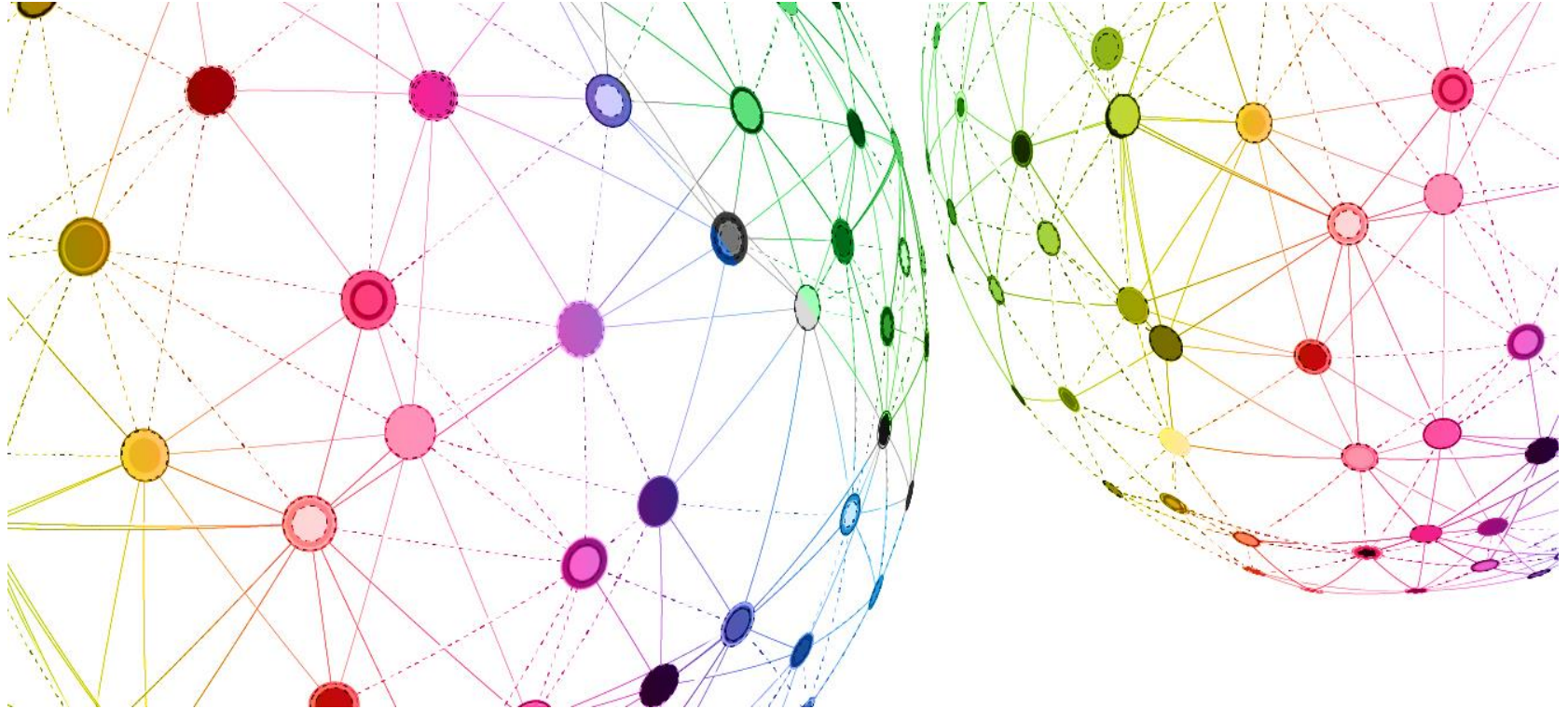




Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

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



© shutterstock/19778194

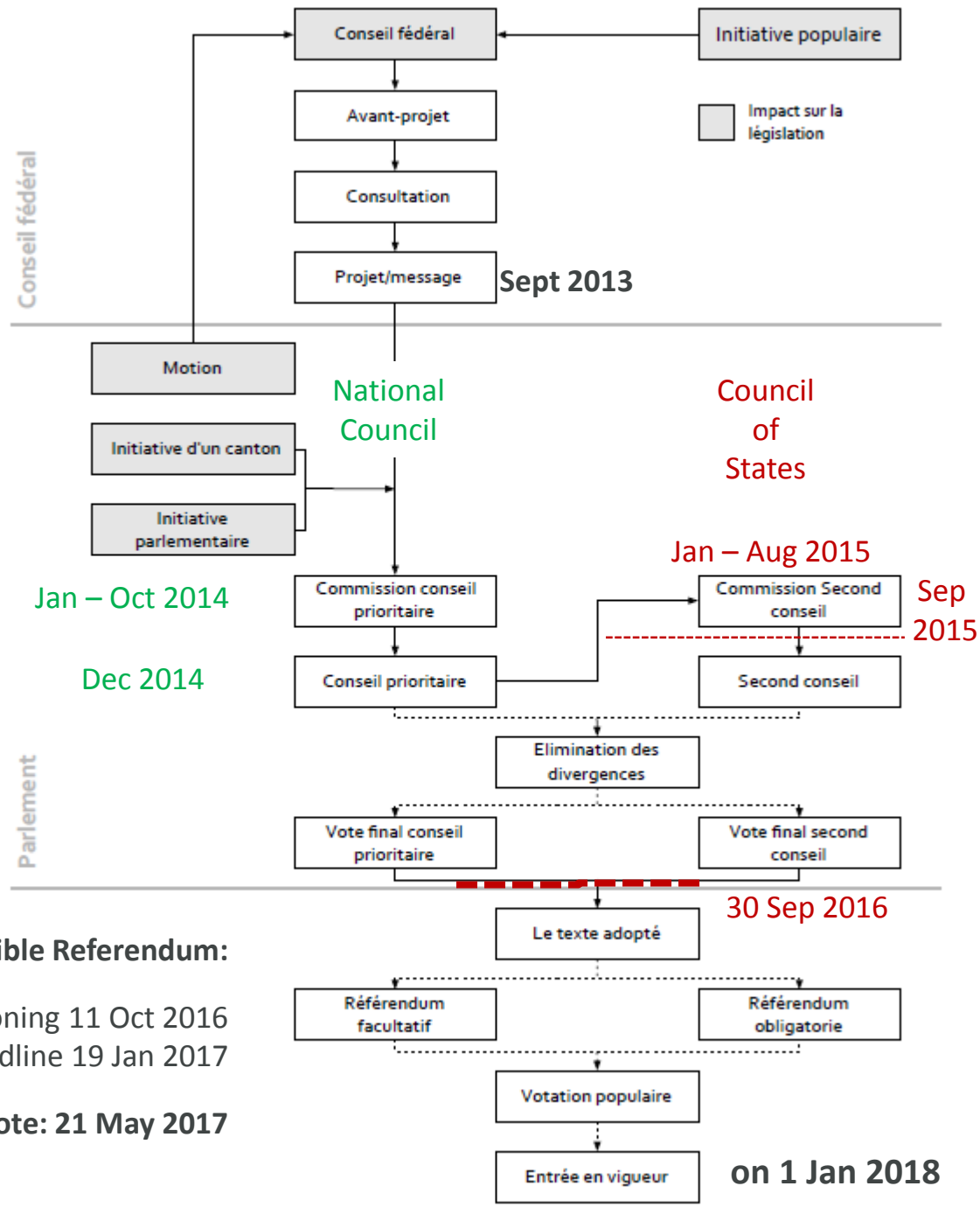
## SCCER-SoE – Meeting the expectations of the Swiss Federal Office of Energy



# THE SITUATION IN SEP 2016

## Energy Strategy 2050:

1<sup>st</sup> of mostly legal measures among them changes to a number of acts such as the Energy Act, the CO<sub>2</sub> Act and many more working their way through parliament (and to the people).





# WHAT'S NEXT REGARDING THE 1<sup>ST</sup> SET OF MEASURES?

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## Major revisions of ordinances

- Total revision of the Energy Ordinance
- Partial revision of the CO<sub>2</sub>-Ordinance and the Electricity Supply Ordinance

## Roadmap

- Consultation period: early February to early May 2017
- Goal: 1 January 2018 Acts and sub-ordinated Ordinances enter into force



# ECONOMIC IMPACT: SUPPORT MEASURES IN 1 EQUATION

Estimated Monetary Value **EMV**  
(of a project based on the probability of finding a resource)

$$= \text{Probability of Success (POS)} * \text{NPV}_{\text{Success}} + \text{Probability of Failure (1-POS)} * \text{NPV}_{\text{Failure}}$$

Installed capacity ( $P_{el}$ )	Tariff (Rp./kWh)
≤ 5 MW	40.0
≤ 10 MW	36.0
≤ 20 MW	28.0
> 20 MW	22.7

EMV

$$= \text{POS} * \text{NPV}_{\text{success}} + (1-\text{POS}) * \text{NPV}_{\text{failure}}$$

- **Geothermal Guarantee Scheme**  
max. 60% of the total (prospecting, exploration, development) subsurface development cost of a project in case the subsurface does not deliver

- **Financial contribution to finding reserves**  
(max. 60% of prospecting and exploration to confirm presence of a reservoir)

Innovate to increase POS and  $\text{NPV}_{\text{success}}$  via:  
- **Research & Development**  
- **Pilot + Demo**  
and through people (you, the SCCER-SoE!)

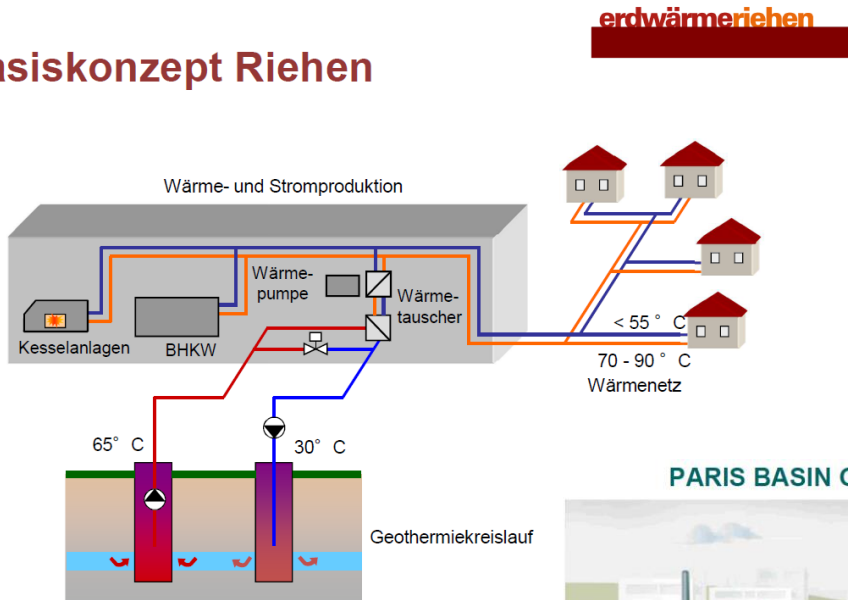
NPV = net present value at the cost of capital or «the sum of the annual cash flows in and out of a project» valued in today's money

Source: Swiss Federal Office of Energy



# PARLIAMENT HAS ALSO INSTITUTED SUPPORT FOR DIRECT USE GEOTHERMAL ENERGY VIA THE CO<sub>2</sub>-ACT

## Basiskonzept Riehen



### Distribution:

District heating networks enjoy support at cantonal levels

### Heat plants:

Established technologies (do not require systematic support)

### (Geothermal) Heat to the wellhead:

Only supported if new technologies are developed and a funding agent is willing to underwrite this effort (in the past only the Swiss Federal Office of Energy)

### The biggest barrier to widespread uptake?

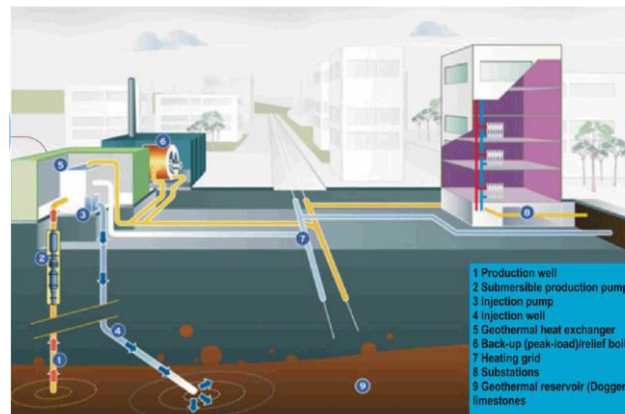
Owing to the lack of knowledge of Switzerland's subsurface, it is the probability of success of finding reserves!

### Change of the CO<sub>2</sub>-Act:

The Confederation is authorized to support such projects (at most Fr. 30 mln per year).

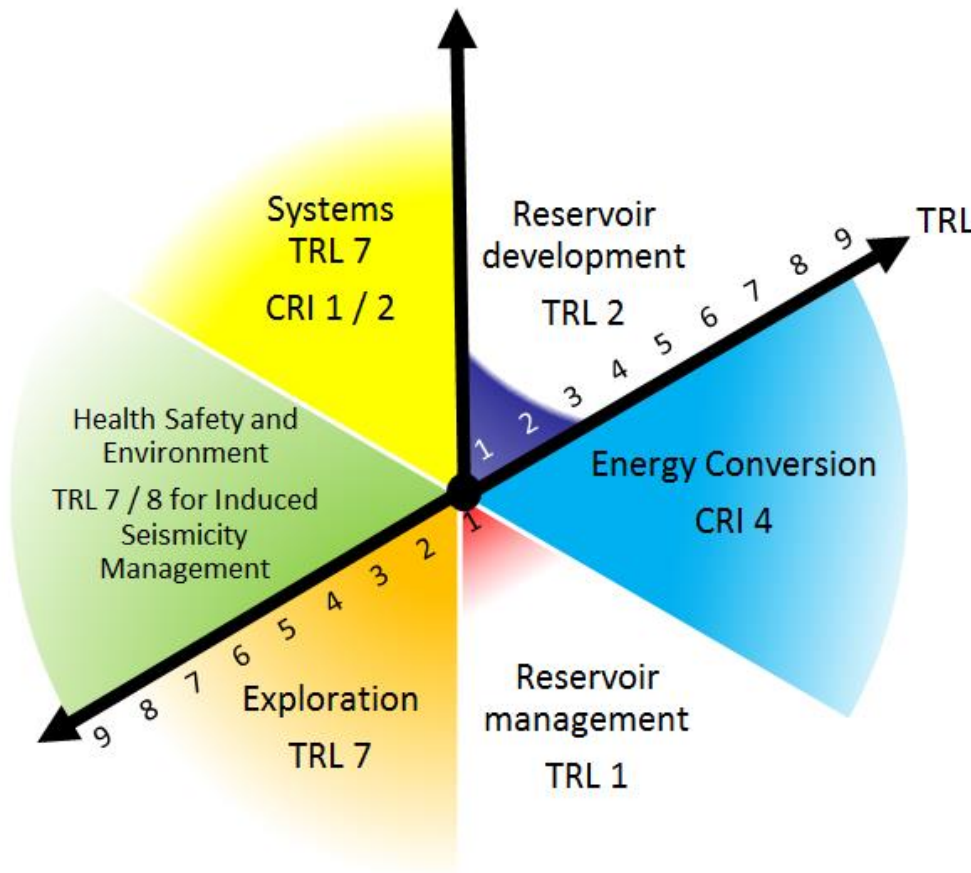
*Also subject to 30 Sep 2016 final vote and a possible referendum*

## PARIS BASIN GDH SCHEME





# R&D ON DEEP GEOTHERMAL SYSTEMS – THE SWISS FEDERAL OFFICE OF ENERGY CONTRIBUTES ITS RESEARCH FUNDING



We have been moving in the right direction:

## Exploration

- Exploration and characterization of deep underground reservoirs - Uni BE
- GENERATE - Uni GE
- **EXPLORLAUS (exploring fault architecture in urban environments)\* - SIL**

## Engineered Geothermal Systems

- ISC Grimsel – ETHZ
- DG-WOW – Uni NE
- **STIMDESIGN – EPFL\***
- EU DESTRESS – Geo-Energie Suisse
- GEOTHERM (EGS)

## Drilling Technology

- **Thermal Spallation Drilling – ETHZ\***
- **Plasma Drilling – ETHZ\***

## Managing Health, Safety and Environmental Risks

- **GEOBEST-CH\* - Swiss Seismological Service**



# AND FINALLY LOOKING BEYOND SWITZERLAND: LEVERAGING NATIONAL RESOURCES VIA THE EU

ERA-NET – European  
Research Area Network  
of Funding Agents  
(not EERA=European  
Energy Research  
Alliance )



- ERA-NET Cofund Action **GEOTHERMICA** (2017-2021) submitted on 5 April 2016 (LCE-34-2016)
- European Commission accepted **GEOTHERMICA** in July 2016 – currently negotiating Grant and Consortium Agreements
- 16 «Research Program Owners and Managers» from **13 European countries**
- Targeted funds for 1<sup>st</sup> Call: € 25-30 million (33% EU contribution, 67% input from partners)
- «**Transnational Call**» for **Pilot- and Demonstration Projects with very strong industry participation**
- Target «Direct use & power generation embedded in an energy system» - detailed in call mid-2017
- 1<sup>st</sup> Call (to be launched and evaluated by GEOTHERMICA): Q2-2017 (two-stage process:
  - project concept / pre-proposal
  - full proposals; award of contracts mid-2018 for work to be completed by early 2021



# AND, YES, THE SCCER-SOE MEETS EXPECTATIONS!

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- The SCCER-SoE operates at capacity
- Annual reviews are excellent
- Big science: Material research is being carried out
- The SCCER-SoE has adapted to changing needs of industry, cantons and the Confederation (e.g. focus on direct use, integration of the subsurface for energy storage solutions)

