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GEORISK

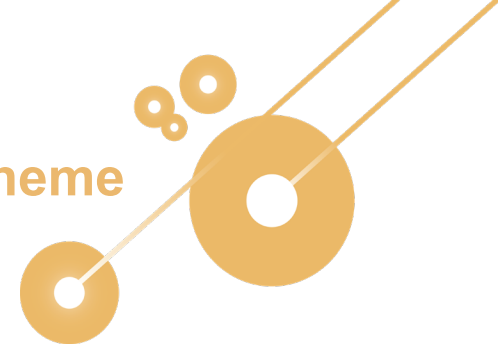


SWISS RISK MITIGATION SCHEMES

NICOLE LUPI • SWISS FEDERAL OFFICE OF ENERGY SFOE

GEORISK WEBINAR • 29.04.2020

T3.2 - Framework conditions for establishing a geothermal risk mitigation scheme



Five key aspects of a risk mitigation scheme (RMS)

1. Identification of the risk(s) to be addressed: *Which precise risk(s) need(s) to be transferred?*
2. Legal and regulatory boundary conditions: *What is the basis for a specific RMS ?*
3. Funding of the risk transfer scheme: *How is the RMS financed?*
4. Procedural aspects: *What is the process for granting aid?*
5. Performance indicators: *How is the RMS performing?*

<https://www.georisk-project.eu/publications>





1. WHAT RISKS ARE COVERED IN SWITZERLAND ?

1. Geological risks (D risks)

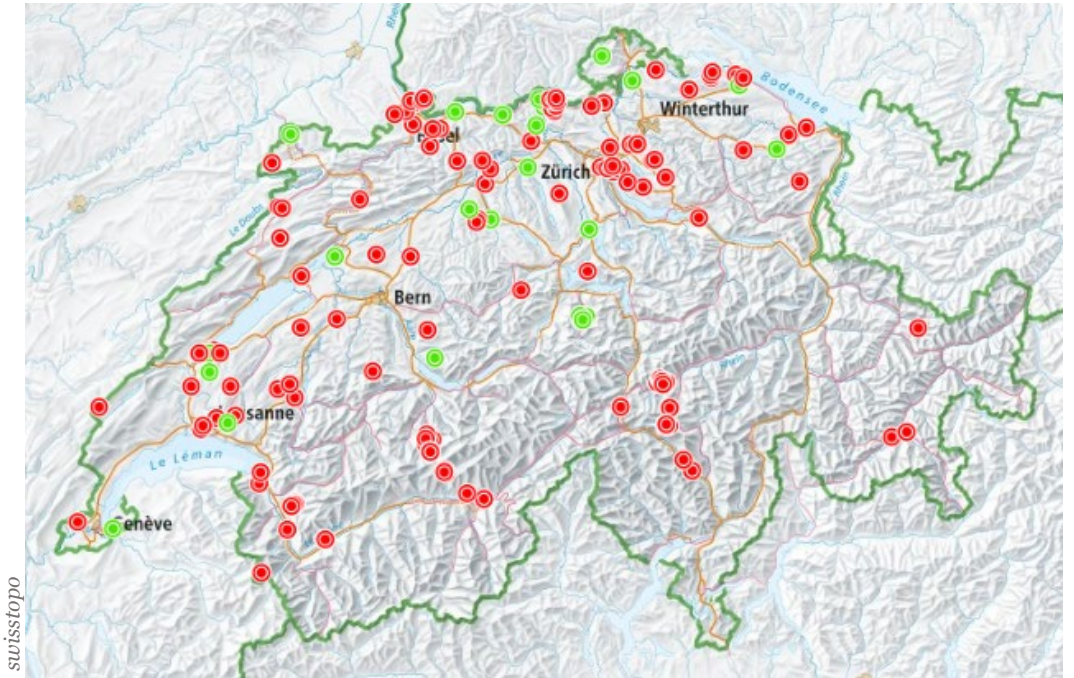
- Unknown subsurface
- Access and development of geothermal reservoirs (incl. EGS)

2. In case of “no reservoir”, severe negative financial consequences (B risks)

3. In a few locations, societal acceptance (B risks)

4. Legal and regulatory framework in Cantons (Concessioning, Permitting, Oversight) (B risks)

5. Know-how and How-to of actors in the geothermal value chain (C risks)



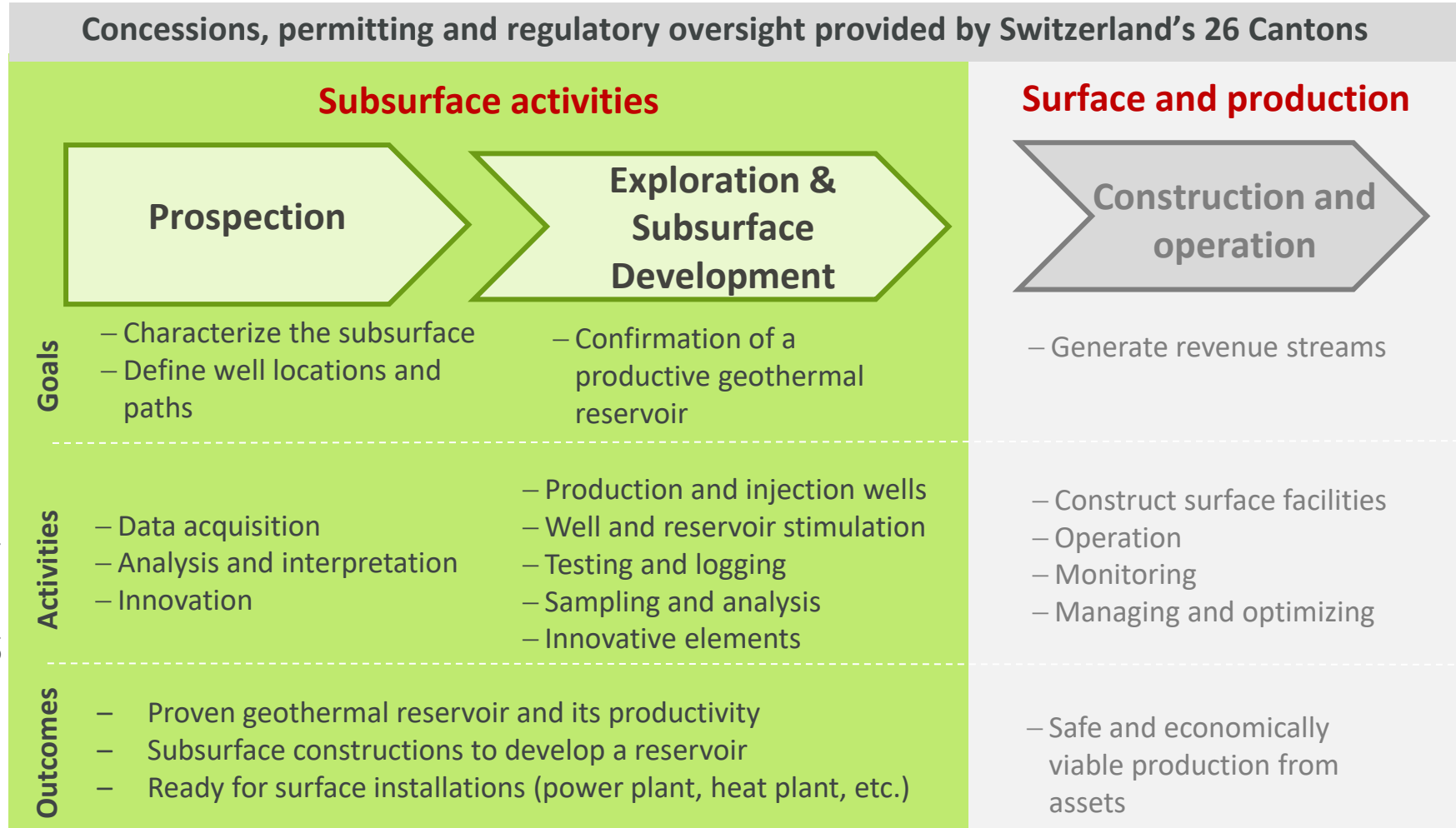
- Well deeper than 500 m
- Well deeper than 500 m with free access to data

The main barrier to the development of geothermal energy in Switzerland is the lack of knowledge of the subsurface.



1. WHAT RISKS ARE COVERED IN SWITZERLAND ?

Bespoke RMS are developed for short term geological risks



Source: conim ag (modified)

The development of a future competitive technology requires public support



2. LEGAL AND REGULATORY BOUNDARY CONDITIONS IN SWITZERLAND

Long is the legal road...

2011

11 March - Trigger: Fukushima plus convergent trends (cost reduction renewables, climate change, political instability in Middle East and North Africa...)

25 May - Federal Government and Parliament decide on a gradual phase-out of nuclear energy

June : Government with approval of Parliament develops a new energy strategy

Mo. 11.3562 SR Gutzwiller: Deep Geothermal Energy. Masterplan: «more **risk coverage**; more **international research and innovation**; more seed funding; simplified and accelerated **permitting**; clear **regulatory framework**; political support for geothermal»

Mo. 11.3563 SR Gutzwiller: Deep Geothermal Energy. Exploring Switzerland: «**organize and finance geothermal exploration** in Switzerland»

Mo. 11.4027 NR Riklin: Action Plan Geothermal Energy: «explore Switzerland by running seismic campaigns and drilling wells; develop **regulatory guidelines** including for managing **induced seismicity risks**»

Po. 13.3103 NR Trede: **Hydraulic Stimulation** in Switzerland: «ban Fracking and get neighboring countries to do the same»

2013

September : Federal Government sends bills to Parliament. Features: exit nuclear when no longer technically safe, up efficiency & savings, decrease fossils, increase renewables

In parallel, a people's initiative (100'000 signatures) called for the shut-down of nuclear after 45 years of operation - 45 years means that 3 of 5 plants to be shut in by the end of 2017!



2. LEGAL AND REGULATORY BOUNDARY CONDITIONS IN SWITZERLAND

Long is the legal road...

2016

30 September : both chambers approve the Energy Act (optional referendum if 50'000 signatures are collected within 3 months against the Act)

Nationalist conservatives successfully launched collection of 68'000 signatures

But, Swiss voters rejected «accelerated» phase-out vs. «orderly» phase-out on 27 November with a solid majority of 54%.

2017

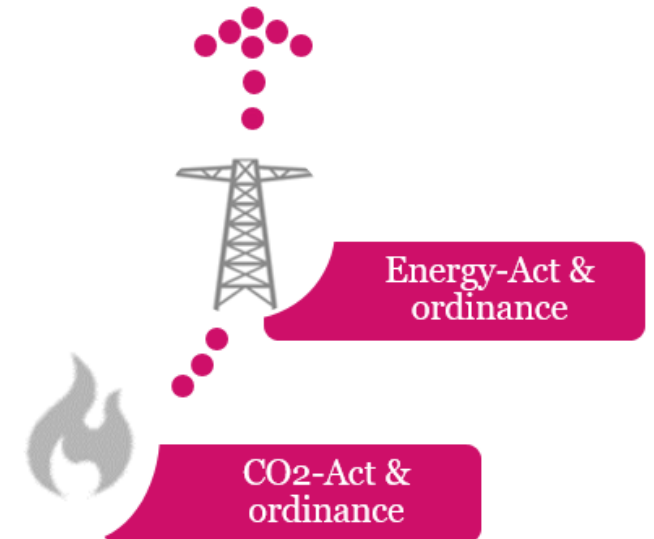
1 February : Federal Administration launches the consultation process of ordinances (implementation rules of policy support measures)

21 May: Swiss population has voted and approved with a 58% majority the revised Energy Act.

2018

1 January - Energy Act and various ordinances enter into force.

Geothermal energy





3. FUNDING OF THE SWISS RISK TRANSFER SCHEMES

RMS FOR **GEOTHERMAL POWER PROJECTS**

Energy Act – enforced since 1.1.2018

High voltage transmission grid surcharge

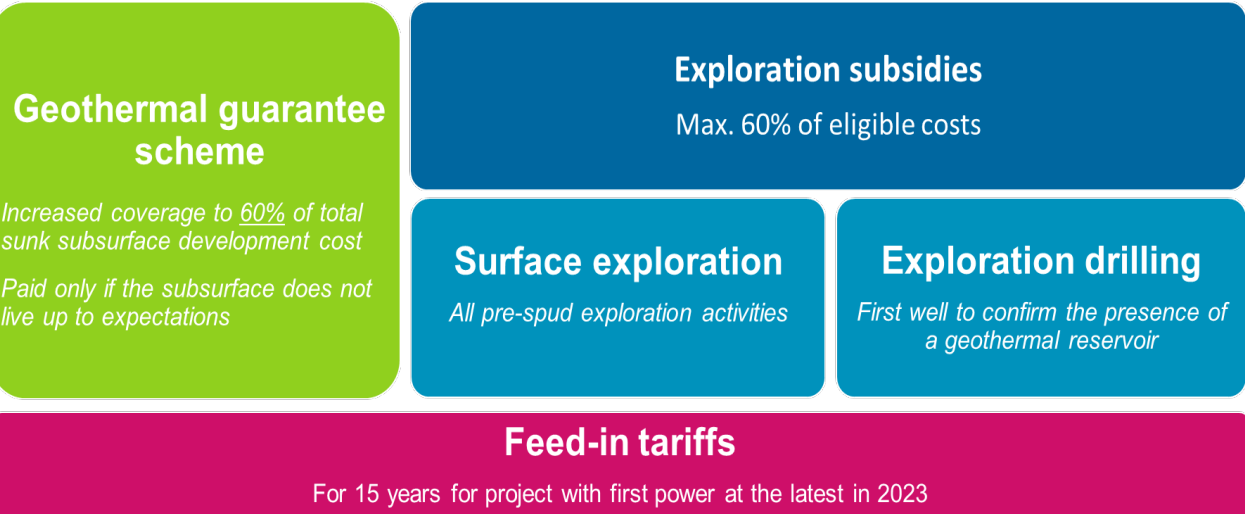
2.3 ct. / kWh



In 2016:

~ 50-55 TWh transmitted through the grid

~ **1 bln CHF / year** for all renewables support measures



Geothermal guarantee and exploration subsidies

Max. de 0.1 ct./kWh
~ **50 mio CHF / year**
Until 1.1.2031

Feed-in tarriffs

1.3 ct./kWh
~ **550 mio CHF / year**
(for all renewables)
Until 1.1.2024



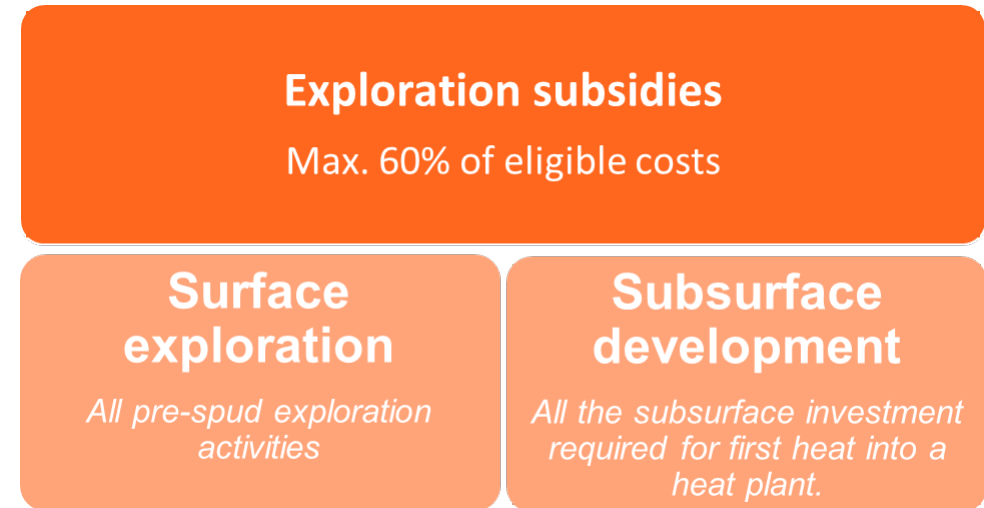
3. FUNDING OF THE SWISS RISK TRANSFER SCHEMES

RMS FOR DIRECT USE OF GEOTHERMAL ENERGY FOR HEAT PRODUCTION

Revised CO₂ Act – Building Program



- The **Building Program** is aiming at reducing the CO₂ emissions of the building sector.
- A third of the CO₂ tax on heating (fossil) fuels, but a max. of 450 mio CHF per year, is to be used to finance supporting measures to reduce on the long term CO₂ emissions from the building sector.

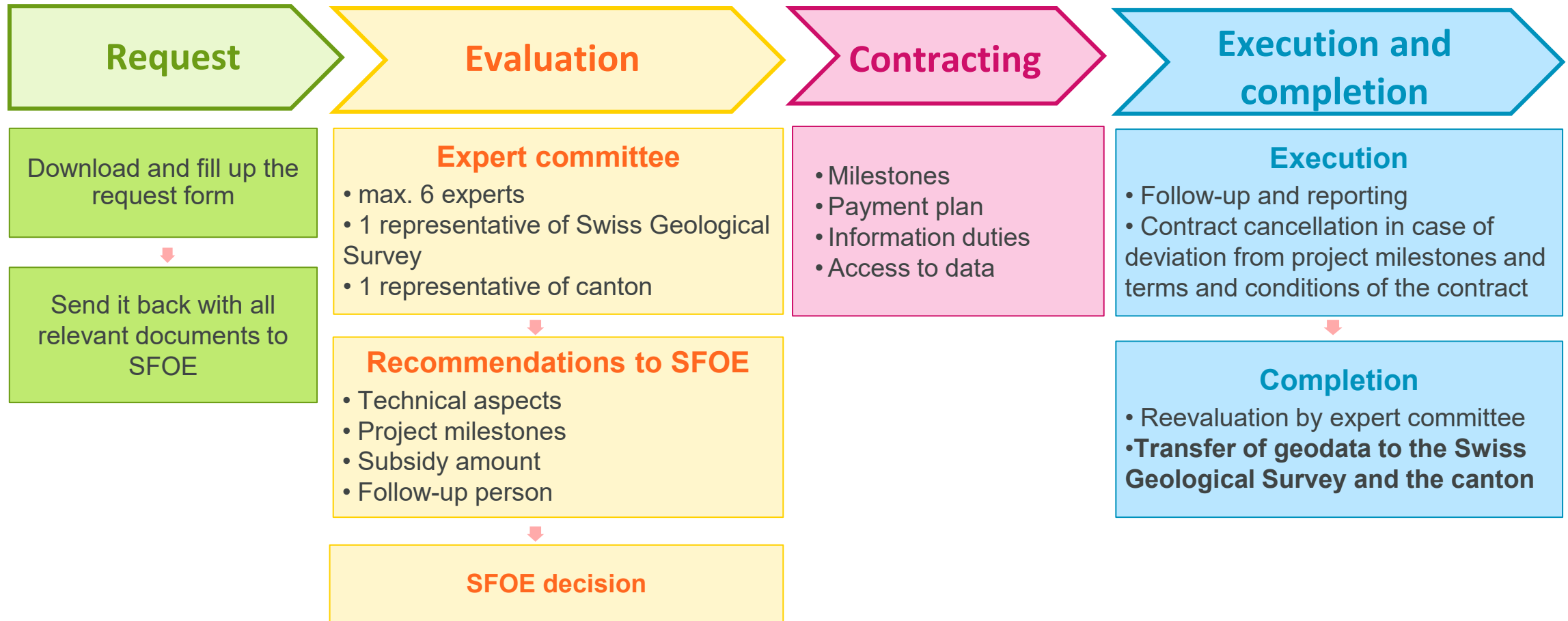


- A max. budget of **30 mio CHF per year** is allocated to support **geothermal direct use projects**.
- Until **01.01.2025**



4. PROCEDURAL ASPECTS: HOW ARE THE SWISS SUBSIDIES GRANTED?

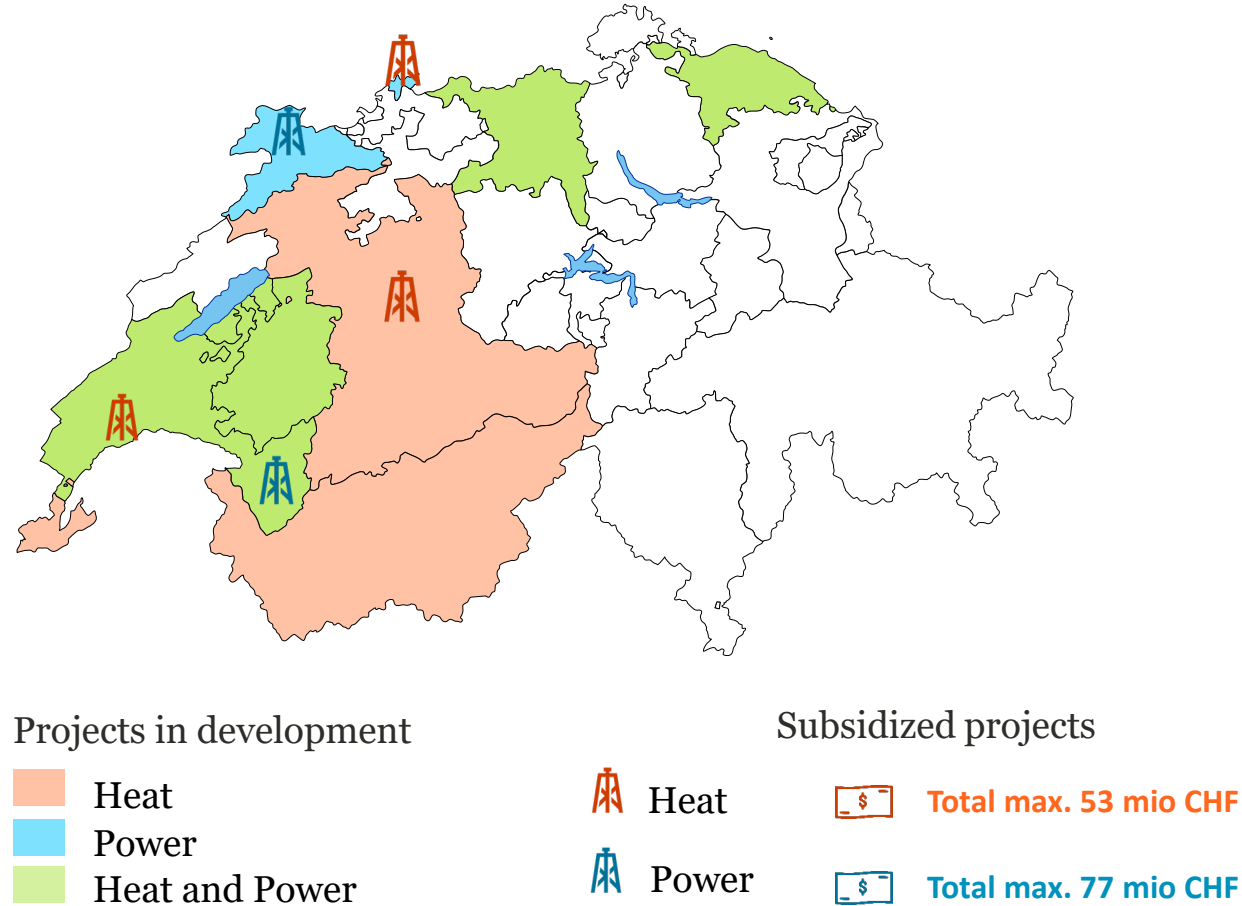
Lean procedure described in the relevant ordinances





5. HOW ARE THE SWISS RMS PERFORMING?

Geothermal energy lives a “boom”, in particular in the heat sector.



Drivers:

1. Investment subsidies
2. Legal and regulatory framework
3. Regional studies that describe geothermal potential in a meaningful manner
4. Studies related to demand (heat, power, energy/heat storage)



THE GEOTHERMAL DECADE



Ongoing revisions of Energy-Act & CO₂-Act

Constant QC & QA of evaluation procedures of subsidy request

Better communicating about geothermal energy



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Questions now or later
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