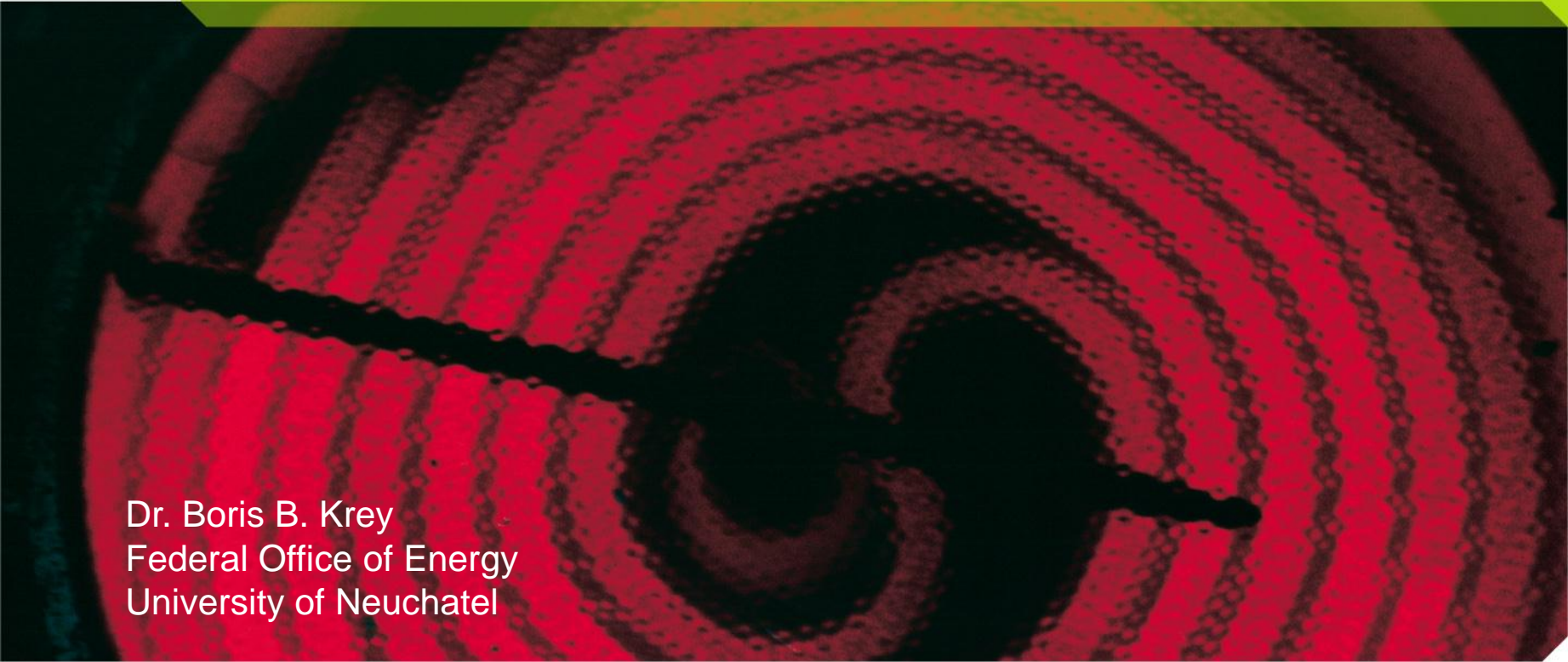




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Developments in the Swiss gas market and the current work status of the gas supply act in CH



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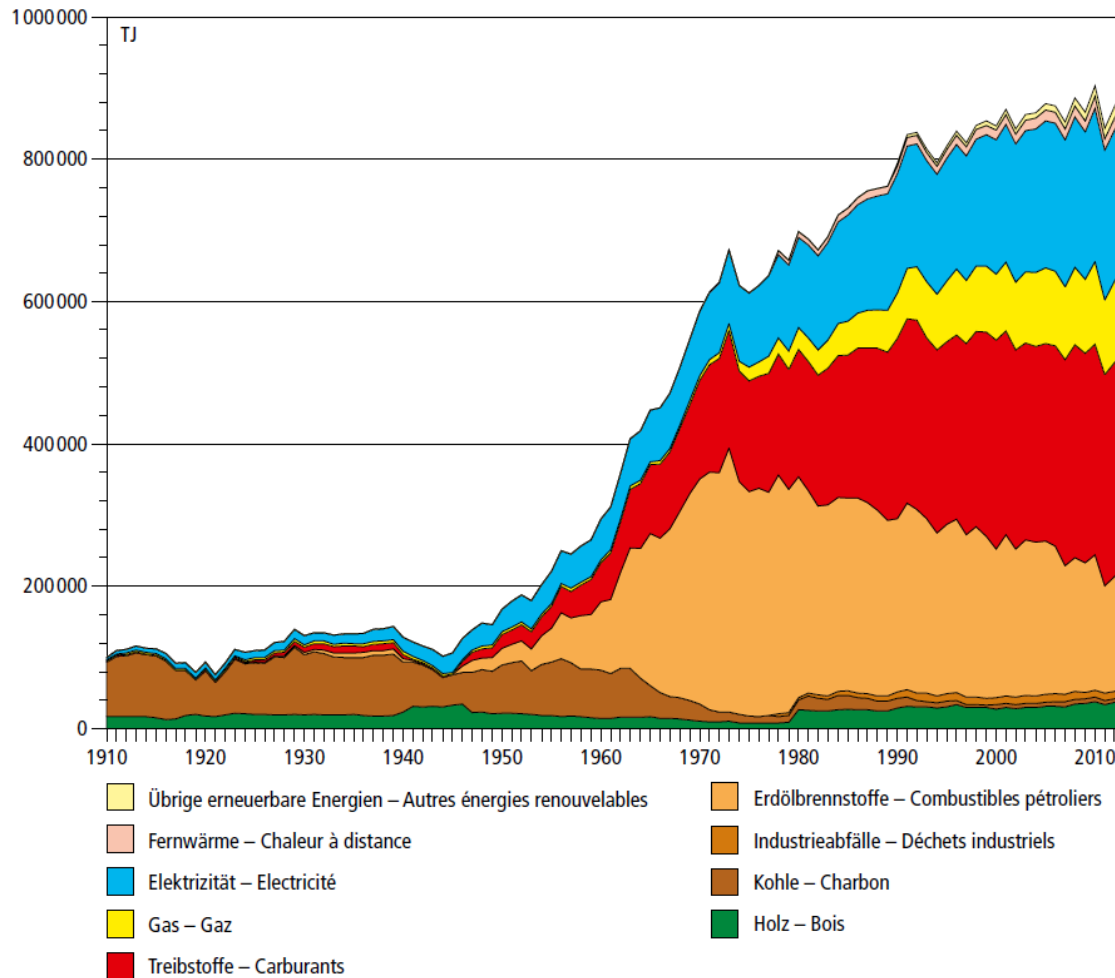


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1. Strong growth in gas, electricity and fuel consumption



Today's consumptions and shares of total energy consumption

electricity: 59 bn. kWh [24 %]
gas: 34 bn. kWh [14 %]

Gas consumption has almost doubled **since 1990**, however since the **last 10 yrs** it has **stagnated**

Abbildung 1: end energy consumption in Switzerland, in TJ (1 TJ = 0.2778 Mio. kWh).

Source: Schweizerische Gesamtenergiestatistik 2013, BFE

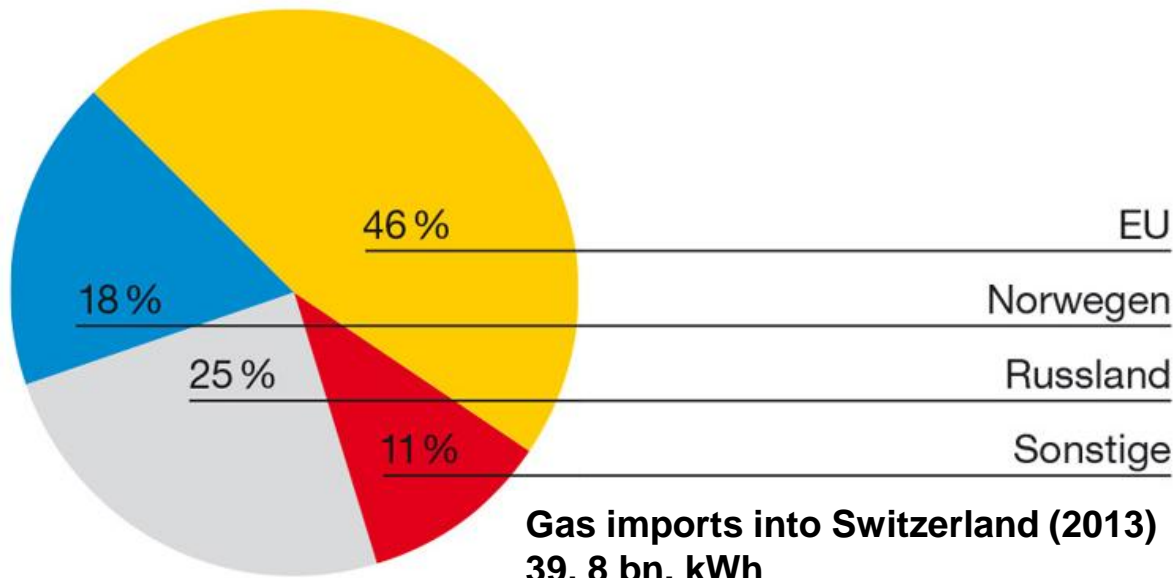


1. Role of gas in Switzerland

- **Largest consumer group** is **households** with 40% of the final consumption, followed by **Industry** with about one third
- Usage particularly for **heat generation** in households (room heating, warm water, cooking) and **process heat** in industry
- About **2 TWh** of gas is used in **conventional thermal power- and thermal heat power stations** to produce electricity and district heating; however compared to Germany the production in CH is negligible (in GER about 620 TWh)
- Gas sector in Switzerland generates turnover of **2,4 bn CHF / annum** and employs **1'600 people**
- Switzerland has **no own natural gas** (between 1985 and 1994 a total of 73 Mio. Nm³ gas were extracted, that equals about 2% of CH annual consumption)
- **Very little domestic biogas production** of around 0,3% CH annual consumption



1. Import portfolio of gas into Switzerland 2013



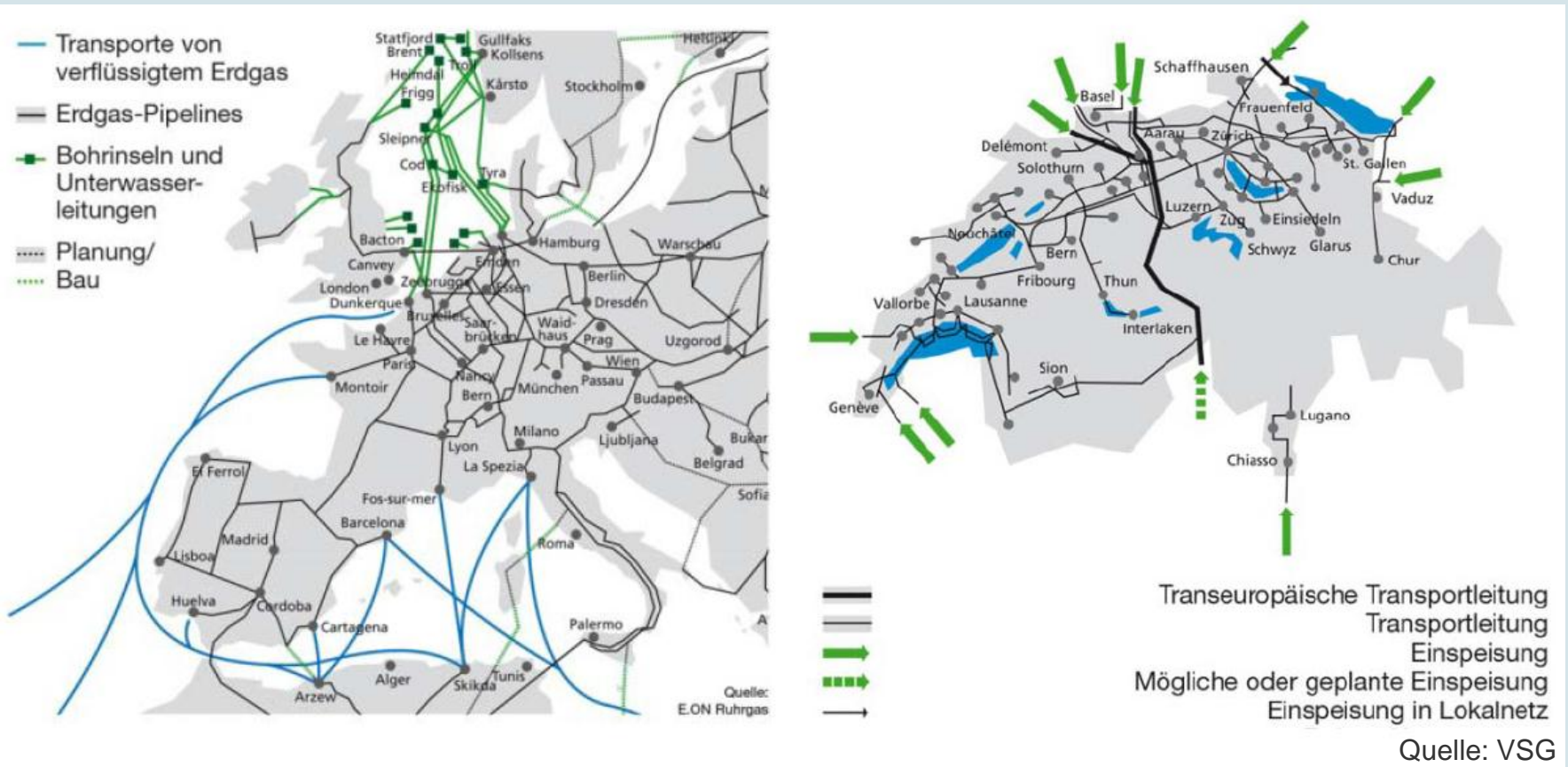
Source: VSG

Comments

- **One quarter** of imported gas comes from **Russian gas fields** via neighbouring countries to Switzerland
- There are **no direct commercial** links to **Russian gas suppliers**
- Compared to the EU **Switzerland is only a minor player**; total Swiss consumption equals about **1 % of the total EU gas consumption**



1. European and Swiss gas transport network





1. Role of gas in Switzerland in the context of the Energy Strategy 2050

Priorities of the energy strategy 2050 are:

- To strengthen **energy efficiency** (particularly buildings)
- **Expand hydro power** → +2 TWh until 2035 and expand pump storage (until 2035 ca. 3'700MW installed capacity; currently there are around 2'100 MW under construction)
- **Increase** the share of **renewable energy** technologies → 14,5 TWh until 2035
- **Additional requirements should be met by:**
 - Expansion of combined-heat-and-power (PHC or WKK)
 - Combined-cycle-power-plan (CCPP or GuD) / Imports

(based on the electricity supply version C&E in the energy strategy 2050)



1. Overview of Swiss gas provision

Conclusions

Conclusions 1

- **Gas** plays a **major role** in the **swiss energy mix**
- **Gas** will **continue** to play a **major role** in the **future**
- Switzerland **imports almost all of its gas from our neighbouring countries**; currently only a very small amount of biogas is domestically generated → approx. 0,3% of domestic consumption
- **New players** will enter the Swiss gas market



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2. Art. 13 of the Swiss Federal Pipelines Act

Art. 13 in summary

- A gas transport company is **obliged to transport** gas for **third parties** if it is **technically feasible** and **economically reasonable**, and if the transport company receives an **appropriate compensation**
- In the case of **disputes** the Federal Office of Energy decides about the terms and conditions of the contract
- Civil liabilities are dealt with by civil courts



2. COMCO preliminary clarifications in 2013

Aim: to evaluate whether the following issues in the private agreement between industry and the gas provision companies (VV) **indicates illegal restrictions on competition**:

- **Capacity allocation** applying the first-come-first-served principle
- Invoicing of **penalties related to grid stability** to third parties but not to shareholders of the regional gas provision companies
- **Ex post increase of grid usage charges** if third parties exceed the maximum agreed transport capacity, while shareholders of the regional gas provision companies face no increases if they exceed
- Criteria for grid access: according to VV only customers with a **transport capacity of at least 200 NM³/h**, who use gas primarily as **process gas** and who own **load curve measurements and data transmission devices**



2. Judgement of the Competition Commission

Under certain circumstances there is a violation of anti-trust law:

- Barrier to access is currently at 200 Nm³/h
 - Primary use must be process gas
 - Compulsory load curve measurements and data transmission devices
-
- Refusal of grid access can only be assessed on an **individual basis**
 - **Legal certainty** can only be induced by **regulatory standards set by law**
 - Conclusion: Within the gas supply industry the **risk of sanctions** continues to exist



2. The reply of the Swiss Federal Council to an inquiry concerning a Swiss gas supply act

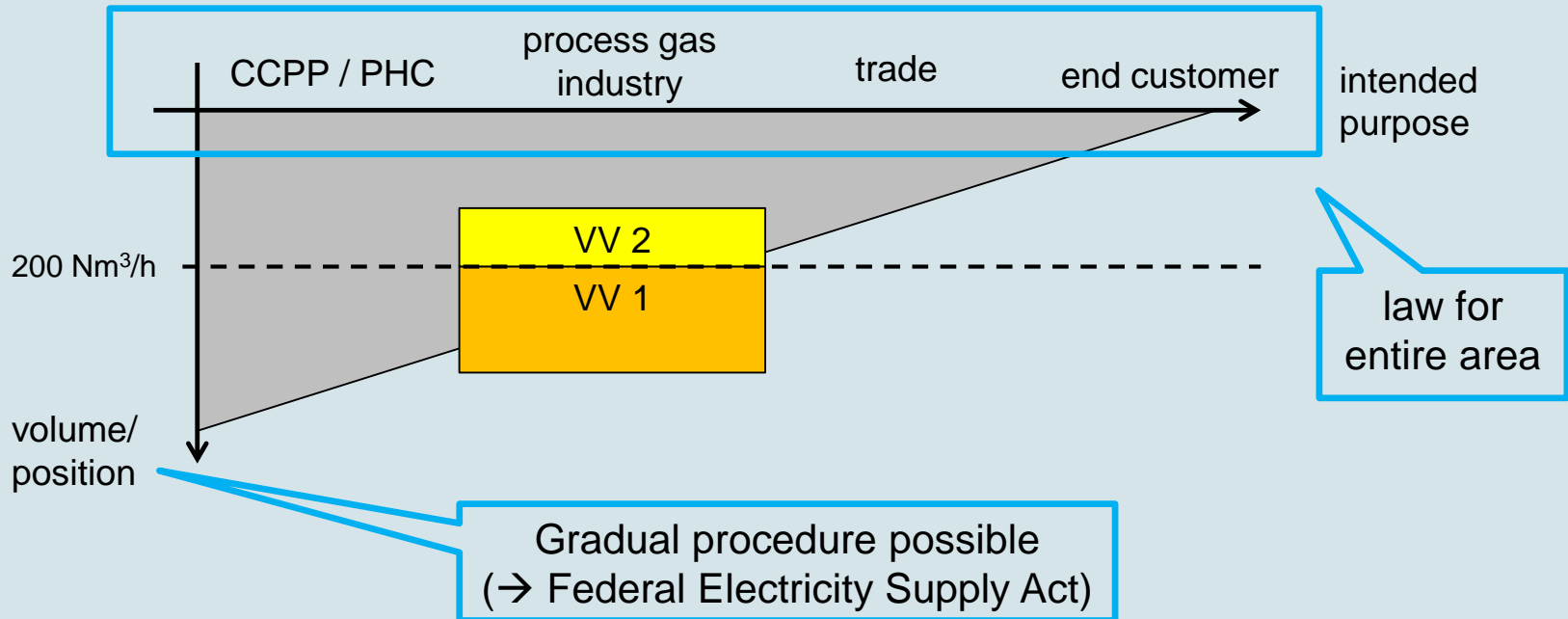
Answer as part of a question time on March 5th 2014 (14.5054)

- A gasmarket liberalization must be **thought through** and should occur in a **well-ordered legislative framework**
- **Further progression on the private agreement** between industry and the gas provision companies (VV) is the **right direction** until the gas supply act has been implemented
- The **VV** can be seen as an instrument **to optimize the opening of the gas market**, it is an **important basis for the gas supply act**
- The Swiss Federal Council is **committed to consider** the creation of a gas supply act in the **legislative period 2015 to 2019**



2. Cornerstones of the gas supply act

Scope of the gas supply act



- EU compatibility (Third EU internal market package; network codes)
- All phases of provision from border crossing point to the final consumer



2. Broad spectrum of topics identified for the gas supply act

Relevant topics:

- Balancing rules
- Network access
- Network tariffs
- Security of supply and crisis prevention
- Unbundling
- Regulatory authority
- Basic supply / secured supply (e.g. households)
- Handling of isolated zones
- Measurement standards
- Publication system
- Tasks and duties of network operators
- etc.



2. Current status of gas supply act

Conclusions 2

- The **agreement between industry and the gas provision companies (VV) complements** the rather rudimentary **Art. 13 of the Pipeline Act**
- VV has been **reviewed** by the **Comco**, **risk of sanctions** continues to exist
- **Further progression** on **VV** is the **right direction** until the gas supply act has been implemented
- Relevant topics for the gas supply act have been identified
- Work has started...



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3. Security of supply / gas crisis provision

Motivation

- **Gas** continues to be an **important energy source in the future**, which will be **almost fully imported**
 - On the one hand side it is expected that **gas demand for households and industries is declining** because of a reduction of demand in heat and due to efficiency improvements, on the other hand there might be an **increase in gas generated electricity** so that **total domestic gas consumption might increase**
- Given this background of possibly **increasing future gas demand**, **security of supply and gas crisis provision are important**, especially the **coordination** with neighbouring countries seems central
- Continues participation in the **Gas Coordination Group**
- **Reverse Flow / TAP**



3. Gas Coordination Group Some background info

- According to an in-depth assessment by the IEA Switzerland has in principle a **solid energy supply policy**
- Switzerland obtains gas via **different countries** and using **different routes**
- In contrast to neighbouring countries Switzerland **does not own any significant domestic gas storage** (only some pipe storage, and some gas storage volume in France)
- **Dual fuel customers** therefore play a relevant role
- Because gas imports are mainly from the EU, the Swiss Federal Council would like Switzerland to **fully participate in the Gas Coordination Group to strengthen our security of gas supply**



3. Gas Coordination Group Infrastructure standard (1/2)

- **N-1 formula** calculates whether the domestic gas infrastructure is able to meet domestic gas demand if the **biggest single gas infrastructure fails to function on one day given an exceptional cold day**, as it occurs **once every twenty years**

Total demand in CH

$$\begin{aligned} N - 1 [\%] &= \frac{EP_{max} + P_{max} + S_{max} + LNG_{max} - I_{max}}{D_{max}} \times 100 \\ &= \frac{85.9 + 0 + 2.0 + 0 - 51.0}{24.1 (27.6)} \times 100 = \mathbf{153\% (134\%)} \end{aligned}$$

Total demand of non-interruptible customers in CH

$$\begin{aligned} N - 1 [\%] &= \frac{EP_{max} + P_{max} + S_{max} + LNG_{max} - I_{max}}{D_{max} - D_{MN}} \times 100 \\ &= \frac{85.9 + 0 + 2.0 + 0 - 51.0}{16.1 (18.4)} \times 100 = \mathbf{229\% (201\%)} \end{aligned}$$



3. Gas Coordination Group Infrastructure standard (2/2)

Das **N-1-Kriterium** ist erfüllt, wenn das Ergebnis der folgenden Berechnung mindestens 100% beträgt:

$$N - 1 [\%] = \frac{EP_{max} + P_{max} + S_{max} + LNG_{max} - I_{max}}{D_{max} - D_{MN}} \times 100; \quad N - 1 \geq 100\%$$

Die **Parameter der N-1-Formel** sind wie folgt definiert:

Nachfrageseite

D_{max} – Maximale tägliche Gasnachfrage in der Schweiz [Mio. Nm³ / Tag], wie sie statistisch einmal in 20 Jahren auftritt.

D_{MN} – Anteil [Mio. Nm³ / Tag] der Gesamtnachfrage, welcher im Fall einer Versorgungsstörung durch marktbasierende nachfrageseitige Massnahmen reduziert werden kann.

Ohne nachfrageseitige Massnahmen ist $D_{MN} = 0$. Falls nachfrageseitige Massnahmen bestehen, kann als Variante die N-1-Formel unter Berücksichtigung der Wirkung von nachfrageseitigen Massnahmen berechnet werden.

Angebotsseite

EP_{max} – Technische Kapazität von Einspeisepunkten im berechneten Gebiet ohne Produktionsanlagen, LNG-Anlagen und Speicher, d.h. Summe der technischen Kapazitäten aller Grenzeinspeisepunkte [Mio. Nm³ / Tag].

P_{max} – Maximale technische Produktionskapazität [Mio. Nm³ / Tag]

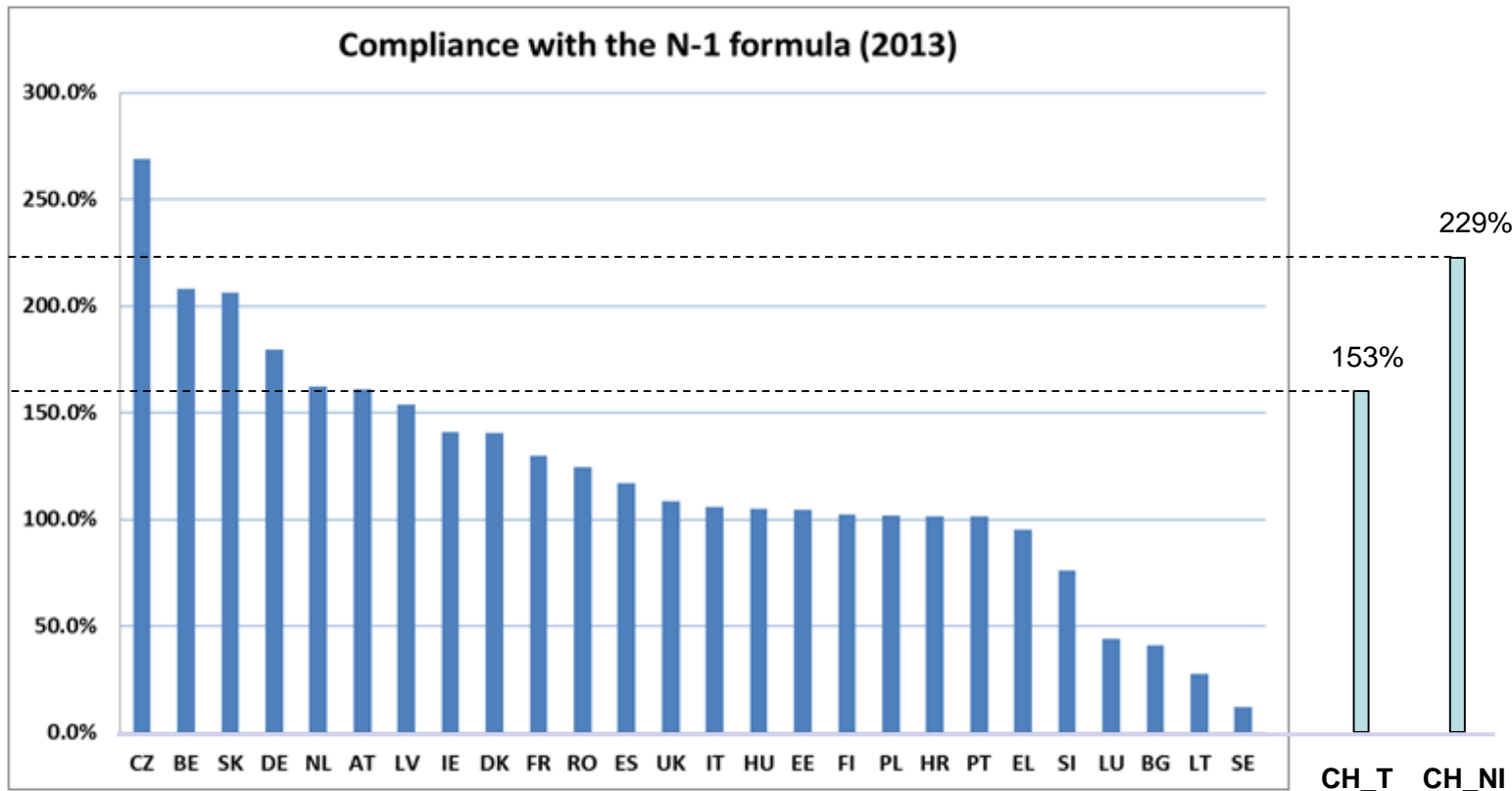
S_{max} – Maximale technische Ausspeisekapazität von Speichern [Mio. Nm³ / Tag].

LNG_{max} – Maximale technische Kapazität der LNG-Anlagen [Mio. Nm³ / Tag]

I_{max} – Technische Kapazität der grössten einzelnen Gasinfrastruktur [Mio. Nm³ / Tag].

Level of N-1 implementation

- **Upsides:** Lithuanian LNG terminal, Greece-Bulgaria reverse flow
- **Exemptions:** Sweden, Slovenia and Luxembourg



Quelle: Europäische Kommission und BFE



3. Gas Coordination Group Supply standards

- The provision of gas for **protected customers** (households) is ensured under the following conditions:
 - **Extreme temperatures on seven consecutive days with peak load** (20 years maximum)
 - **Exceptionally high gas consumption** for at least **30 days** (20 years maximum)
 - Breakdown of the **biggest single gas infrastructure** for at least 30 days given normal (average temperature) winter conditions
- In **all three cases** Switzerland is able to **ensure the gas supply to protected customers**
- Additional **interference scenarios**, e.g. **complete shortfall of Russian gas supply to Switzerland (25%)**, show that the **resilience of Swiss gas supply against risks and crises are good**



3. Reverse Flow Transitgas and TAP Transitgas today... (1/2)

- The **Transitgas grid system connects the three most important continental European gas markets**: Germany, France and Italy
- The Transitgas grid has a length of **293 kilometres** and transports around **18 bn. Nm³** per year (twice as much as 1998; more than four times of CH total demand)
- **80-85%** of the transported gas is for the **Italian gas market** (covers **about 10-20%** of Italy's total gas demand)
- The **rest** (15-20%) is for the **Swiss gas market** and covers about **70% of our domestic gas demand**
- Until today «**one-way-stream**» → Northern Europe to Italy



3. Reverse Flow Transitgas and TAP Transitgas today... (2/2)



Source: Transitgas



3. Reverse Flow Transitgas and TAP ...Transitgas in future

- In the **future** gas should flow from Italy to Northern Europe (**reverse flow**)
- The **Swiss Federal Office of Energy granted the plan approval** for the necessary adjustments in Wallbach (AG), Lostorf (SO) and Ruswil (LU)
- The Transitgas pipeline upgrade that enables the reverse flow from Italy to Northern Europe will **improve the domestic security of gas supply** and **strengthens Switzerland's importance as a gas transit country.**
- It is expected that **from 2017** onwards reverse flow capacities are available at the transitgas pipeline



3. Reverse Flow Transitgas and TAP TAP (Trans Adriatic Pipeline) (1/2)

- **TAP** will transport gas from gas field **Shah Deniz II** in Azerbaijan through Greece and Albania to Italy, from there via **Switzerland** to **Northern Europe**



Source: TAP



3. Reverse Flow Transitgas and TAP TAP (Trans Adriatic Pipeline) (2/2)

- TAP offers the **shortest and most direct connection** from the Caspian region to the most attractive European gas markets and has a transport capacity of 10 bn. **Nm³** per year
- From **2019** onwards the export volume should be available for transportation
- **Total EU gas consumption** is about **440 bn. Nm³ per year in 2012**; the additional gas that comes from TAP will be relatively minor (**approx. 2 %**), however, the **capacity can be increased to 20 bn. Nm³** per year



3. Security of supply / gas crisis provision

Conclusions (1/2)

Conclusions 3

- **Switzerland** meets all conditions of the **infrastructure** and **supply** standards
- The **resilience of Swiss gas supply against risks and crises are good**
- **Switzerland** has **no domestic gas storage, LNG terminals** and **generates no gas** (except some negligible quantities of biogas)
- To expand the domestic security of gas supply Switzerland aims to gain **full membership** in the **Gas Coordination Group**



3. Security of supply / gas crisis provision Conclusions (2/2)

Conclusions 3 (cont.)

- **Reverse flow** and **TAP** can further increase **Switzerland's security of gas supply**
- **Today Transitgas** provides gas **from Northern Europe to Switzerland**
- **Today more than 80%** of gas, which is transported by Transitgas, **goes to Italy**
- **In the future** transitgas will transport gas from Italy to Northern Europe (**reverse-flow**)
- **Reverse-flow in combination with TAP** will improve the domestic **security of gas supply** and **strengthens Switzerland's importance** as a gas transit country



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4. Madrid forum

- The Madrid Forum was set up to discuss issues regarding the **creation of the internal gas market**
- Currently it is addressing the cross-border trade of gas, in particular the tariffication of cross-border gas exchanges, the allocation and management of scarce interconnection capacity and other technical and commercial barriers to the creation of a fully operational internal gas market
- The participants include national regulatory authorities, EU national governments, the European Commission, transmission system operators, gas suppliers and traders, consumers, network users, and gas exchanges
- Since 1999 the Forum meets once or twice a year in Madrid and is co-hosted by the Fundación de Estudios de Regulación
- As a non-EU participant Switzerland holds an **observer status** at the forum
- The last forum took place between **20 – 21 April 2015**

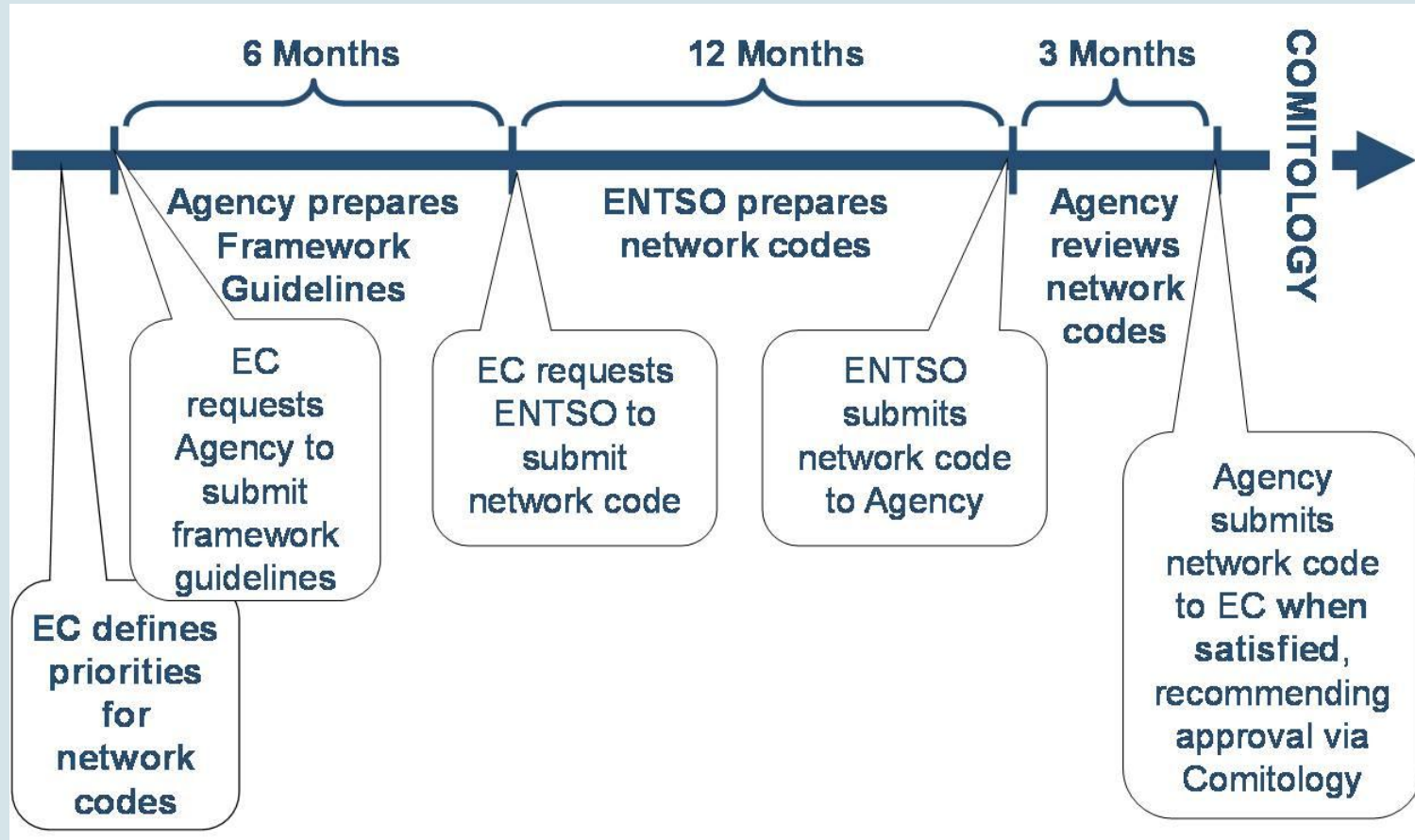


4. Current issues

- Ukraine (winter package, prevention and emergency plans)
- Strategic gas storage
- Market integration between Belgium and Luxembourg
- Energie Union
- LNG
- Framework Guidelines, Network Codes & Comitology



4. Implementation of laws at EU level



Quelle: ACER



Thank you for your attention!