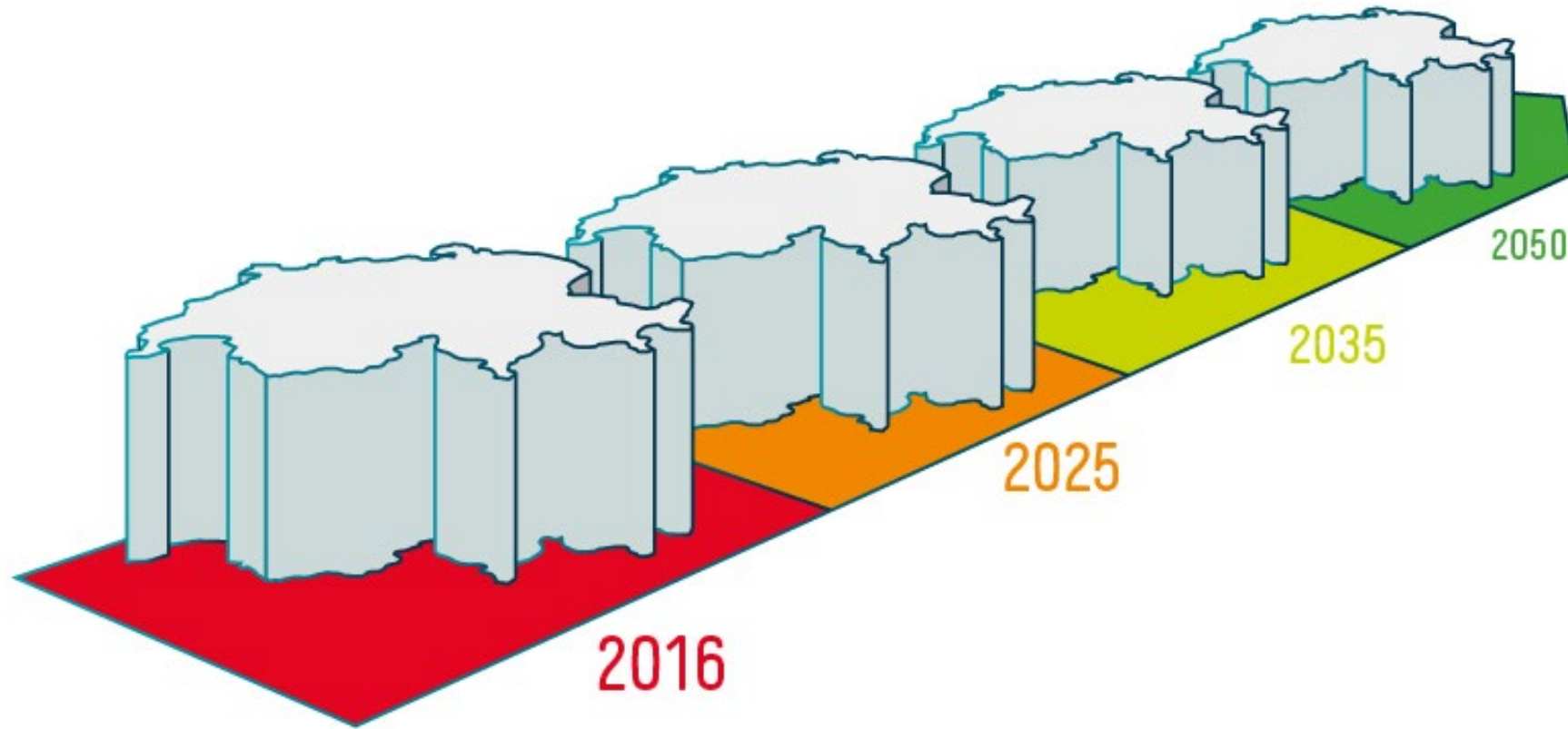




Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

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



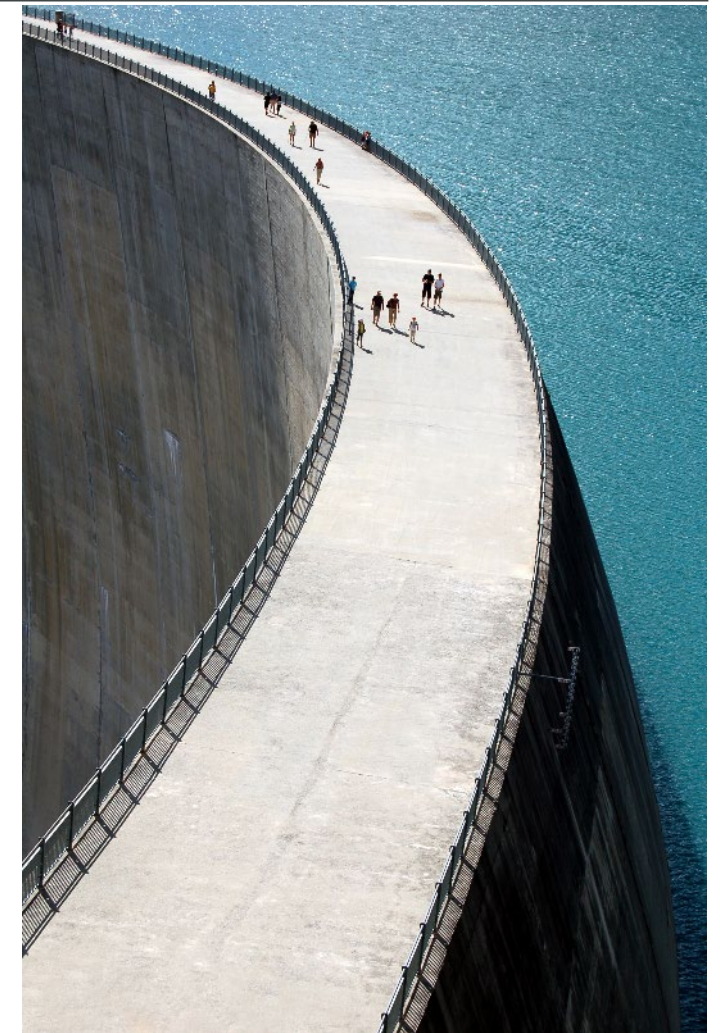
# ENERGY STRATEGY 2050: PROMOTION OF ENERGY EFFICIENCY AND RENEWABLE ENERGY



# OUTLOOK

---

1. The Swiss energy system
2. Energy and climate goals
3. The Energy Strategy 2050
  - a. Energy Efficiency Measures
  - b. Promotion of Renewable Energy





# KEY ENERGY DATA

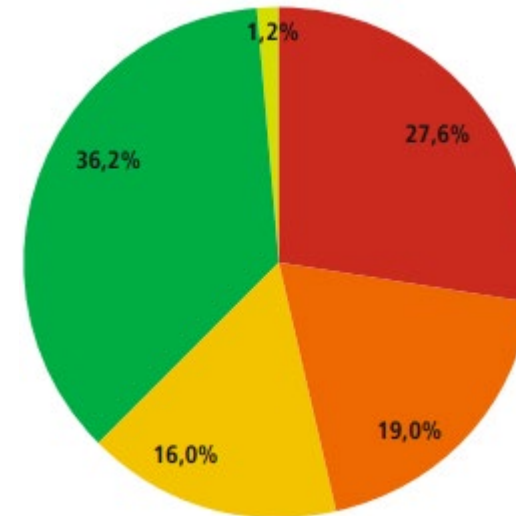
## Energy Sector:

- Small share of industry
- Relatively high share of transport
- Low share of natural gas
- > 60% energy import dependence

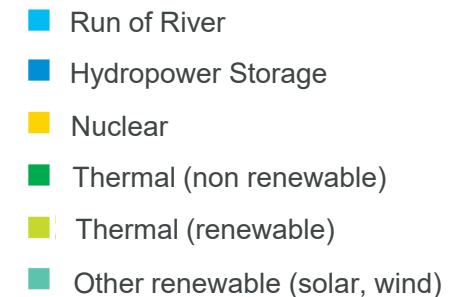
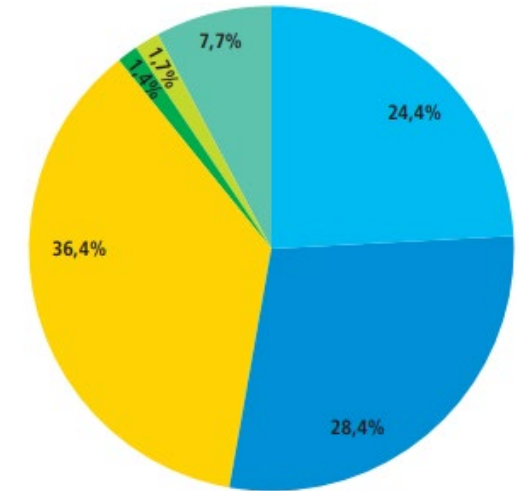
## Electricity Sector:

- (Almost) 100% CO2-free electricity generation
- 55-60% from hydropower
- Nuclear phase-out: no set date

Final Energy Consumption by Sector 2022



Electricity Generation by type 2022





# CLIMATE-NEUTRAL SWITZERLAND IN 2050

Hydrogen production at run-of-river sites (7 PJ)

1.5 million heat pumps (today 0.3 million)

Wind and geothermal energy with attractive generation profile

Heavy transport by rail, with bioenergy and hydrogen

3.6 Mio. battery-powered cars

Negative emissions technologies: storage in Switzerland (3 million t CO<sub>2</sub> pa)

38.6 TWh from hydropower (renewable net production)

High levels of efficiency in industrial processes

Waste treatment with CCS (3.6 Mt CO<sub>2</sub> pa)

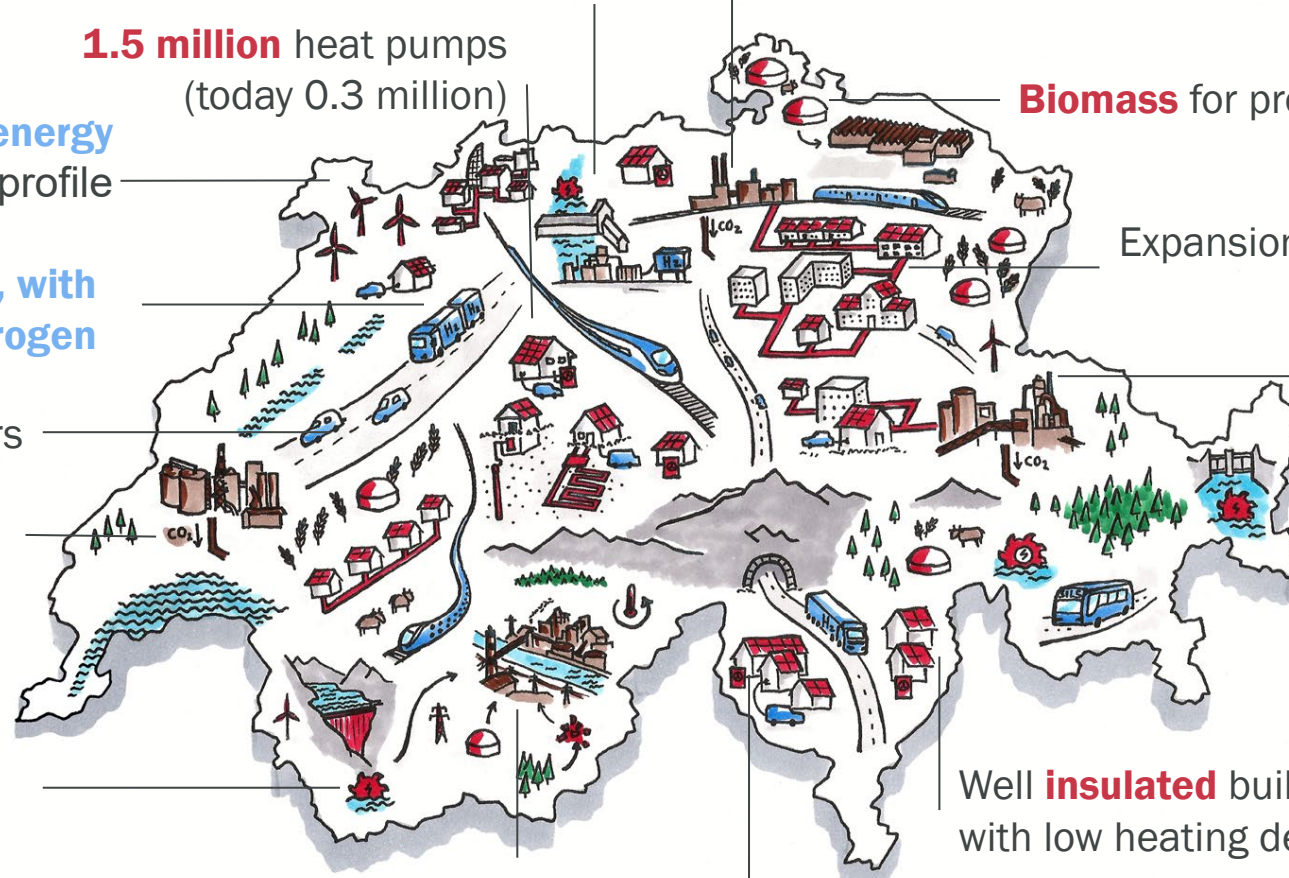
Biomass for process heat

Expansion of heat grids in urban areas

Cement and chemicals factories with CCS (2.9 Mt CO<sub>2</sub> pa)

Well insulated buildings with low heating demand

34 TWh from photovoltaic systems, 40 % of production (today 2 TWh)



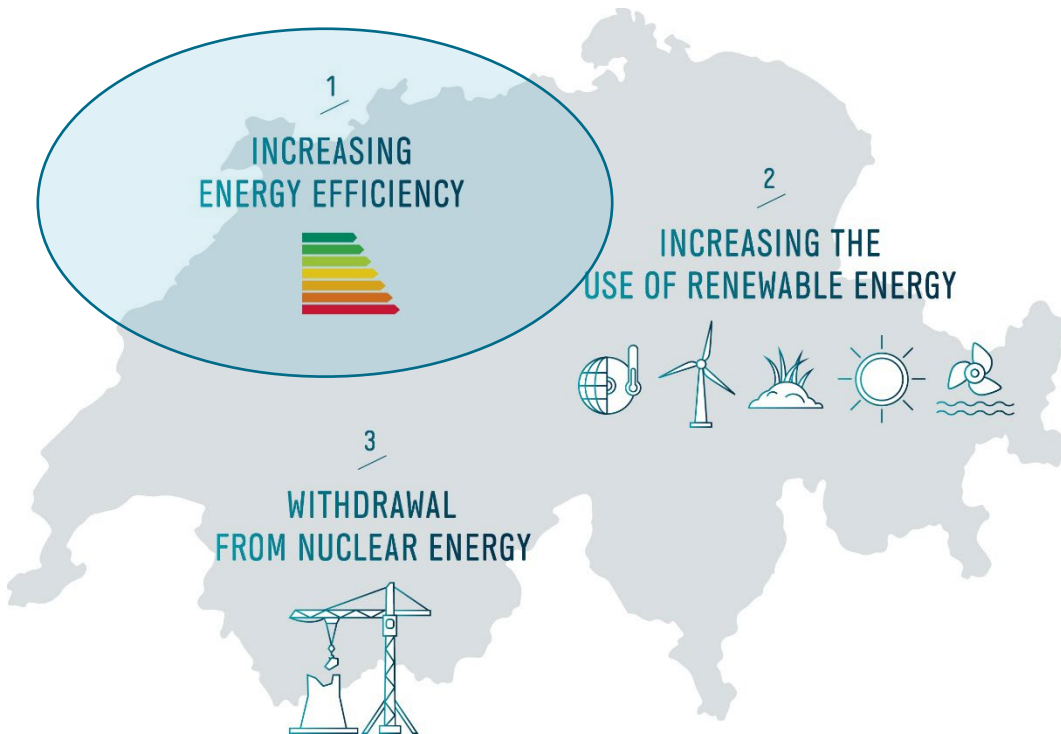
© Graphic: Dina Tschumi, Prognos AG / TEP Energy GmbH / INFRAS AG 2020



# ENERGY STRATEGY 2050

## THREE STRATEGIC OBJECTIVES

---



### 1. Measures to increase energy efficiency

- Buildings
- Mobility
- Industry
- Appliances

### 2. Measures to increase the use of renewable energy

- Promotion system

### 3. Withdrawal from nuclear energy

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



# MEASURES FOR BUILDINGS: RESPONSIBILITY OF THE CANTONS

---



**Buildings account for almost half of overall energy consumption (mostly for heating)**

Measures:

- Cantons and not the Confederation are responsible for the heating sector
- **Buildings programme of the Cantons** to improve energy-efficiency: i.e. building refurbishments, replacement of fossil heating, district heating, e-vehicle charging

Financed through **earmarking of the CO<sub>2</sub>-tax**:

- 1/3 from CO<sub>2</sub>-tax proceeds (**450 million CHF/annum**) is distributed to the Cantons for subsidies
- 2/3 of the CO<sub>2</sub>-tax proceeds are redistributed to the population and the economy
- CO<sub>2</sub>-tax is by **120 CHF/t CO<sub>2</sub>** (second highest in the world)



# MEASURES FOR APPLIANCES AND INDUSTRY: COMPETITIVE TENDERS FOR ELECTRIC EFFICIENCY

---



Types of measures: motors, pumps, ventilation, lighting, cooling/heating

Measure:

- Financial support for electric efficiency measures which would otherwise not be implemented (payback  $\geq 4$  years)
- Awarded by auctions to the lowest subsidy-savings ratio (average cost-effectiveness factor by 2.8 ct/kWh)
- Beneficiaries: industry, small enterprises and households

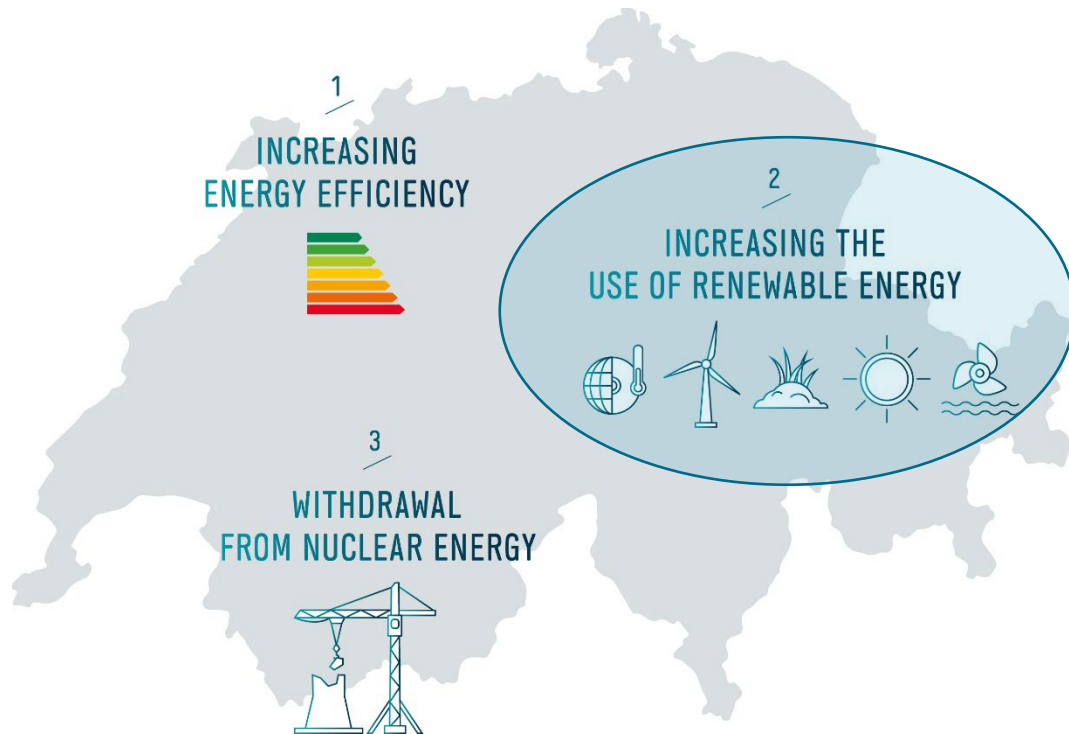
Budget: **50 millions CHF/year**

Financed through the electricity **grid surcharge**



# INCREASE THE USE OF RENEWABLE ENERGIES

---



## 1. Measures to increase energy efficiency

- Buildings
- Mobility
- Industry
- Appliances

## 2. Measures to increase the use of renewable energy

- Promotion

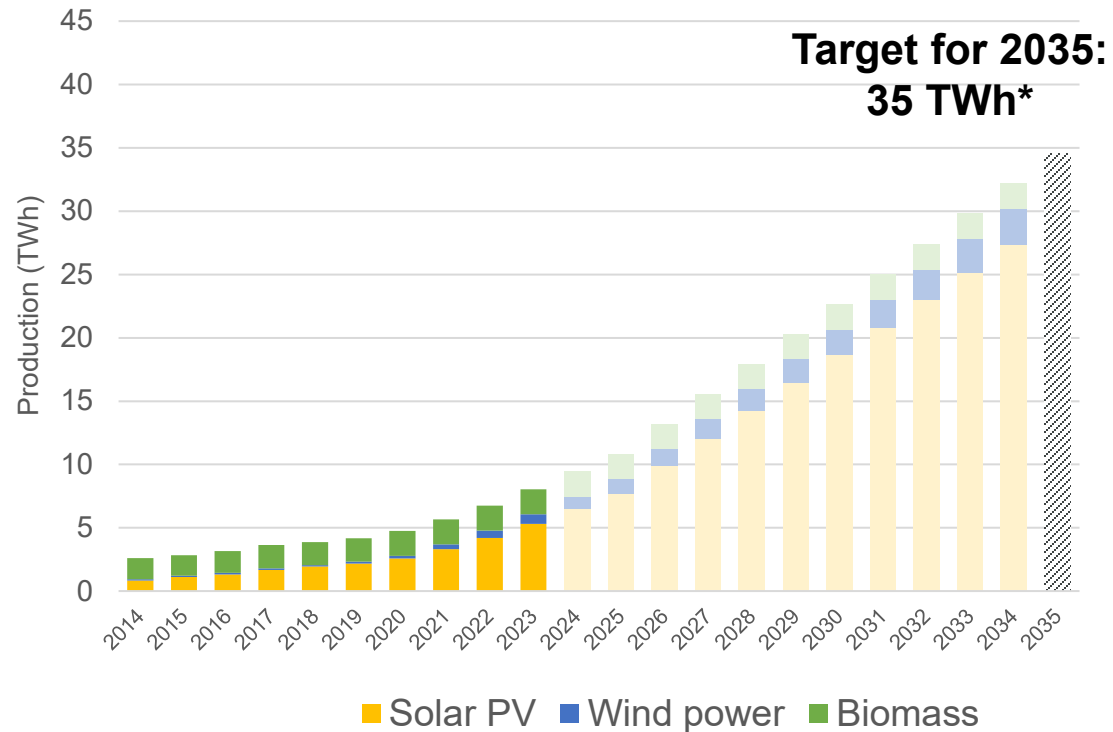
## 3. Withdrawal from nuclear energy

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





# INCREASE THE USE OF RENEWABLE ENERGY: TARGETS

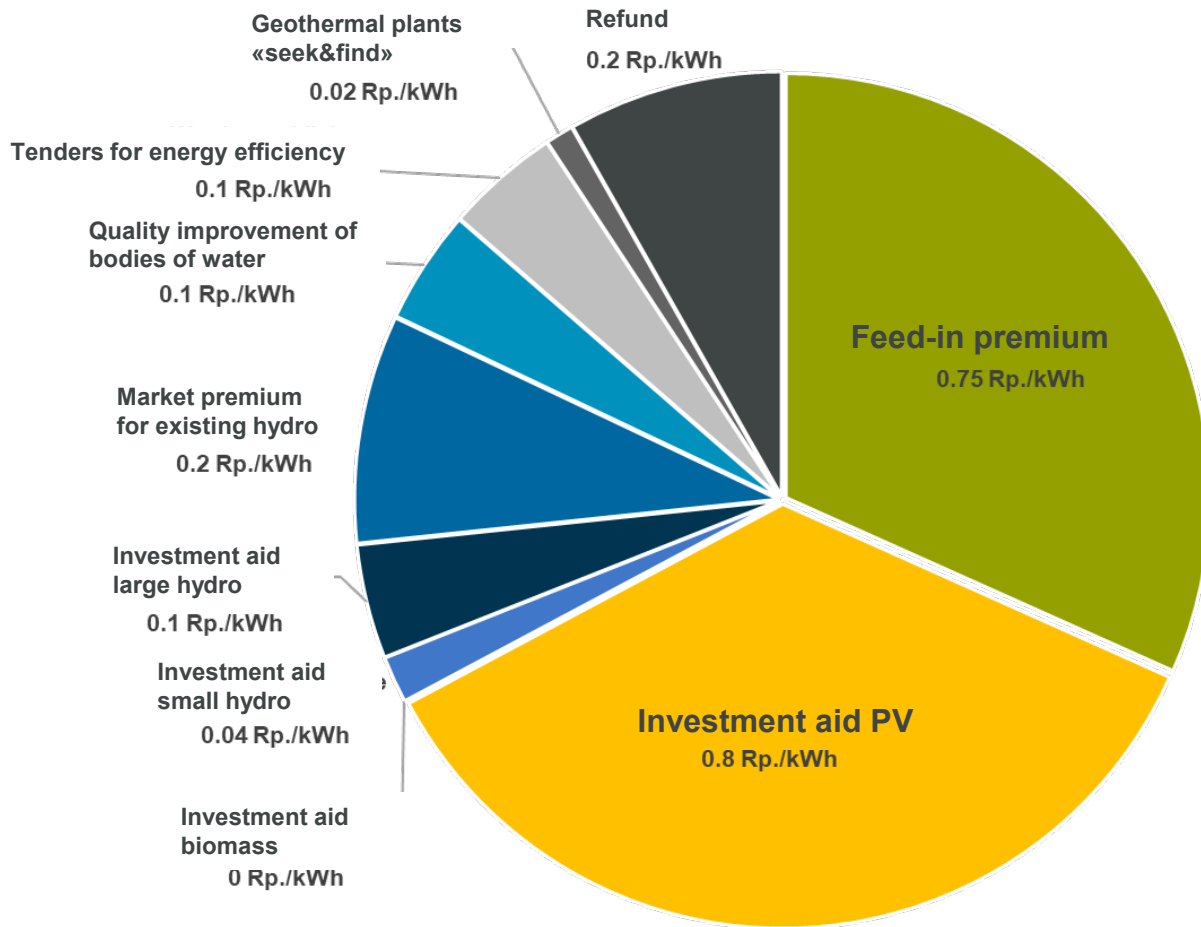


- New renewables (w/o hydropower) cover today ca. **8%** of the national electricity production
- **Solar PV boom:** increase in three years from ca. 300 MW capacity/year to ca. 1'500 MW installed in 2023

\*possibly subject to popular referendum



# FINANCING THE PROMOTION SYSTEMS: SURCHARGE ON NETWORK COSTS



**Network surcharge for promotion of electricity from renewable energy, energy efficiency and improvement of quality of bodies of water**

- Budget: **1.3 billions CHF/year**
- Capped surcharge: 2.3 cents/kWh
- refund to companies with high electricity consumption

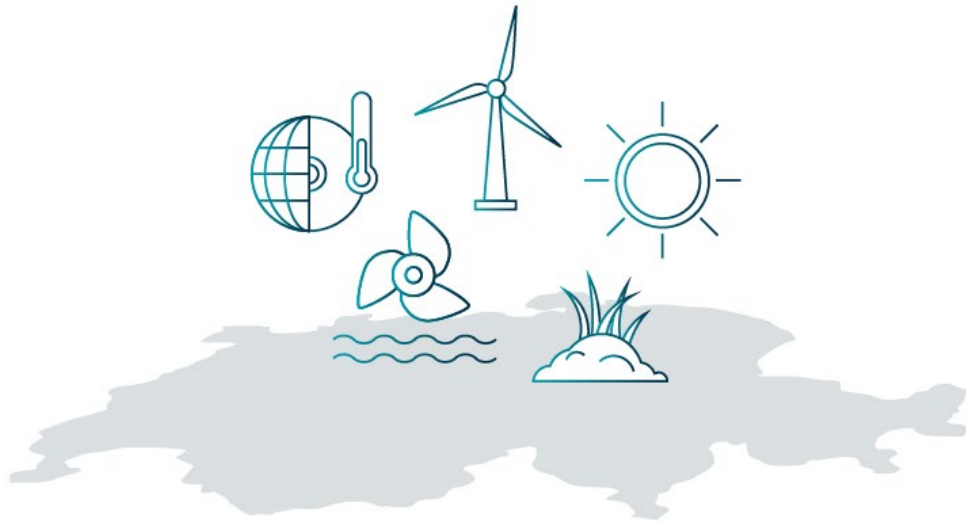


# SUPPORT MEASURES FOR RENEWABLE ELECTRICITY

---

Measures:

- **One-time investment aid** (20 to 60% of investment costs) and **feed-in premiums**
- **Auctions** for large photovoltaic plants
- Eligible technologies:
  - Solar PV: rooftop, large and alpine plants
  - Biomass (only waste): biogas, wood, waste incineration plants
  - Wind power plants
  - Hydropower: small and large, new and enlarged/refurbished plants
  - Geothermal plants: contributions seek&find
- **Beneficiaries:** house owners, enterprises, industry, public sector
- Supported electric plants size: form very small to very large
- Temporal limitation: phase out by 2030 (possibly 2035)





# THANK YOU FOR YOUR ATTENTION

