EUROPE'S NATIONAL ENERGY EFFICIENCY CHAMPION

Presentation at the **Motor Summit 2021 Switzerland**
based on the The European Energy Efficiency Scoreboard

ODYSSEE-MURE

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Utrecht University

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OVERVIEW

- **A brief introduction to Fraunhofer**
- The European ODYSSEE-MURE project for Energy Efficiency Indicators and Policies
- The European Energy Efficiency Scoreboard
- The position of Switzerland in the Scoreboard and some explanations
- Conclusions

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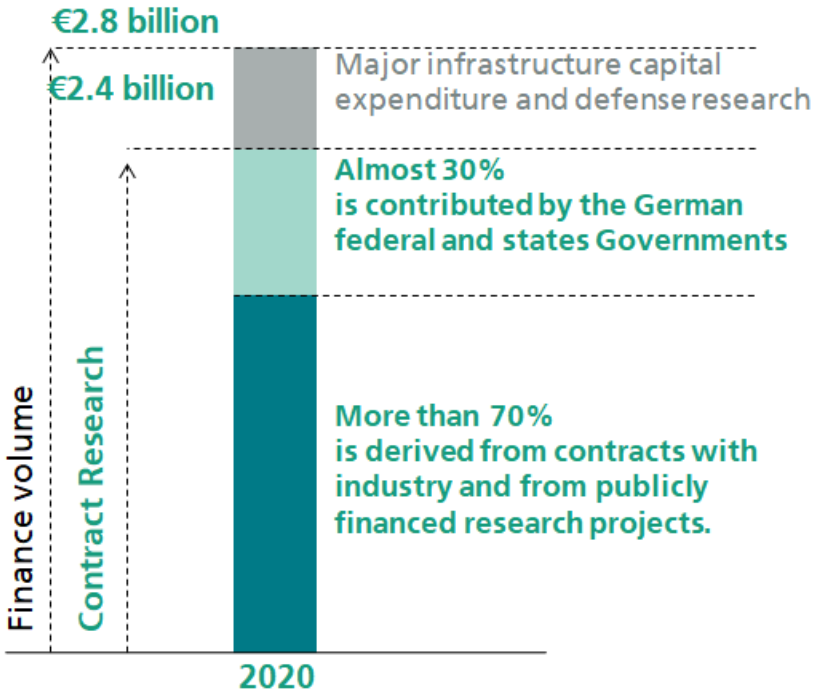
The Fraunhofer-Gesellschaft at a Glance

The Fraunhofer-Gesellschaft undertakes applied research of direct utility to private and public enterprise and of wide benefit to society.

29,000 staff

75 institutes and research units



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The Company's namesake Joseph von Fraunhofer (1787–1826)

Researcher

- Discovery of the "Fraunhofer lines" in the solar spectrum

Inventor

- New manufacturing methods for lenses

Entrepreneur

- Head and partner of a glass works

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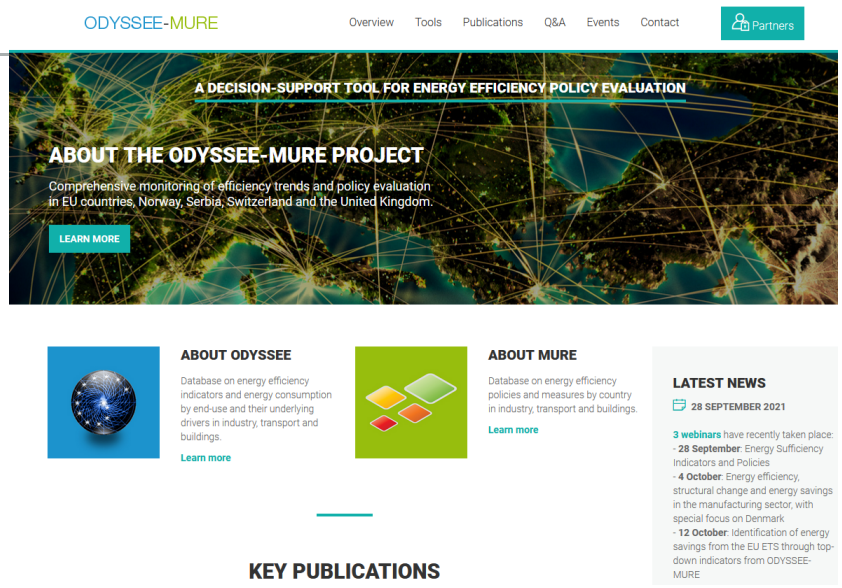
BACKGROUND: ODYSSEE-MURE PROJECT ON ENERGY EFFICIENCY (EE)



- 27 EU countries (+UK, Norway, Switzerland, Serbia) represented by energy efficiency agencies
- 2 complementary databases:
  ODYSSEE on EE Indicators (200 EEIs)
  MURE on EE Policies (2500 national EE policies)
- Decentralised data collection
  → legitimacy of the results
- Exchange on methodologies, analyses through seminars gathering 60 experts
- Harmonised data collection allowing data going « beyond the energy balance », rapid updating (- one year), quality check
- Benchmark through adjustments for national circonstancies
- Dissemination: sectoral and country profiles, national reports, policy briefs, webinars
- Communication tools (12 facilities for end-users , single website http://www.odyssee-mure.eu/).

SWISS PARTNERS IN ODYSSEE-MURE

- University of Geneva - Institute for Environmental Sciences (ISE) – Energy Efficiency (Prof. Martin Patel)
  http://www.unige.ch/efficience/en/

- Zurich University of Applied Sciences – School of Management and Law - Center for Energy and Environment (Prof. Regina Betz)
  https://www.zhaw.ch/de/sml/institute-zentren/cee/

WHAT IS THE ECEEE & ODYSSEE-MURE ENERGY EFFICIENCY SCOREBOARD?

- Benchmarking tool to compare the impacts of energy efficiency policies and developments amongst European countries.
- Intended to paint a well-rounded picture of how a country is performing with respect to energy efficiency, relative to its peers in Europe.
- First energy efficiency scoreboard to account for quantitative impacts of policies (output-based scoring).
- It accounts for several decades of statistical data as well as future impacts of current energy efficiency programmes.

- Cooperation with the European Council for an Energy Efficient Economy eceee

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WHY THIS SCOREBOARD?

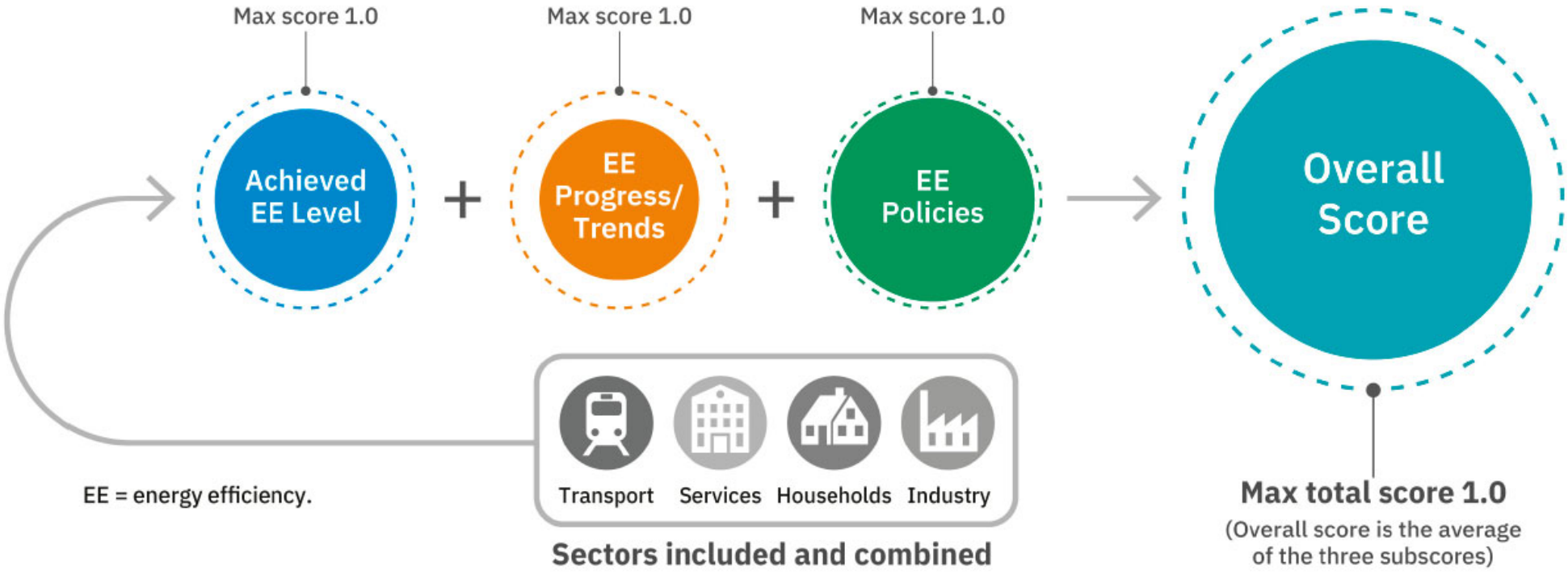
- **Raise the profile** of energy efficiency
- **Increase transparency** about progress and impacts of energy efficiency policy
- **Facilitate learning** – highlight successes and areas for improvement.

The unique aspects of this scoreboard are:

- It uses **indicators** that are adjusted for structural and climatic factors
- It accounts for **quantitative effects** of policies
- It considers impacts from the **past**, the **present**, and even **future** implications
- It weighs **various evidence-based parameters** into **one single score**

By weighing various parameters, and by looking back and to the future, the score gives a more fair and realistic description of development than simple comparisons of energy intensity.

HOW DOES THE ODYSSEE-MURE SCORING METHOD WORK?



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THE SCORE "LEVEL" – ASSESSING TODAY'S PERFORMANCE LEVEL

The Level Score answers the question "How is my country **currently** performing with respect to energy efficiency?"

Quantitative measure of a country's performance at the present time, influenced by autonomous developments, energy prices and policies in place. Accounts for all major sectors of the economy (Industry, Transport, Households, and Services).

The scoring is based on **adjusted** and mainly **physical indicators** for energy efficiency (and not on simple energy intensities), such as:

- energy use per m2 and building type (household, office…)
- share of public transportation in total land passenger transport
- specific energy consumption for industrial branches

Note: The "Level" parameter is based on top-down statistical EE indicators in the ODYSSEE database

THE SCORE "TREND" – A LOOK AT PROGRESS SINCE 2000

The Trend score answers the question "How much **progress** has the country achieved in the area of energy efficiency?"

The Trend score determines progress using the same set of energy efficiency indicators as selected for the "Level" score since the year 2000.

Dynamic parameter that takes development and past actions i nto account.

Note: The "Trend" parameter is based on top-down statistical EE indicators in the ODYSSEE database

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THE "POLICY" SCORE – QUANTIFYING FUTURE SAVINGS FROM TODAY'S POLICIES

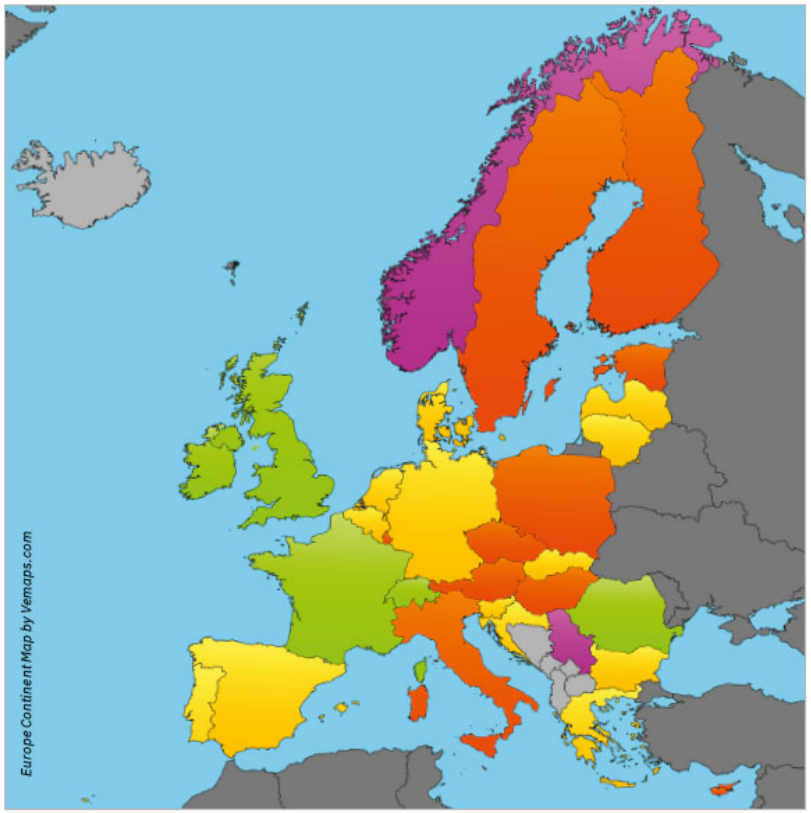
The Policy Score answers the question "What **future impacts** can I expect from **recent policies** enacted in my country?"

This score forecasts the energy-saving impacts of more recent policies from a given starting year, e.g., 2015, until a target year (e.g., until 2030). It converts policy impacts into a quantitative or semi-quantitative score.

Bottom-up evaluation of policies, based on the energy savings expected to be achieved in each sector compared to the sectoral energy consumption.

Note: Policy impacts are gathered in the MURE Database from quantitative and semi-quantitative measure impact evaluations in a target year, e.g., 2030

THE SCOREBOARD COVERS 31 COUNTRIES: EU, NORWAY, THE UK,SERBIA AND SWITZERLAND



Upper value
Score above 0.70 [5 countries]

Middle value
Score in the range 0.41–0.69
[13 countries]

Lower value
Score below 0.40
[13 countries including Norway and Serbia with incomplete data]

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SWITZERLAND IS EUROPE'S 2021 ENERGY EFFICIENCY CHAMPION

Best top Overall Score – ranking top

Rank	Country	Score
1	Switzerland	0.92
2	UK	0.80
3	Ireland	0.78
4	Romania	0.77
5	France	0.72

Level – overall (all sectors) ranking top 5

Rank	Country	Score
1	Lithuania	1.0
2	Switzerland	0.86
3	Denmark	0.79
4	Spain	0.79
5	Portugal	0.77

Trend – overall (all sectors) ranking top 5

Rank	Country	Score
1	Romania	1.0
2	Ireland	0.96
3	UK	0.91
4	Switzerland	0.90
5	Slovakia	0.89

Policy – overall (all sectors) ranking top 5

Rank	Country	Score
1	France	1.0
2	Switzerland	1.0
3	Finland	0.95
4	Ireland	0.86
5	Germany	0.82

SWITZERLAND – DETAILED SCORING – 2021

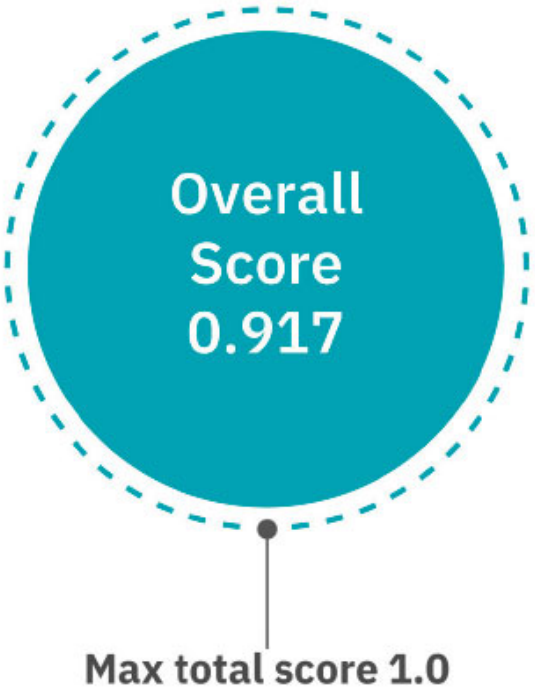
	Level	Trend	Policy	Combined
Overall	**0.86**	**0.90**	**1**	**0.92**
Industry	1	0.33	1	0.78
Transport	0.63	0.95	0.75	0.75
Households	0.90	0.54	1	0.81
Services	0.66	0.78	1	0.81

WHY DID SWITZERLAND SCORE SO WELL – AND WHAT CAN BE IMPROVED?

- **Top 5** in all aspects – Level, Trend, and Policies
- Top score for **Industry-Level**
- Very strong **Policy scores** overall – especially Industry, Households, and Services

Room for improvement?

- Relatively weak **Trend** score in **Industry** and **Households** (i.e. slow improvement over time)
- Currently strong **Policies** in both of those sectors indicate that Trend should improve.



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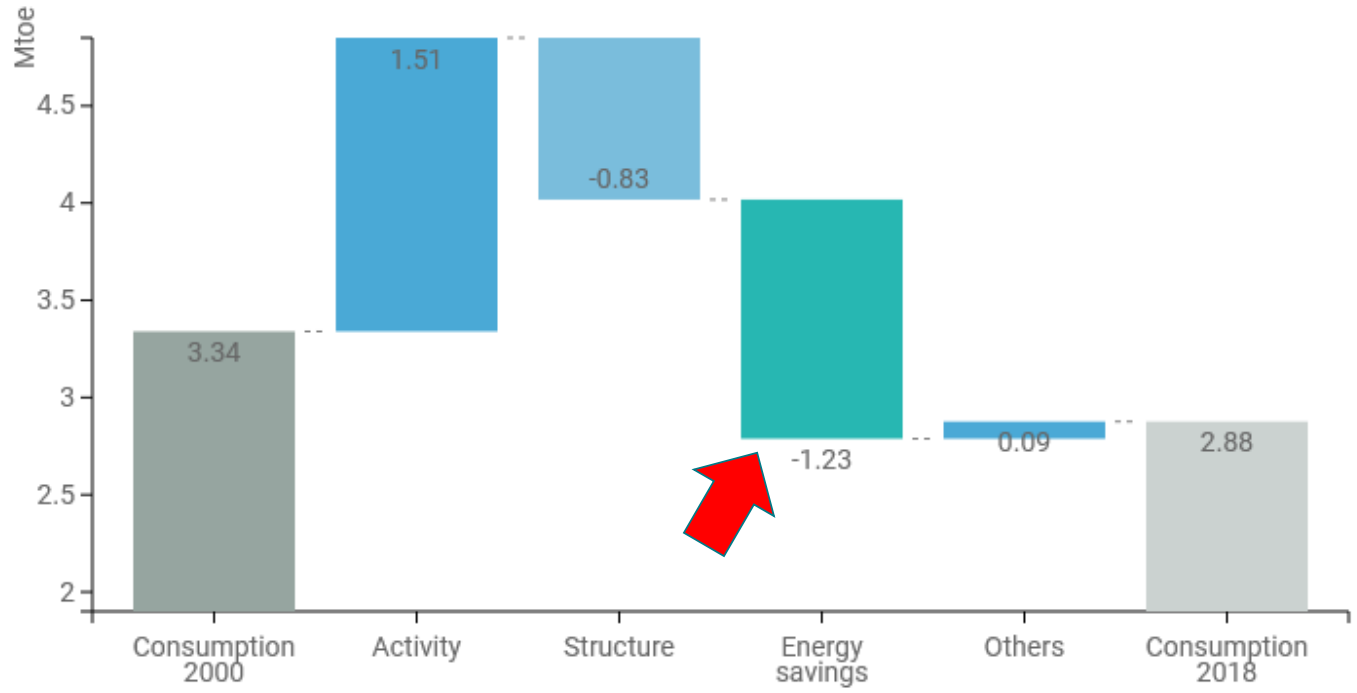
SWITZERLAND: MAIN DRIVERS OF THE ENERGY CONSUMPTION VARIATION IN INDUSTRY



Source: ODYSSEE

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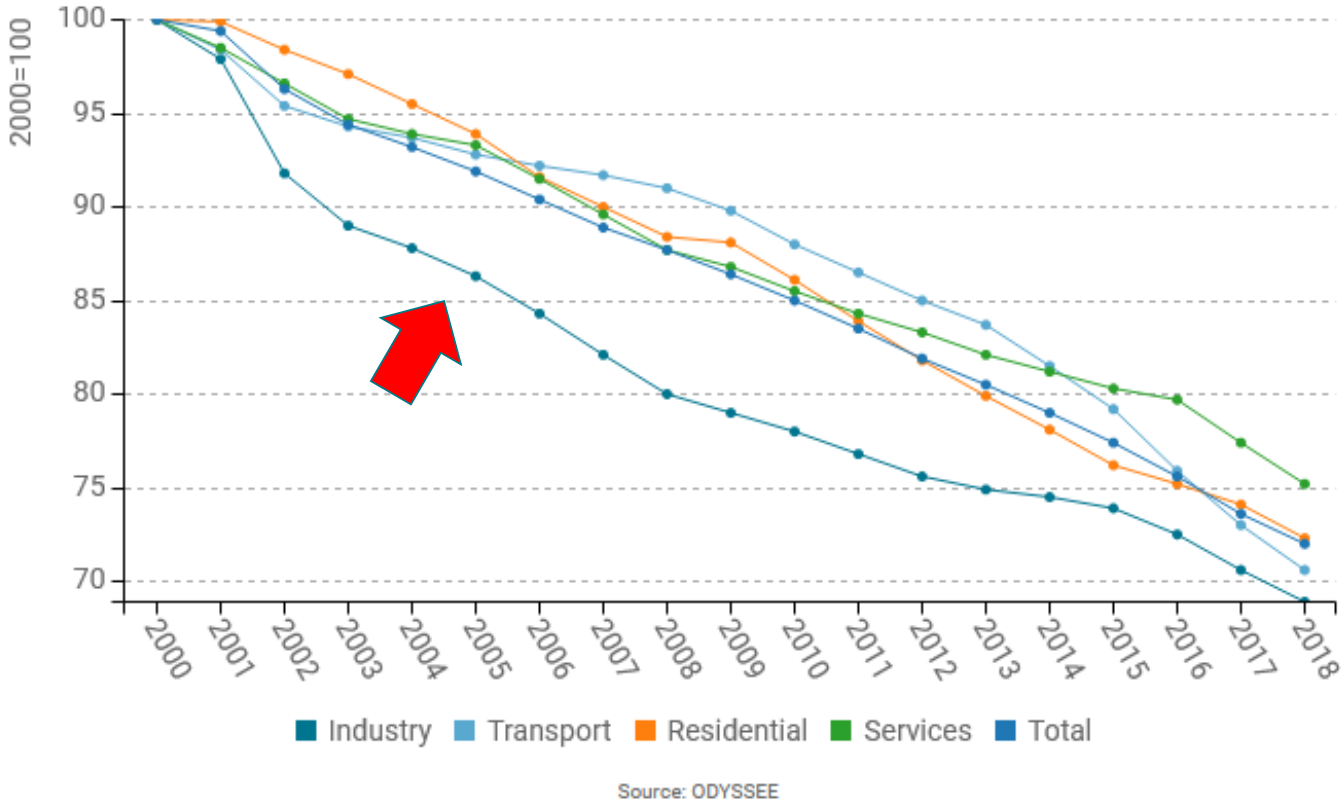
SWITZERLAND: TECHNICAL ENERGY EFFICIENCY INDEX

- Overall nation-wide energy efficiency of Switzerland improved at the rate of **1.7% p.a.**, as measured by the ODEX (28% total improvement) from 2000 to 2018.
- The energy efficiency of the industry sector improved at a rate of **2% p.a.**, making it the fastest improving sector in Switzerland.



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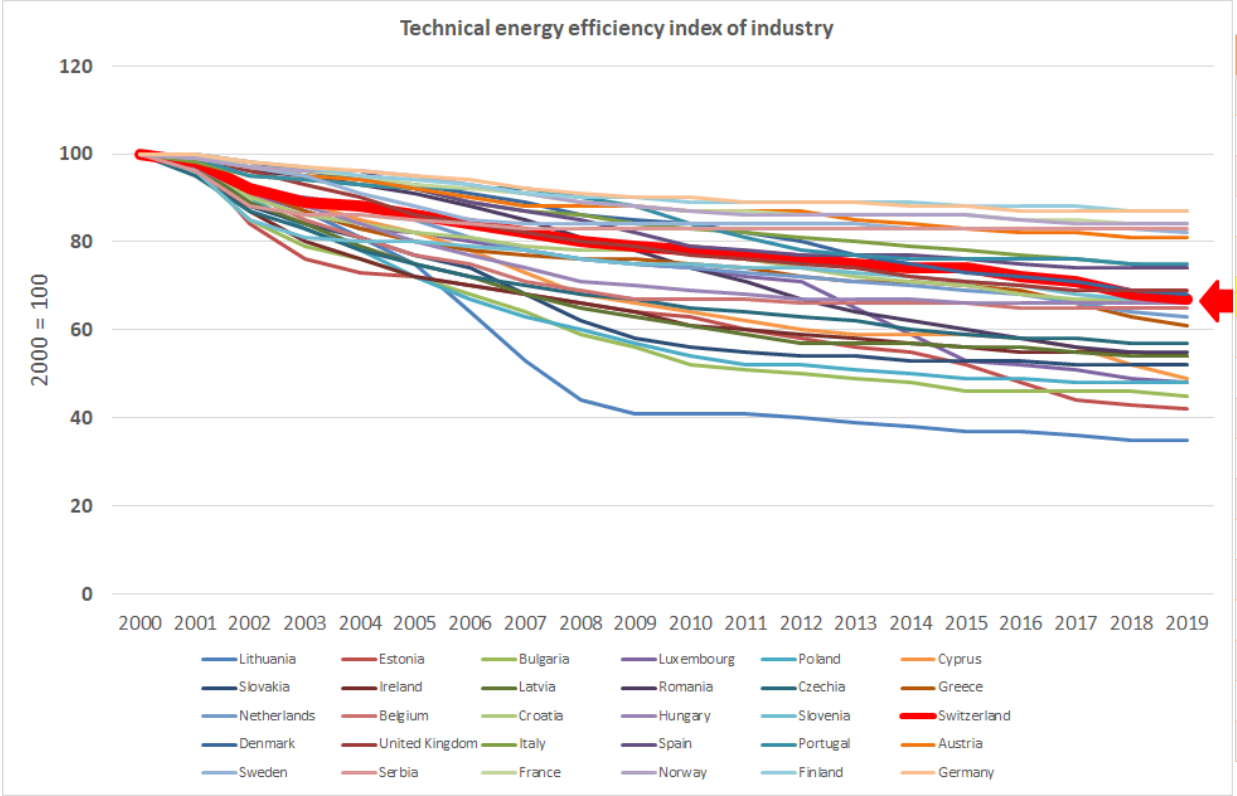
SWITZERLAND: TECHNICAL ENERGY EFFICIENCY INDEX

- In terms of energy efficiency trends in industry (measured by the ODEX) Switzerland did well...
- ...but other countries performed better (though it was easier for Eastern countries to improve trends
- Among the more mature European countries in Europe Switzerland performed quite well.



Spalte1	2019
Luxembourg	48
Ireland	54
Greece	61
Netherlands	63
Belgium	65
Switzerland	67
Denmark	68
United Kingdom	69
Italy	74
Spain	74
Portugal	75
Austria	81
Sweden	82
France	84
Norway	84
Finland	87
Germany	87

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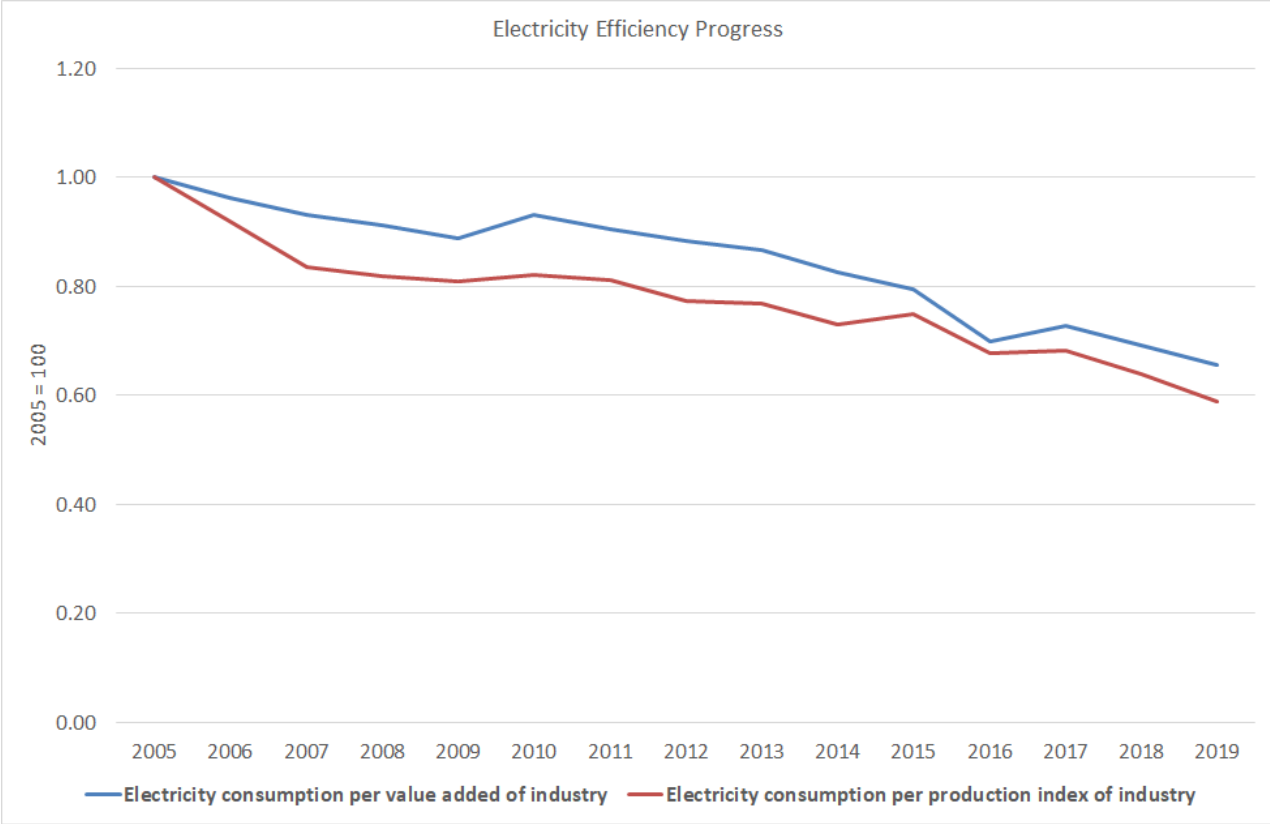
SWITZERLAND: ELECTRICITY EFFICIENCY PROGRESS IN INDUSTRY

- Electrity Efficiency progress was also very important in the Swiss industry (electric motors…)



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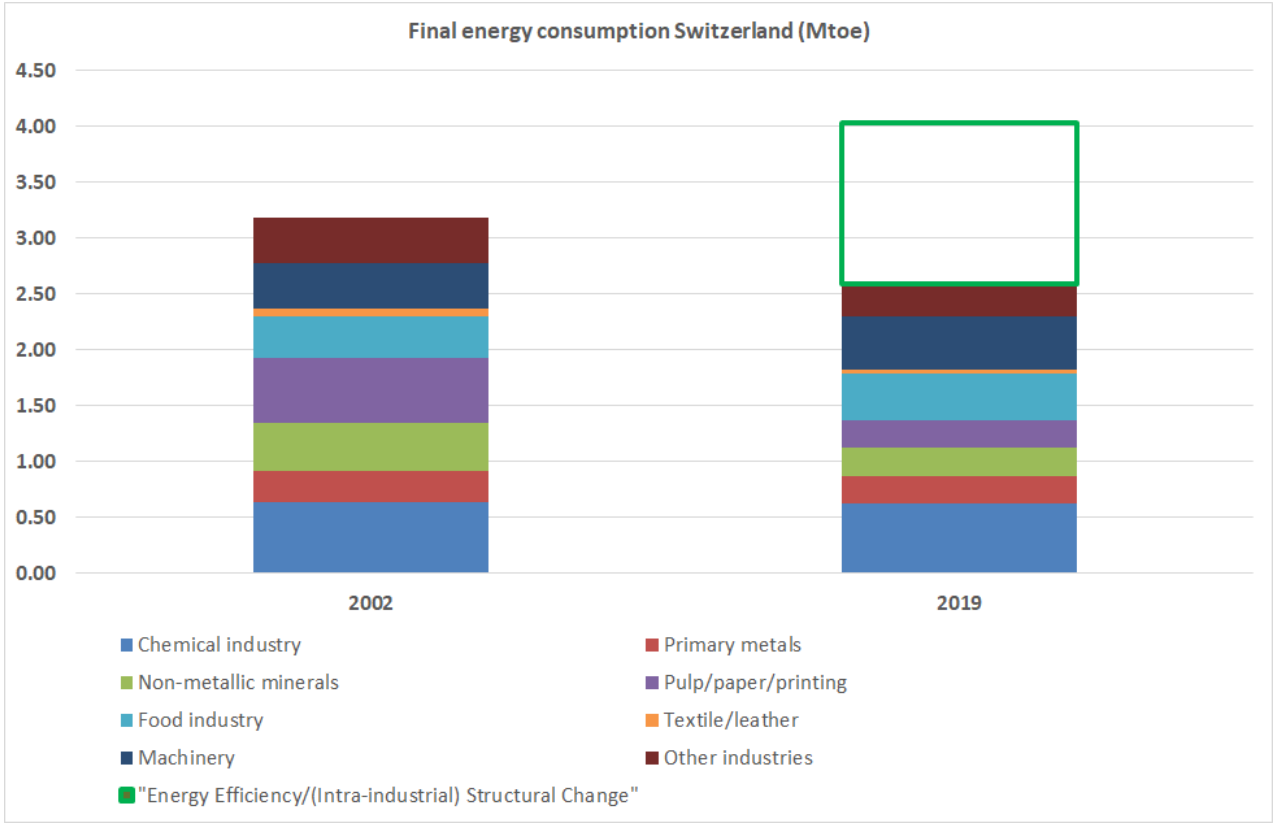
SWITZERLAND: WHICH TECHNOLOGIES HAVE CONTRIBUTED TO THE PROGRESS OF EE IN INDUSTRY?

- In just under 20 years, Switzerland has saved **about one third of the energy** it would otherwise have needed.
- Significant contributions came from the **chemical sector (thermal applications and cross-cutting technologies)** and from **other industries**.



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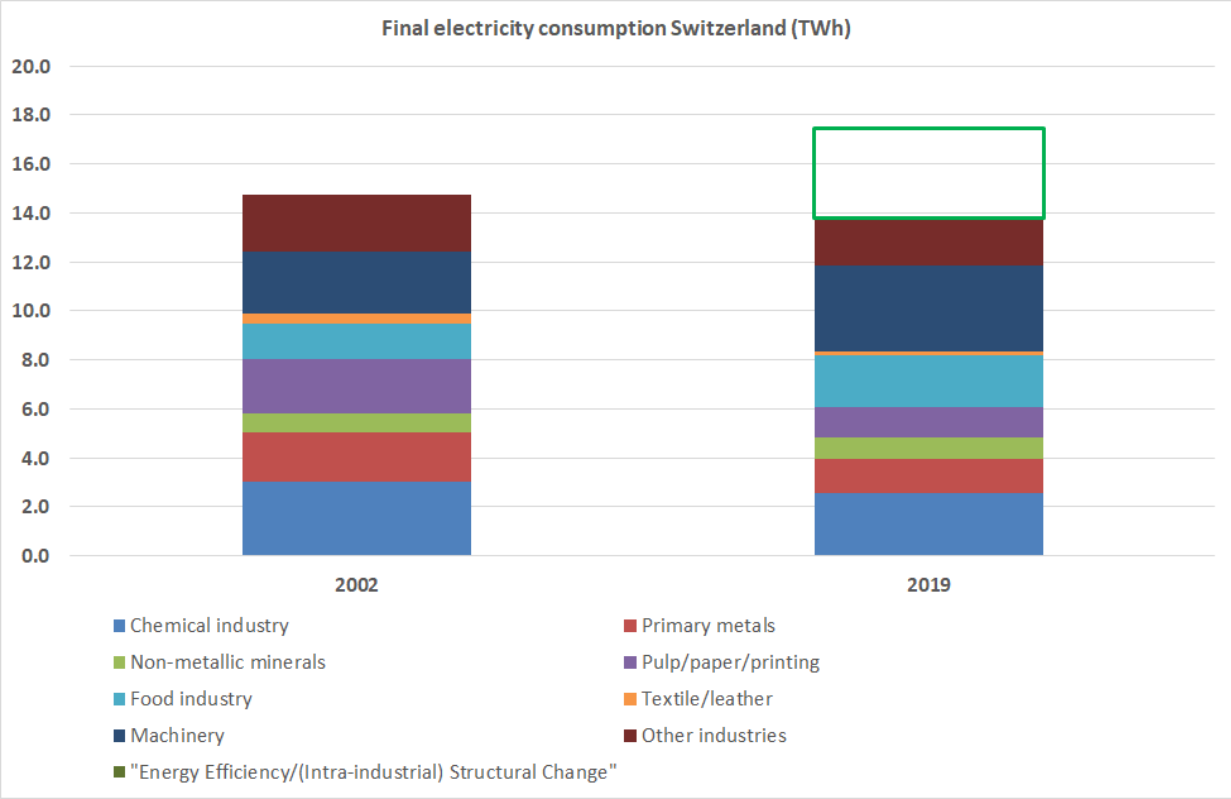
SWITZERLAND: WHICH TECHNOLOGIES HAVE CONTRIBUTED TO THE PROGRESS OF EE IN INDUSTRY?

- **Electricity-related applications** have made a significant contribution to industrial savings in Switzerland
- The vast majority of electricity used by Swiss industry is used in **cross-cutting technologies (electric motors and applications).**



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SWITZERLAND: IMPORTANT EE MEASURES IN INDUSTRY

Code	Title	Type	Starting Year	kt CO2 (2030)	PJ(2030)
IND-CH1051	Emission Reduction Target Agreements (Zielvereinbarung zur Emissionsverminderung / Convention d'objectifs à réduire les émissions / Impegno congiunto di riduzione delle	Others	2013	113	*2.02*
IND-CH1052	Technology Fund (Technologiefonds / Fonds de technologie / Fondo per le tecnologie)	Financial	2015	low impact	
IND-CH1053	Competitive Tenders for Energy Efficiency (Wettbewerbliche Ausschreibungen / Appels d'offres publics / Gare pubbliche)	Financial	2010	*188*	3.35
IND-CH1054	CO2 Levy (CO2-Abgabe / Taxe sur le CO2 / Tassa sul CO2)	Fiscal	2008	344	*6.14*
IND-CH4287	Emission Trading System (Emissionshandelssystem / Système d'échange de quotas d'émission / Sistema di scambio di quote di emissioni)	Market-based Instruments	2008	535	*9.55*
				(in Italics: estimate with emission factor of natural gas)	

Measures	Description	Expected savings, impact evaluation	More information available
Emissions trading system	The Swiss ETS covers around 50 installations from energy intensive industries, around 10% of Swiss greenhouse gas emissions. The Swiss ETS copied to a great part the European emissions trading rules and is linked to the EU ETS since 2020.	By 2020: estimated mitigation impact of 0.4 MT of CO2 relative to reference scenario	Link
Emission reduction target agreements	Greenhouse-gas intensive companies can be exempted from the CO2 levy if they commit to reduce their emissions based on an emission reduction target agreement.	By 2020: estimated mitigation impact of 0.1 MT of CO2 relative to reference scenario	Link

CONCLUSIONS

- **Switzerland did well on energy effiency. Howevever, there is even more scope for improvement (and need for climate neutrality). Best wishes for your work!**
- **More information:**

https://www.odyssee-mure.eu/data-tools/scoring-efficiency-countries.html

Country profile Switzerland: https://www.odyssee-mure.eu/publications/efficiency-trends-policies-profiles/switzerland.html

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