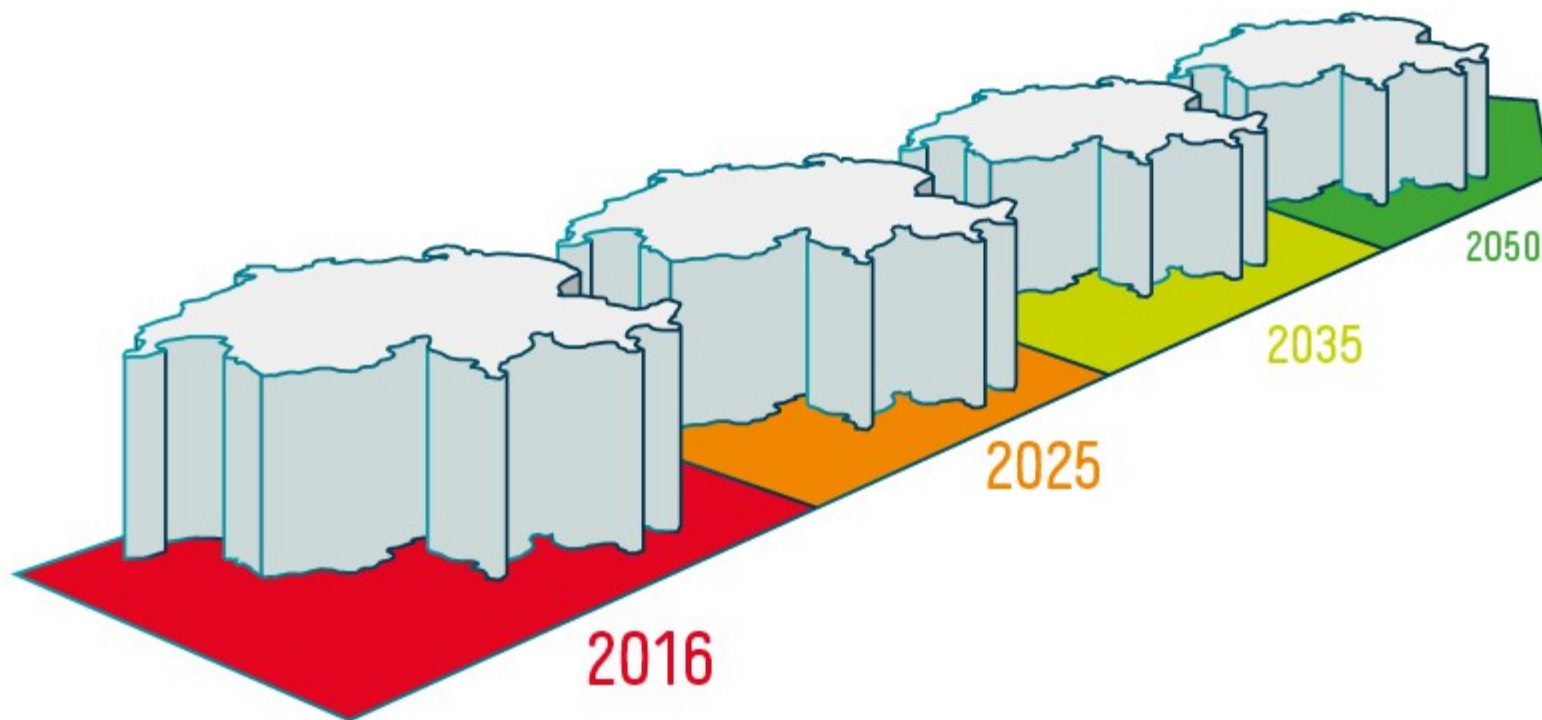




Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Bundesamt für Energie BFE
Office fédéral de l'énergie OFEN
Ufficio federale dell'energia UFE
Swiss Federal Office of Energy SFOE



ENERGY STRATEGY 2050 – FACTS AND FIGURES; TARGETS AND MEASURES



CONTENTS

1. Introduction: Facts, Figures and Policy Overview
2. Energy Strategy 2050, initial package of measures
(Revision of Federal Energy Act)
3. Revision of Federal CO₂ Act
4. Revision of Electricity Supply Act

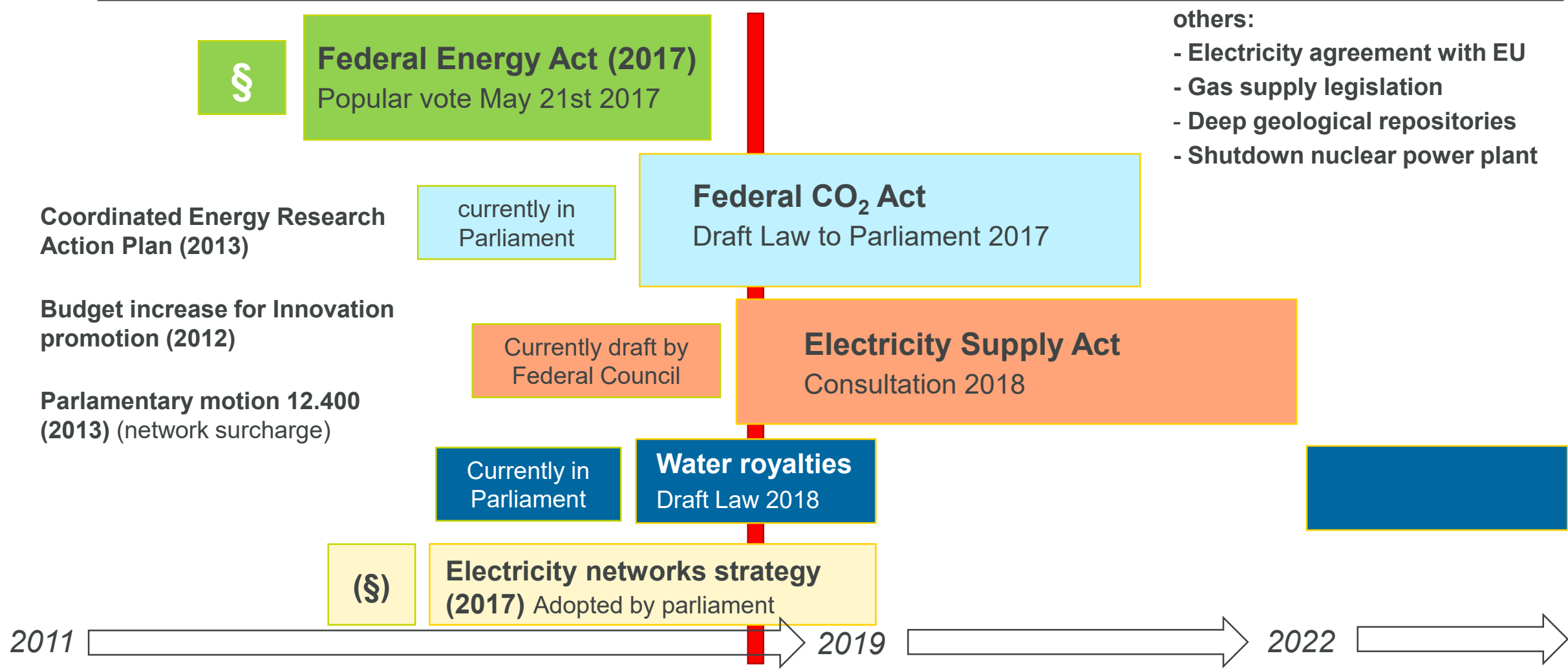


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OVERVIEW ON POLITICAL AFFAIRS

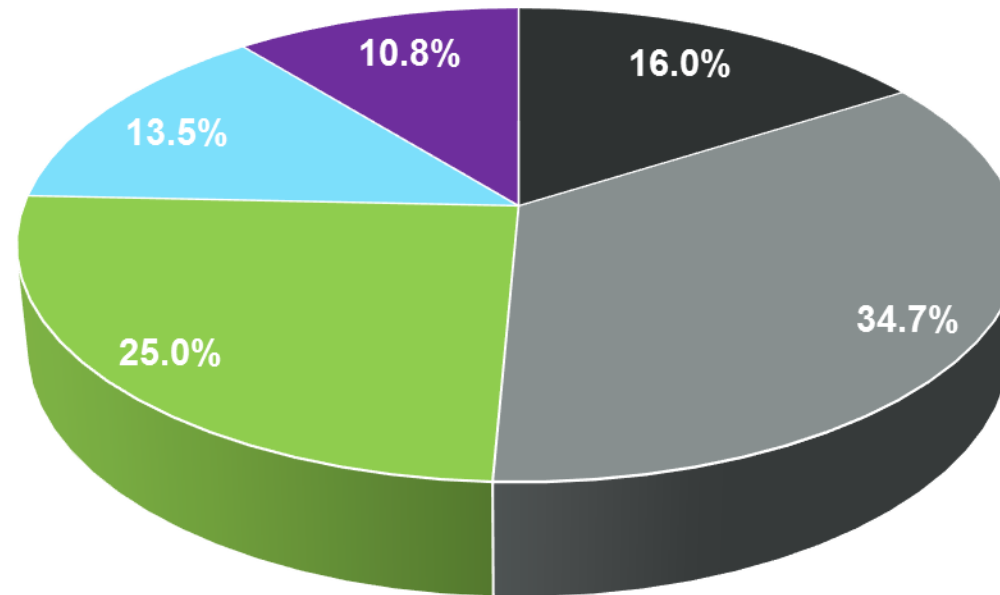




FINAL CONSUMPTION OF ENERGY SOURCES

Final consumption of energy sources (2015)

- liquid fossil combustible
- liquid fossil fuel
- electricity
- natural gas
- else



Final consumption:
838'360 TJ
(233 TWh)

Expenses of final
consumer:
CHF 26.36 bn
(EUR 24.7 bn)

EUR 2980/capita

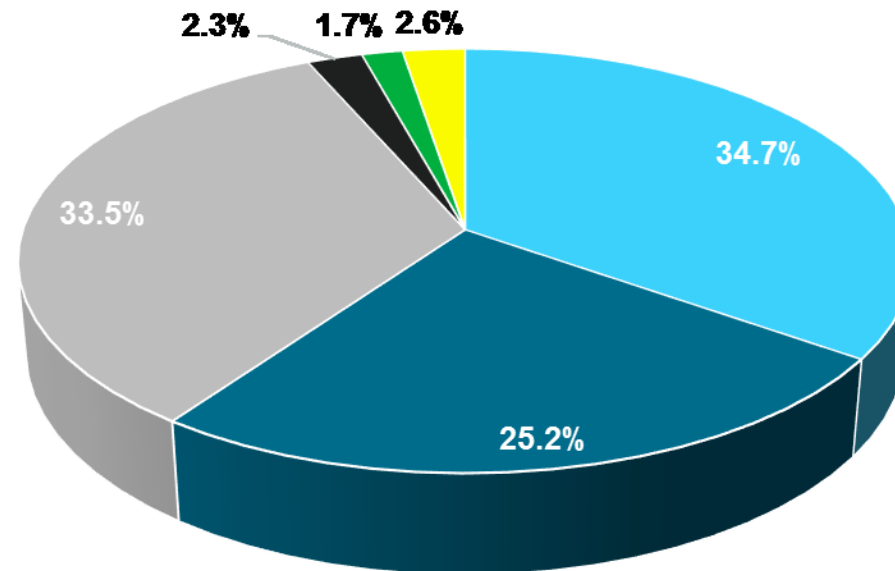
Source: SFOE, Statistique globale suisse de l'énergie 2015 (fig. 2, fig. 6, fig 13)



ELECTRICITY GENERATION

Electricity generation (2015)

- storage hydro power
- river power station
- nuclear power plants
- thermic (fossil) power plants
- thermic (renewable) power plants
- further renewables



Net production:
63.7 TWh

Final consumption:
58.2 TWh

Import: 42 TWh /
export: 43 TWh

CO₂ electricity
production: about 28gr
CO₂ electricity
consumption: about
92gr

Source: SFOE, Statistique suisse de l'électricité 2015 (fig. 1, fig. 7); FOEN Umweltbilanz Strommix 2011.



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(Revision of Federal Energy Act)

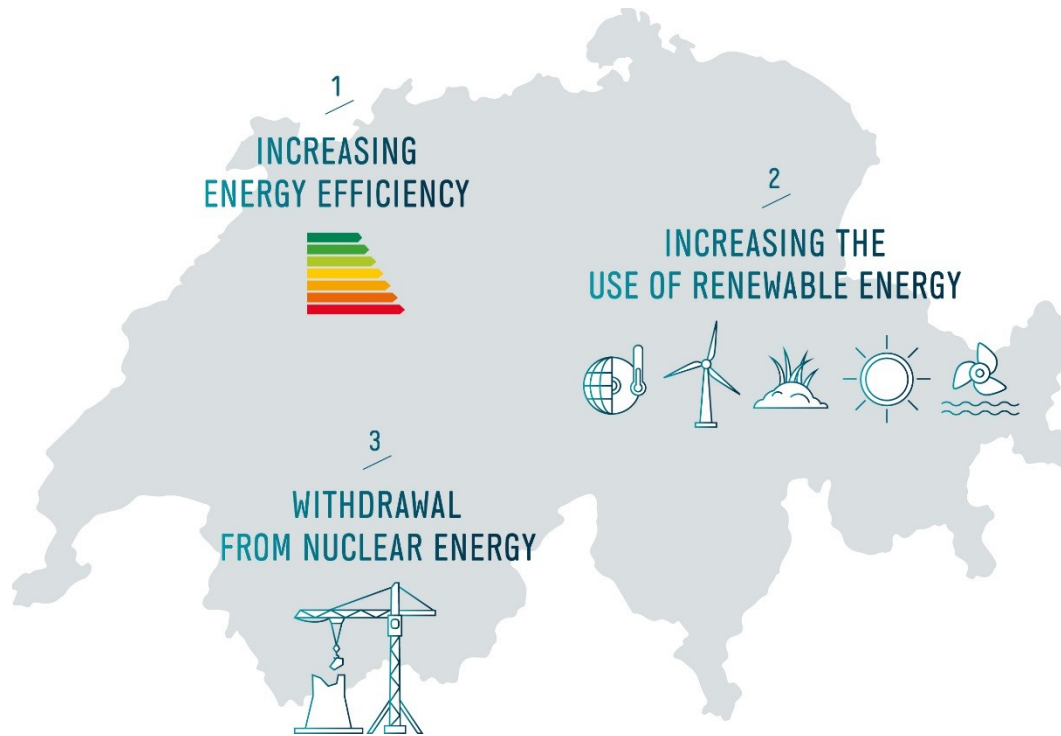
Federal Energy Act (2017)
Popular vote May 21st 2017

3. Revision of Federal CO₂ Act

4. Revision of Electricity Supply Act



INITIAL PACKAGE OF MEASURES: THREE STRATEGIC OBJECTIVES



Measures to increase energy efficiency

- Buildings
- Mobility
- Industry
- Appliances

Measures to increase the use of renewable energy

- Promotion
- Improvement of legal framework

Withdrawal from nuclear energy

- No new general licences
- Step-by-step withdrawal – safety as sole criterion



INITIAL PACKAGE OF MEASURES: ENERGY EFFICIENCY – TARGETS/GUIDELINES



Average per capita energy consumption

Reduction versus level in 2000

- 16% in 2020
- 43% in 2035

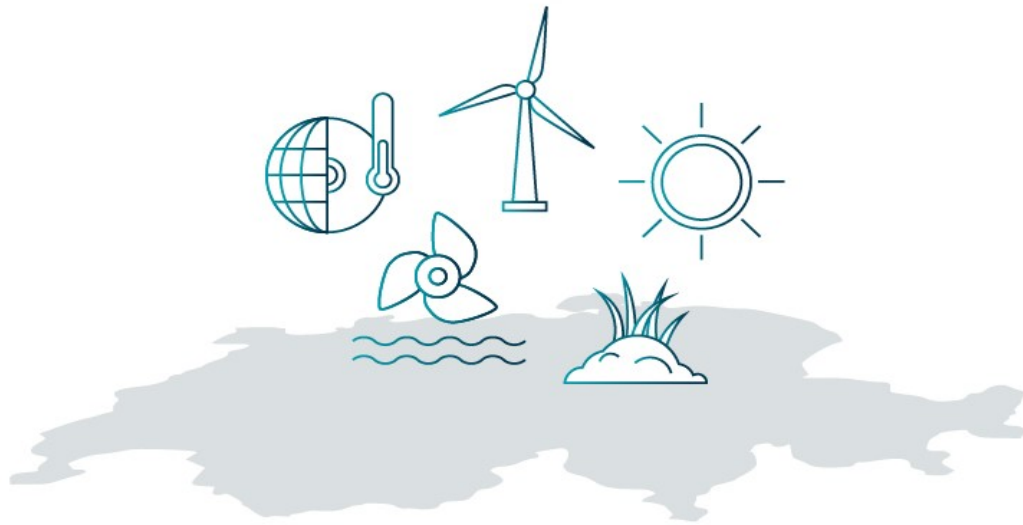
Average per capita electricity consumption

Reduction versus level in 2000

- 3% in 2020
- 13% in 2035



INITIAL PACKAGE OF MEASURES: RENEWABLE ENERGY – TARGETS/GUIDELINES



Average domestic production of renewable energy excluding hydropower

- in 2020: 4'400 GWh
- in 2035: 11'400 GWh

Hydropower

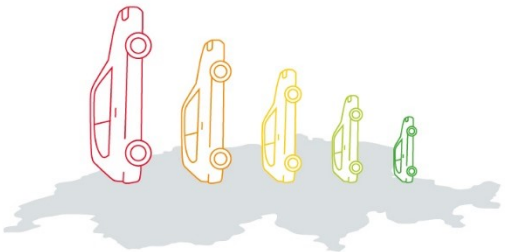
37'400 GWh in 2035



INITIAL PACKAGE OF MEASURES: ENERGY EFFICIENCY MEASURES



- Partial earmarking of revenue from CO₂-levy for improving energy-efficiency in buildings (from 300 million to 450 million CHF/annum)
- Higher tax incentives for improving energy efficiency in buildings



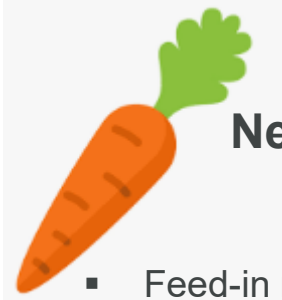
- More stringent emission regulations for cars (95gr CO₂/km by 2020)
- Extension of emission regulations to utility vehicles and light semi-trailers



- Target agreements for companies
- Subsidies for electricity efficiency through tenders (ProKilowatt)
- Electrical appliances: similar to EU eco-design and labelling directive

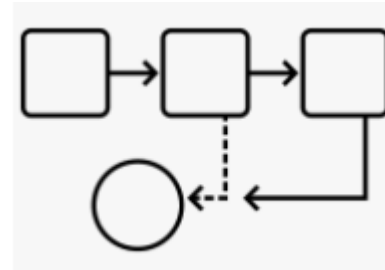


INITIAL PACKAGE OF MEASURES: RENEWABLE ENERGY MEASURES



Network surcharge (2.3 cents/kWh)

- Feed-in remuneration (1.3 cts/kWh) (till 2022)
- One-time remuneration for PV (0.2 cts/kWh)
- Market premium for existing large-scale hydropower plants (0.2 cts/kWh) (till 2022)
- Contributions towards investments in new large-scale hydropower plants (0.1 cts/kWh) and small-scale hydro and biomass (0.03 cts/kWh)
- Contributions and guarantees for geothermal exploration (0.07 cts/kWh)
- Refund of network surcharge (0.2 cts/kWh)
- Competitive tenders (0.1 cts/kWh)
- Improvement of quality of bodies of water (0.1 cts/kWh)



Approval procedures

- The use of nature and the landscape for the production of renewable energies is granted the status of national interest.
- Deadline for assessments by the Federal Commission for the Protection of Nature and Cultural Heritage.
- Federal government as single point of contact for wind energy projects.



Market based support system

- New regulation for prosumers and for microgrids (Collective contiguous prosumers) make PV more profitable.
- Requirement for producers to directly sell their renewable electricity generation.



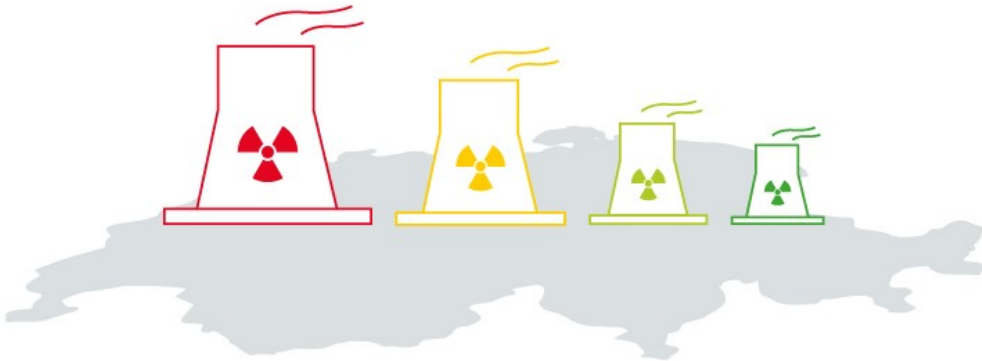
INITIAL PACKAGE OF MEASURES: WITHDRAWAL FROM NUCLEAR ENERGY

No new general licences for nuclear power plants

- No ban on nuclear technology
- Continued operation of existing power plants as long as their safety is guaranteed
- Long-term operation to be regulated by Ordinance

Reprocessing of spent fuel elements

- Ban instead of the existing moratorium
- Extension of moratorium until June 2020 (separate regulation in effect)





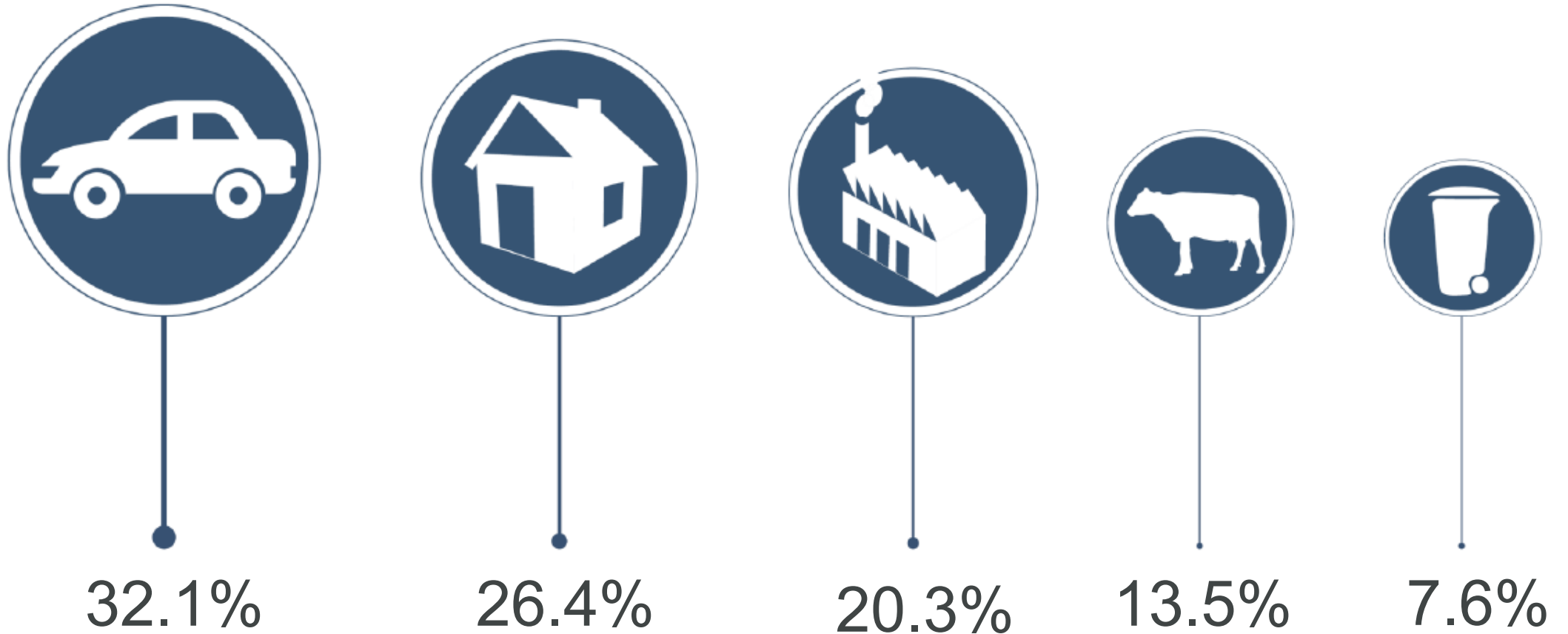
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Federal CO₂ Act
Draft Law 2017



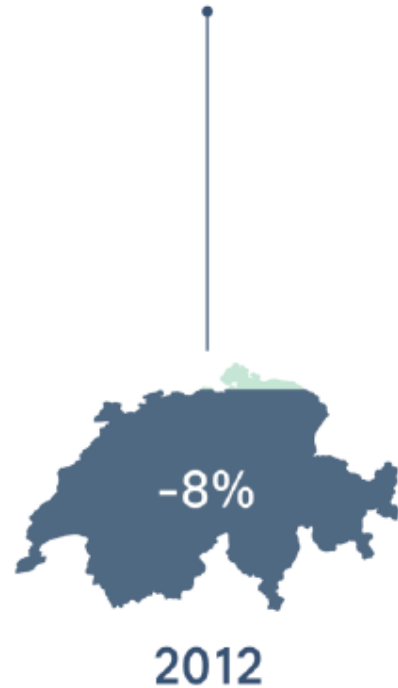
GHG EMISSIONS BY SECTORS (2015)





MILESTONES OF SWISS CLIMATE POLICY

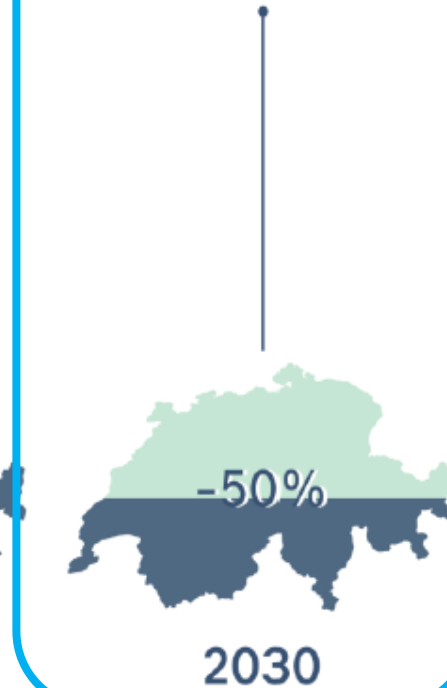
Including
measures abroad



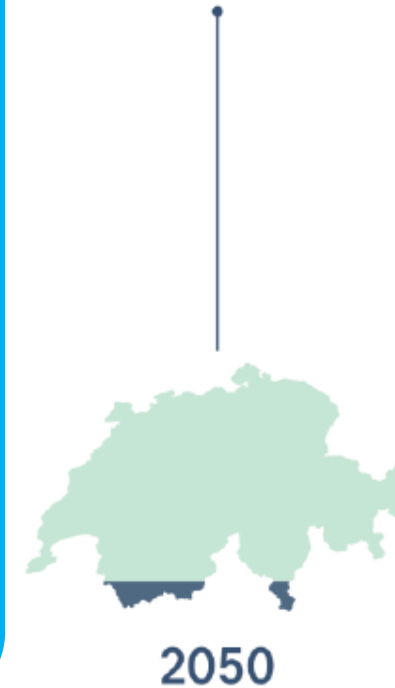
Domestic
measures only



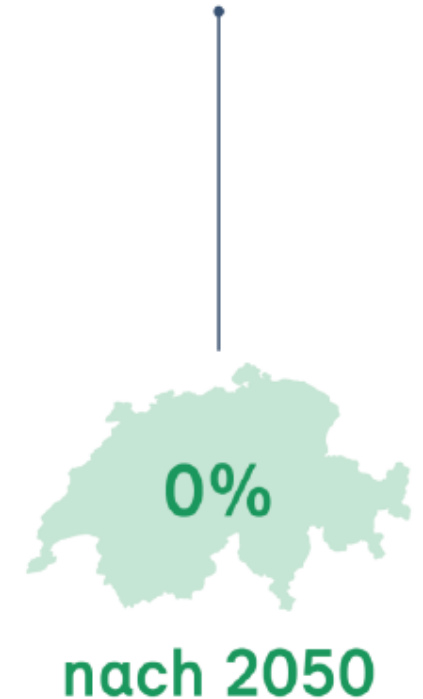
Including
measures abroad



-70 to -85%
emission reduction



Climate neutrality



Base year 1990: 53.7 Mio t CO₂eq; Reference Scenario 2030: 41.8 Mio t CO₂eq



DOMESTIC EMISSION REDUCTION AND INTERNATIONAL OFFSET

Domestic reference
/ 1990:
11.9 Mio. t CO₂

Domestic new:
6.6 Mio. t CO₂

International:
8.5 Mio. t CO₂

Domestic emissions 2030 reference scenario (BAU)	41.8 MtCO₂eq
Additional reduction in the buildings sector <ul style="list-style-type: none"> <i>Incl. CO₂ levy (further increases, up to max CHF 210/tCO₂)</i> <i>Incl. Building Refurbishment Programme (CO₂ levy earmark up to CHF 450 million per 2018, implemented with ES2050)</i> <i>Incl. Additional cantonal measures</i> 	3.5 MtCO₂eq <i>1.0 MtCO₂eq</i> <i>1.5 MtCO₂eq</i> <i>1.0 MtCO₂eq</i>
Additional reduction in industry sector <ul style="list-style-type: none"> <i>Incl. CO₂ levy (further increases, up to max CHF 210/tCO₂)</i> <i>Incl. qualifying more SMEs for reduction covenants with levy exemption resp. simplifying procedures</i> <i>Incl. ETS</i> 	1.5 MtCO₂eq <i>0.3 MtCO₂eq</i> <i>0.2 MtCO₂eq</i> <i>1.0 MtCO₂eq</i>
Additional reduction in transport sector <ul style="list-style-type: none"> <i>Incl. standards for passenger and LDV</i> <i>Incl. increasing compensation obligation for fuel importers to 15-20%</i> 	0.9 MtCO₂eq <i>0.3 MtCO₂eq</i> <i>0.6 MtCO₂eq</i>
Additional reduction in agriculture	0.5 MtCO₂eq
Additional reduction in synthetic GHG	0.2 MtCO₂eq
Domestic emissions	35.2 MtCO₂eq (-35% vs 1990)
International offsets	8.5 MtCO₂eq
Domestic emissions minus international offsets	26.7 MtCO₂eq (-50% vs 1990)



MEASURES IN TRANSPORT SECTOR



Increasing compensation obligation to fuel importers

- At least 15% of emissions of traffic have to be compensated within Switzerland
- At least 5% of emissions of traffic have to be compensated through biofuels

Emission standards for cars and light duty vehicles

- More or less following EU standards



MEASURES IN BUILDINGS SECTOR

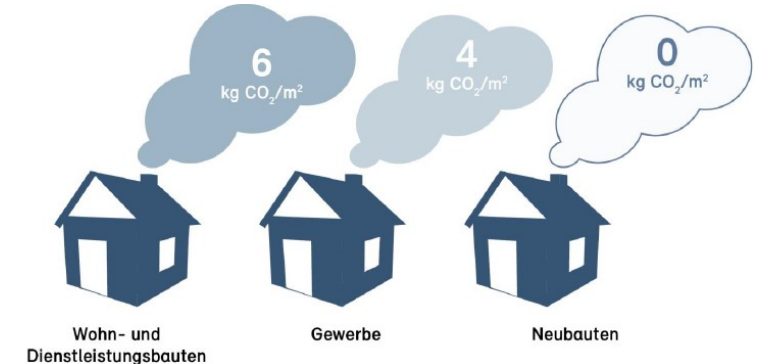


Cantonal measures and subsidiary introduction of emission limits by the federal government

- Target: lowering emission to 20% by 2050 and 2026/27 to 50% (compared to 1990)
- If 2026/27 not 50% reduction reached, setting CO₂-emission limits for buildings (*revised*)

CO₂ levy and subsidies for building refurbishment

- Increasing CO₂ levy on thermal fuels up to 210 CHF/t
- Cancel subsidies by 2025 (*revised*)



MEASURES IN INDUSTRY

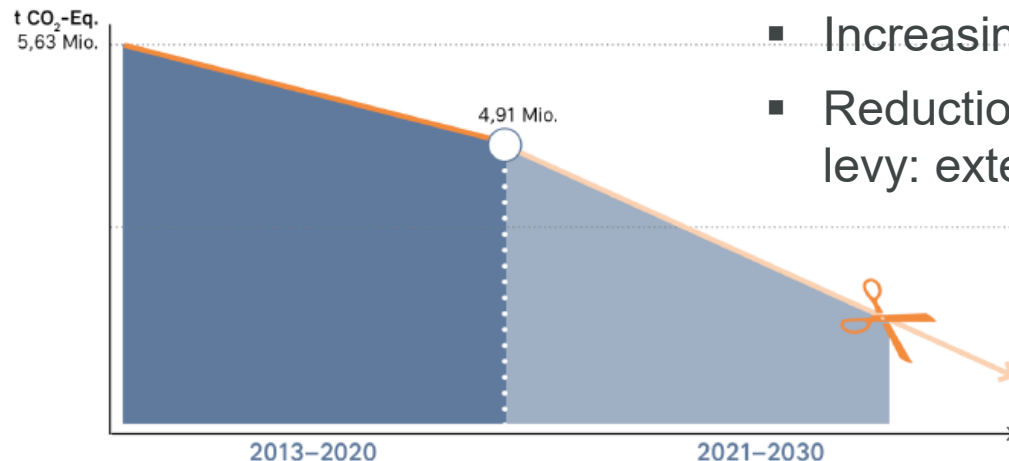


Emission trading

- Coupling with EU-emission trading
- For companies emitting large volumes of CO₂
- Emission allowances decrease faster (probably 2.2%/year)
- Possible combined cycle gas power plants: coupling (*revised*)

CO₂ levy

- Increasing CO₂ levy on thermal fuels up to 210 CHF/t
- Reduction commitment for companies that want to be exempted from the levy: extended to more companies (*revised*)





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Electricity Supply Act
Consultation 2018



MAIN OBJECTIVES AND MEASURES

Market

- ❖ **Full market opening** treats all end consumers equally and guarantees freedom of choice. This creates a more flexible pricing process and product innovation.
- ❖ Swiss electricity as **default for basic supply**, each provider can offer other products in addition (proof by guarantees of origin).
- ❖ **Storage reserve** (focus on energy) in addition to the energy-only-market: ensures availability of electricity in unforeseeable situations.

Grid

- ❖ **Sunshine-regulation** improves transparency and serves as a possible starting point for incentive regulation.
- ❖ **Power component** in grid tariffs will get more weight, according to the user pays principle.
- ❖ **Flexibility**: use of rights for owner of installations, condition for developing a new market.
- ❖ Free choice of the provider for **measuring electricity consumption and feed-in** in order to improve competition and quality of the service.



FULL MARKET OPENING AND DEFAULT IN BASIC SUPPLY

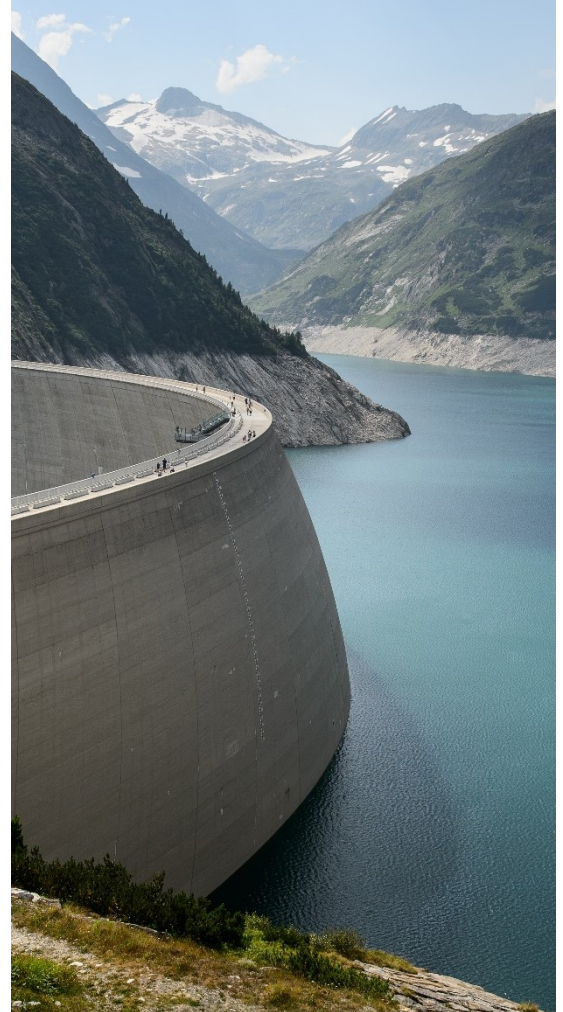
Basic supply remains, grid operators still important

Art. 5 Grid areas and connection requirement

- Grid operators are not only responsible for grid operation, but also for basic supply

Art. 6 Basic Supply

- Basic supply for consumers < 100 MWh still in place
- Default electricity product of Swiss origin and mainly or completely renewable.
- End-consumers are free to choose another electricity product.





STORAGE RESERVE

Complementing the energy-only-market with a storage reserve as an additional insurance

Art. 8a Storage reserve for unforeseeable situations in electricity supply

- A storage reserve is created annually as an insurance in times of critical supply shortage.
- Participating operators receive remuneration for retaining generation capacity over a given time.
- Technology-neutral, open to all operators of suitable storage power stations and storages that are connected to the Swiss power grid.
- Participating operators are determined yearly through call for tenders.





SUNSHINE REGULATION

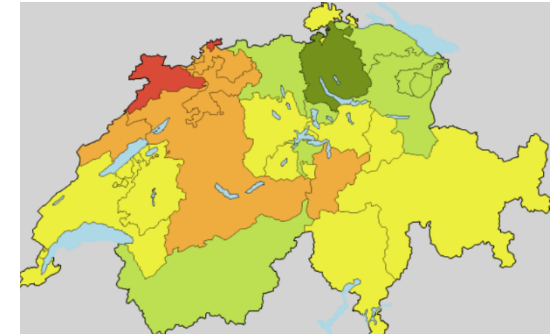
Sunshine regulation: creates transparency and «soft» incentives for improving efficiency

Art. 22a Publication of comparisons of Quality and Efficiency

- ElCom compares in particular:

Tariffs for grid utilisation and attributable costs of grids, tariffs in basic supply, quality of electricity supply, quality of basic supply and grids, investment in smart grids, measurement for billing (monopoly), implementation of publication and information duties

- SFOE evaluates sunshine regulation every four years. If the efficiency hasn't improved (including effects on grid costs), the Federal Council draws a decree for incentive regulation.





NETWORK POWER TARIFF COMPONENT

Strengthening of «user pays principle» through improved options in the network power tariff component

Art. 14 Abs. 3, First sentence , 3^{bis} and 3^{ter}

- End-consumers without power measurement:
Uniform, non-degressive energy tariff component of at minimum 50% (instead of 70% so far)
- End-consumers with power measurement and yearly energy consumption of < 50 MWh: the uniform, non-degressive energy tariff component may be below 50%, if the total grid tariff costs for consumers are not higher than in the case of an energy tariff component of 50%.



REGULATION OF FLEXIBILITY

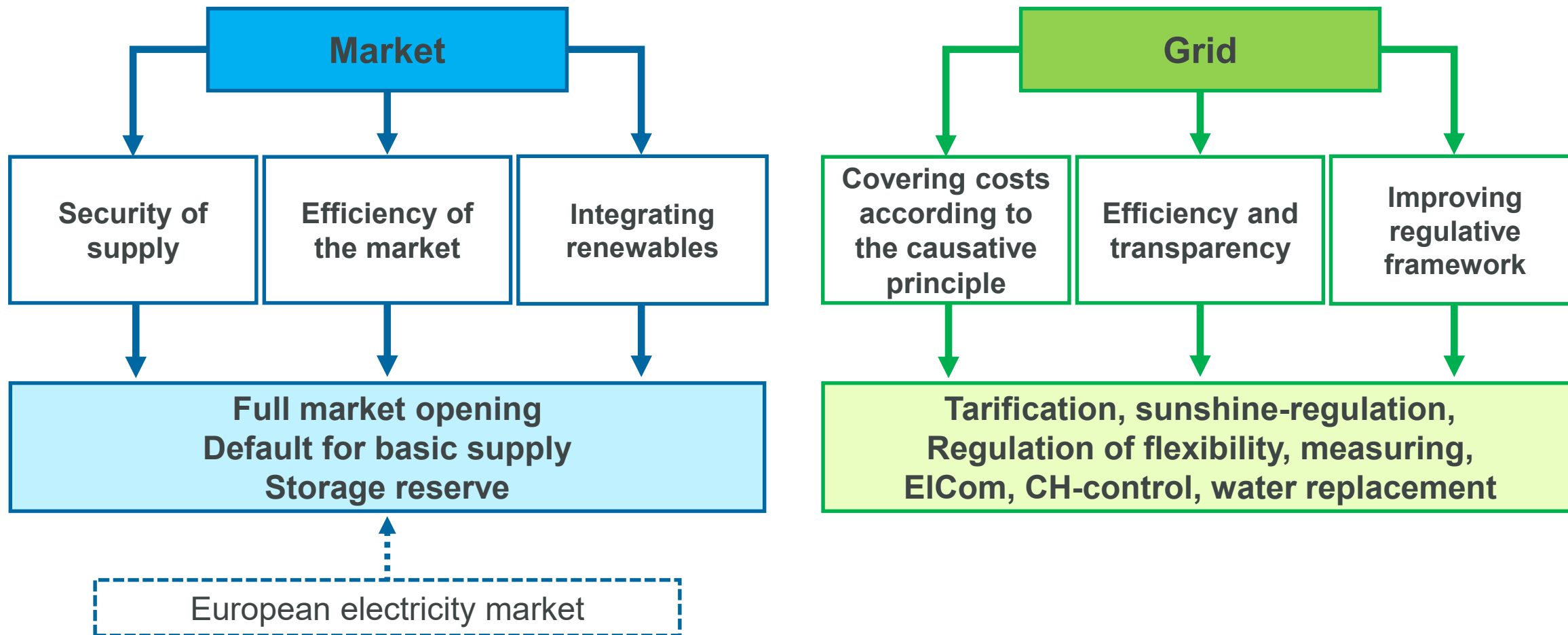
Establishing the framework of the future market for flexibility

Art. 17^{bis} Use of flexibility

- End consumers, storage operators and producers are owners of flexibility of consumption, storage and feed-in. Use by third parties based on contracts.
- Grid-assistive use: standardized contracts, individual contracts possible.
- Use of flexibility as a mandatory part of grid planning.
- Adequate remuneration for derating of feed-in and use in an interim time (until grid expansion is realized). In case of immediate risks in grid operation, use is free.
- Federal Council defines for each production technology the part that can be derated or controlled. ElCom supervises misuse.



REVISION OF ELECTRICITY SUPPLY ACT





Thanks for your attention!

Next deadlines

Federal CO₂ Act
Draft Law 2017

ESPEC-N October 30st 2018 (committee
of the first chamber)

Electricity Supply Act
Consultation 2018

Consultation ends January 31st 2019
Parliament: start second half 2019

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BFE.ADMIN.CH



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