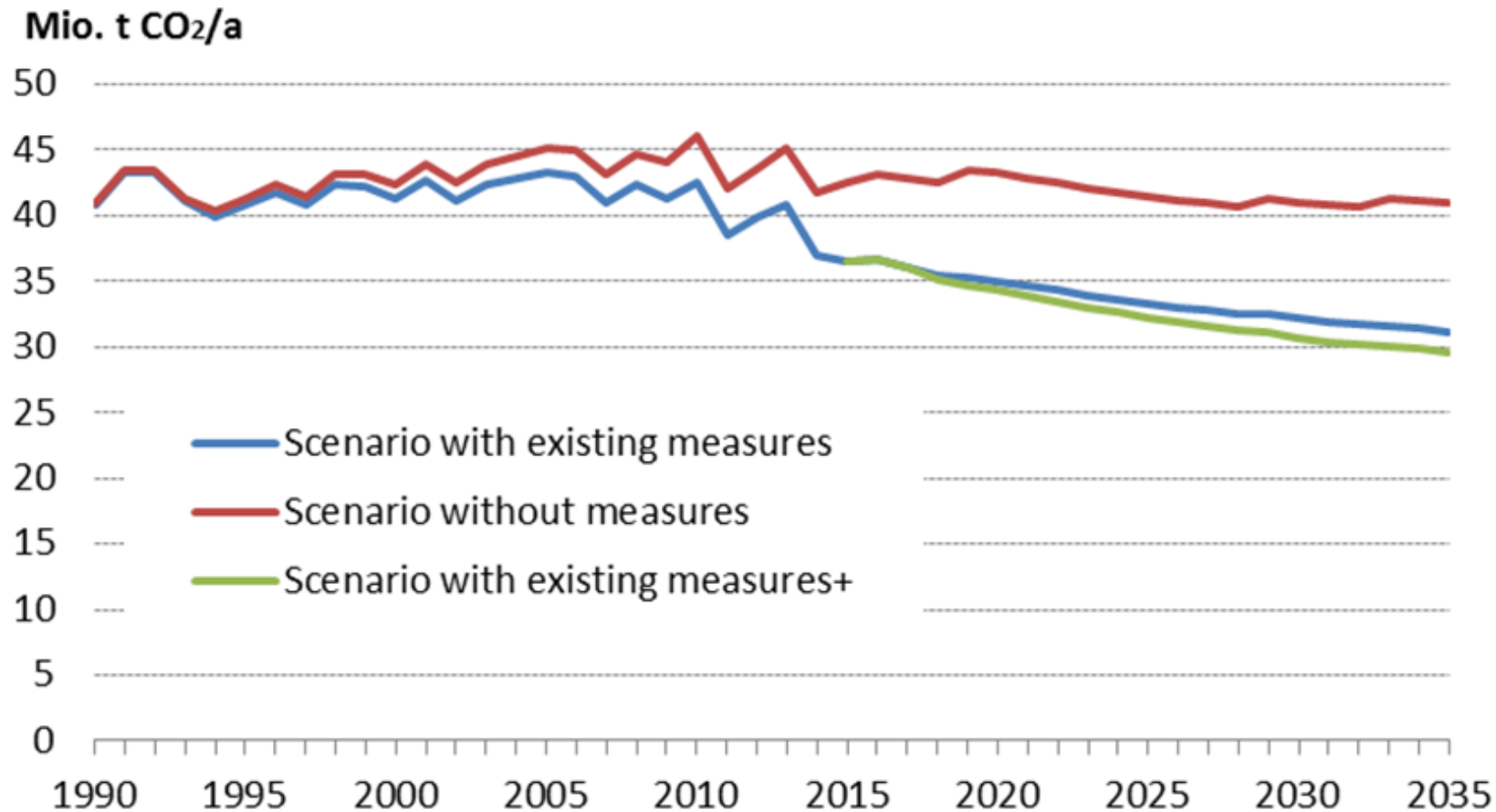
<https://worldmrio.com/footprints/carbon/>
last update 20 January 2020

Improvements in buildings (partly thanks to warming) and a bit in agriculture



Effectivity of climate policy

Energy CO₂ emissions in scenario without measures and in two scenarios with existing and decided measures (1990-2035)

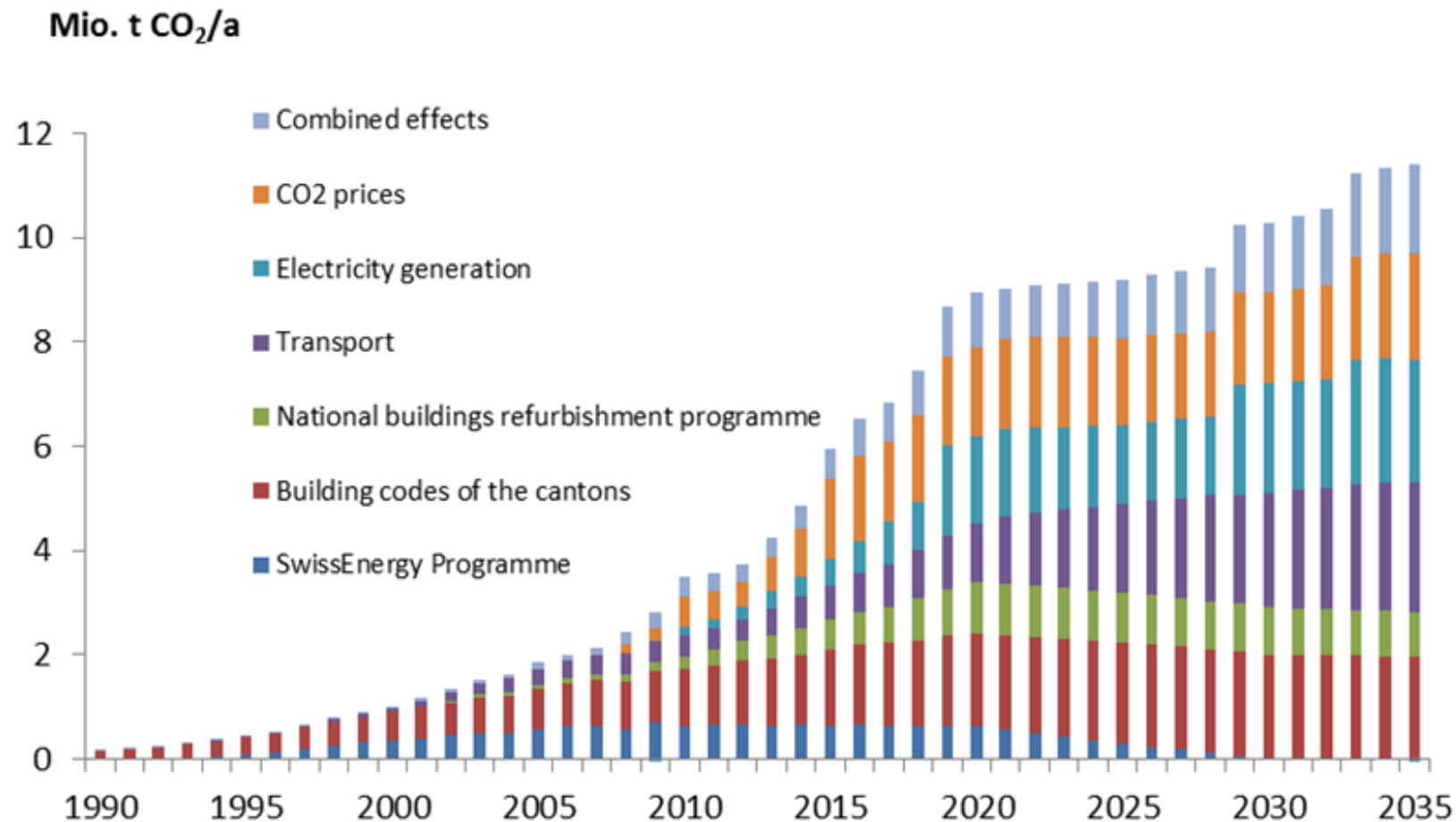


CO₂ from combustion processes (1A). Fig. 1 of Vielle and Thalmann (2017)

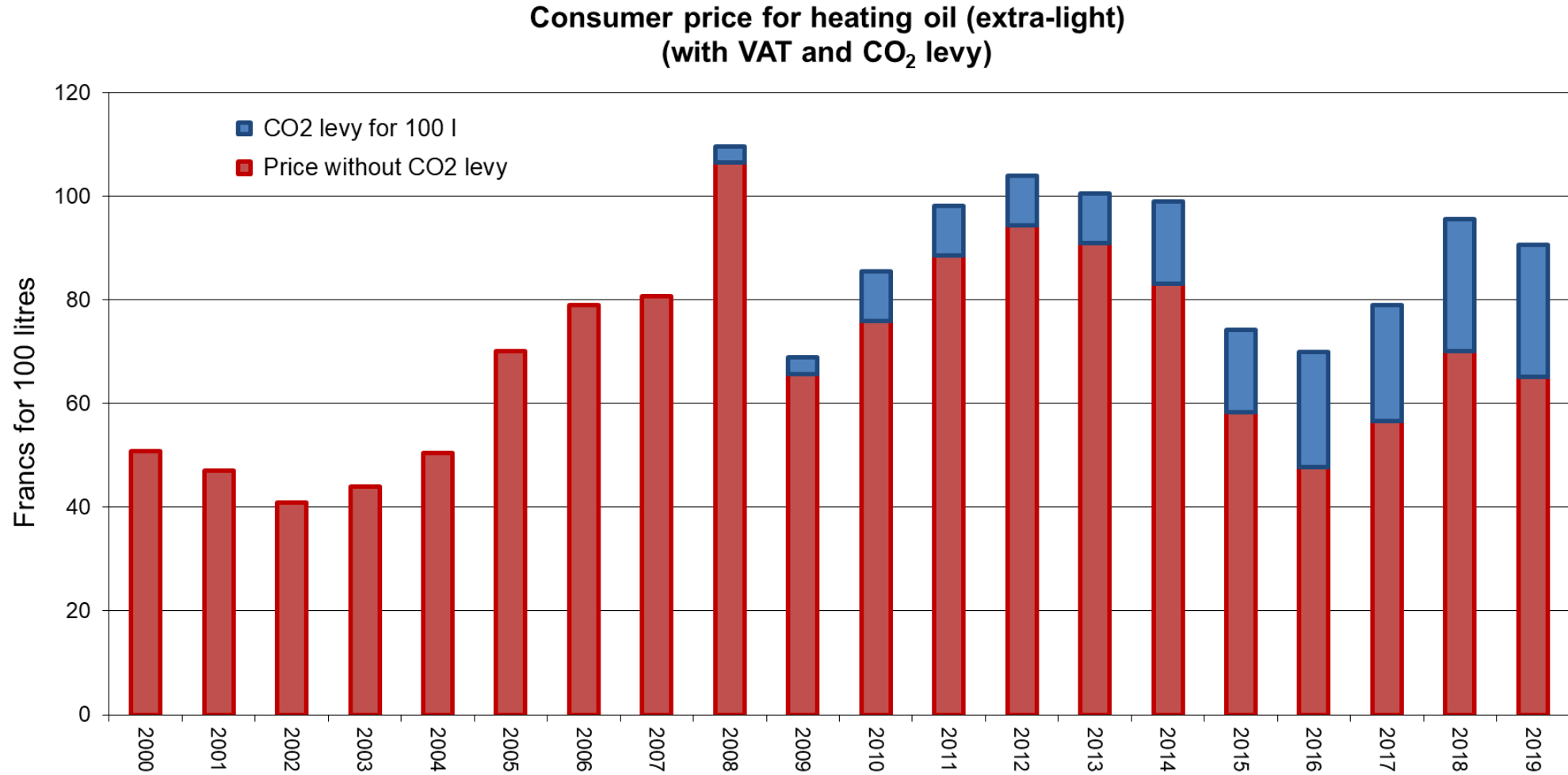
Vielle, Marc, and Philippe Thalmann, "Updated emissions scenarios without measures, 1990-2035", Report for Federal Office for the Environment, Lausanne, 12 October 2017

Effectivity of different components of "climate policy"

Total reduction of CO₂ emission in scenario with decided measures compared to scenario without measures, by group of measures (1990-2035)



A rising tax does not guarantee a rising price



Source of data: Swiss Federal Office of Energy, Overall energy statistics



THIRD PERIOD (2022-2030)

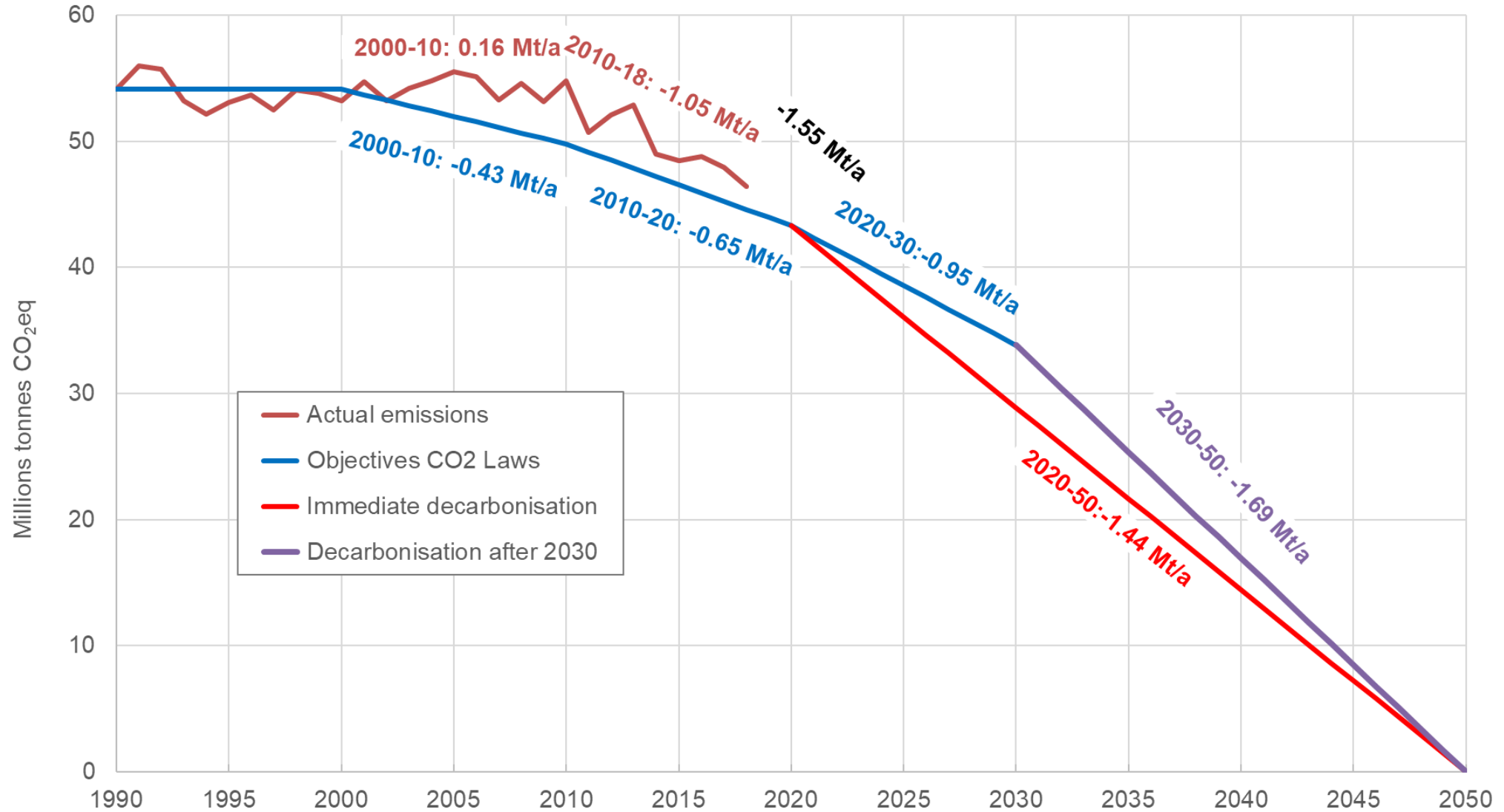
Third CO₂ Law

- Targets: in 2030, GHG emissions are reduced by 50% relative to 1990, of which at least $\frac{3}{4}$ in Switzerland
- In effect: -37.5% relative to 1990
- Existing instruments are extended and somewhat tightened
- New instruments: airline ticket tax and climate fund

Is the third CO₂ Law sufficient?

- 2020 target can only be met 'thanks' to Covid-19 slowdown
- Target does not really require accelerated decrease after 2030, but many 'low-hanging fruits' were picked
- Cap on motor fuel levy of 12ct/l will bind if compensation measures become increasingly expensive
- Cap on CO₂ tax at 210 CHF/t will bind if world oil price is lower in 2030 than the expected 139 USD₂₀₁₃/barrel
- The tax-exemption mechanism for firms is too lenient and causes high administrative costs

The longer we wait, the greater the effort needed



Thank you for your attention



Lake of Geneva, August 3, 2006

References

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