ETH zürich


# Shale gas & fracking: state of the art

**Workshop and panel discussion**

organized by the Energy Science Center of ETH Zürich, under the auspices of the Swiss Gas & Water Industry Association and the Swiss Competence Center for Energy Research SoE

Wednesday, April 2nd 2014, 10:00 - 16:30
ETH Zürich, Main building, Audimax

Energy Science Center

SVGW SSIGE

SCCER SoE

# *science technology assessment stakeholder dialogue*

***«Gas: too much of a good thing?»***
***«Climate impact of potential shale gas production in the EU»***
***«Do the benefits derived from shale gas outweigh the drawbacks of fracking?»***
These are the titles of recent reports on shale gas and fracking from different sources, which refer explicitly to the technology's pros and cons.

In fact, shale gas, produced by hydraulic fracturing («fracking») of tight rock formations, seems on the one hand to be transforming the world's energy outlook thanks to its abundance (including Europe), but on the other hand extracting shale gas is controversial and fiercely opposed, due to environmental concerns regarding land use and ground water resources.

The one-day workshop organized by the ESC of the ETH Zürich contributes to the dialogue by providing the scientific and technical background and a platform for an in-depth discussion involving the key stakeholders and the audience.

**Program**

10:00 **Welcome**

10:15 **Technical presentations**

10:15 **«Technology overview»**
*Marco Mazzotti* – Professor of process engineering, ETH Zürich. Chairman of the board of the Energy Science Center.

10:45 **«Advanced geophysical methods for exploration and monitoring»**
*Johan Robertson* – Professor of exploration and environmental geophysics, ETH Zürich.

11:15 **«Shale gas exploration: Water related issues»**
*Marion Junghans* – Risk assessment group, Ecotox Center, Eawag-EPFL.

11:45 **«Environmental performance from a life cycle perspective»**
*Christian Bauer* – Technology Assessment Group, PSI.

12:15 **Lunch (Foyer Audimax)**

13:30 **«Shale gas and fracking related induced seismicity: Lessons from abroad and implications for Switzerland»**
*Stefan Wiemer* – Director of the Swiss Seismological Service. Professor of seismology, ETH Zürich.

14:00 **«Resources and perspectives for Switzerland»**
*Werner Leu* – Geoform, Geological Consulting and Studies.

14:30 **Panel discussion**
Moderator: *Thomas Häusler* – Chief science editor, SRF.

16:30 **Closing and coffee**

**Panelists**

- *Jean-Claude Weber*
  Vice president of the SVGW executive board.
- *Domenico Giardini*
  Professor of seismology and geodynamics, ETH Zürich. Director of the SCCER-SoE (Supply of Electricity).
- *Lukas Bretschger*
  Professor of Resource Economics, ETH Zürich. President Elect of the European Association of Environmental and Resource Economists.
- *Gunter Siddiqi*
  Energy Research Section of the Swiss Federal Office of Energy SFOE, responsible for research program Geothermal energy and Power plant 2020/CCS.
- *Elmar Grosse-Ruse*
  WWF Switzerland, Climate & Energy, lead author of position paper «Gasförderung in der Schweiz»
- *Peter Burri*
  President of the Swiss Association of Energy Geoscientists SASEG. Chairman of the scientific advisory board of GeoEnergie Suisse.

**Attendance and refreshments are free, but registration is required to participate.**
**Please follow the link below to register until March 25th, 2014:**

**www.esc.ethz.ch/events**

# Welcome

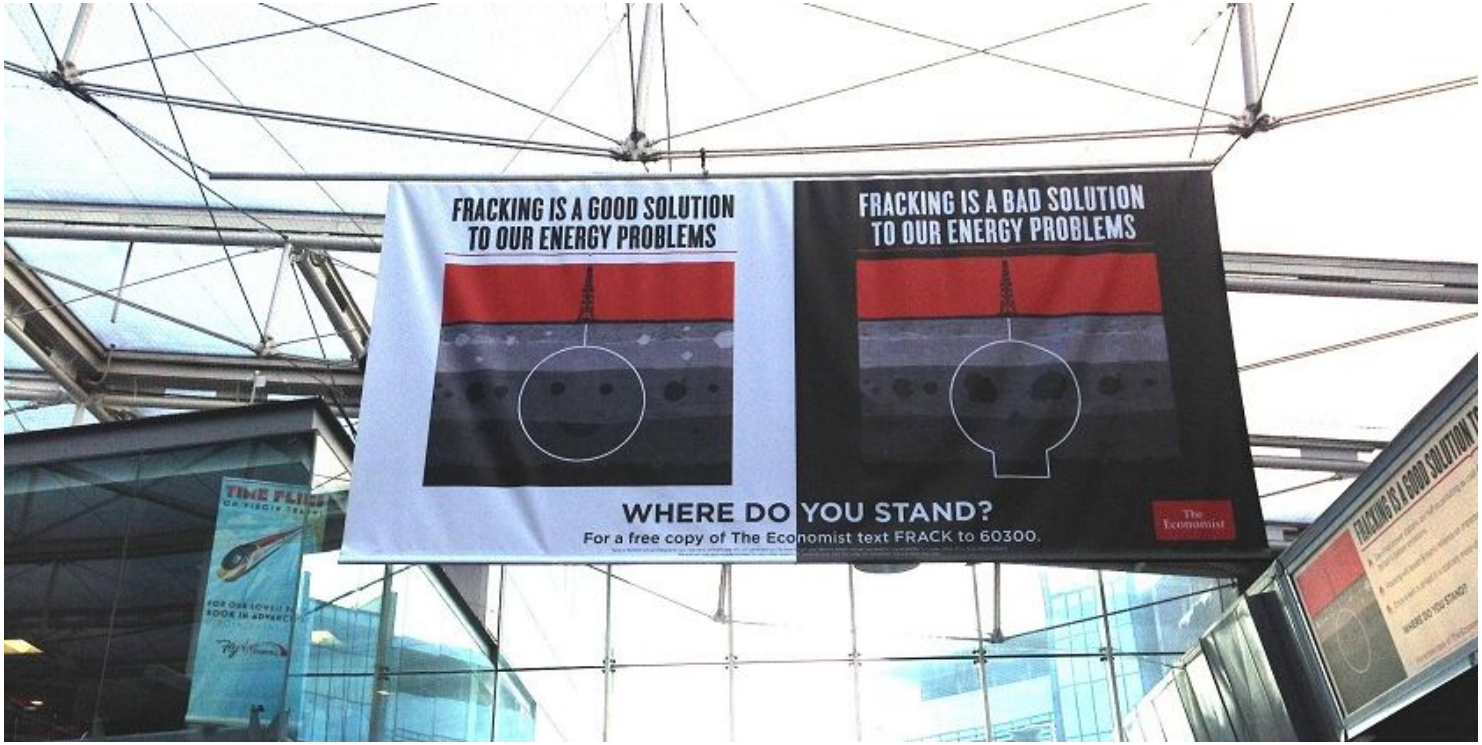
## SWISS GAS AND WATER INDUSTRY ASSOCIATION

## SCHWEIZERISCHER VEREIN DES GAS- UND WASSERFACHES (SVGW)

**Workshop**

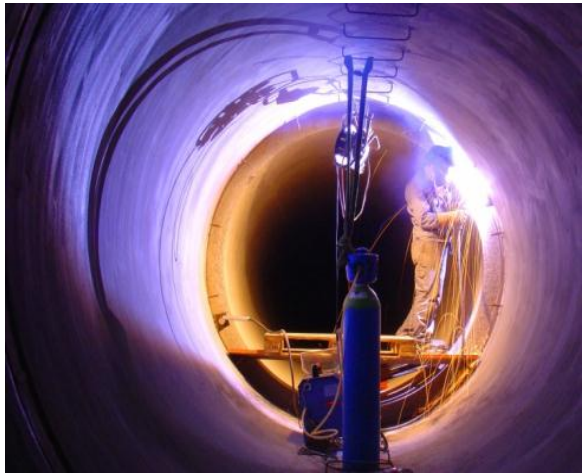
Shale gas and fracking state of the art

# Shale gas and fracking controversy topic worldwide…

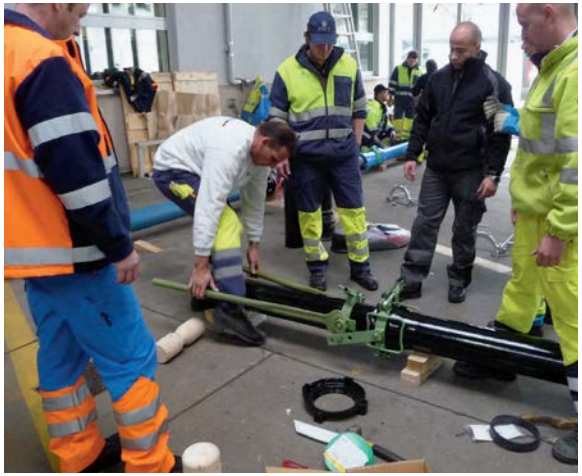


# …Fields of activities of SVGW…

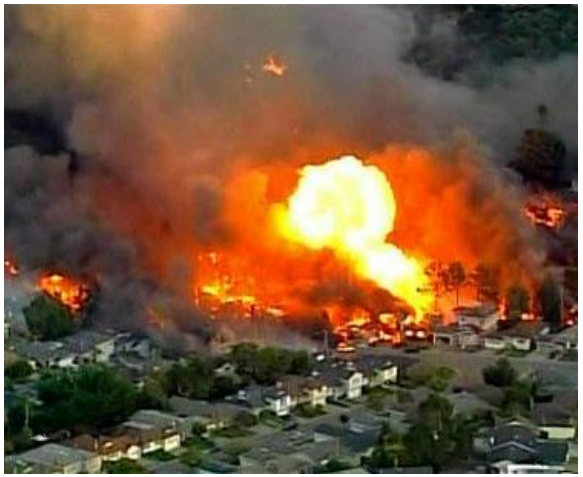
*regulation and standards*



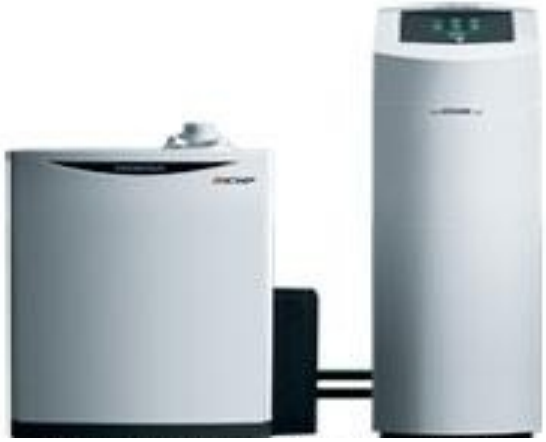
*education*



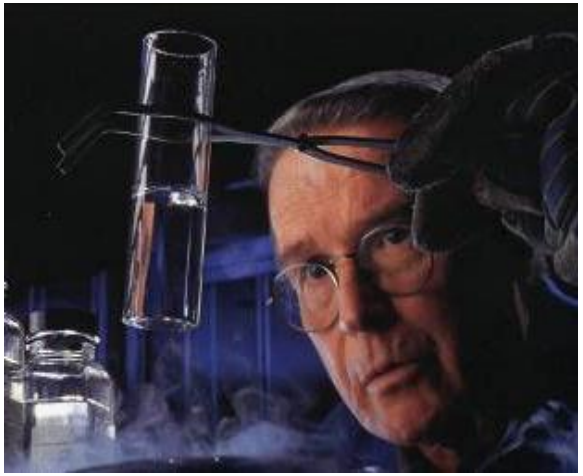
*safety inspections*



*know-how transfer*



*R&D*



*testing and certification*

SCCER SoE

SWISS COMPETENCE CENTER for ENERGY RESEARCH

SUPPLY of ELECTRICITY

- ✓ Seven SCCERs launched
- ✓ 10-yr RD&D roadmap
- ✓ Started Nov 1, 2013
- ✓ First phase 2013-2016

In cooperation with the CTI

Energy
Swiss Competence Centers for Energy Research

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Commission for Technology and Innovation CTI

# Academic Research & Cooperation Partners

SCCER-SoE includes the different R&D strength in the Swiss schools in the fields of GeoEnergy and HydroPower:

- Geological sciences (ETHZ, Universities)
- HydroPower R&D (ETHZ, WSL, EPFL)
- GeoEnergy and HydroPower technologies (ETHZ, EPFL, UAS)
- Integrated energy systems (ETHZ, PSI, EPFL)
- Key industry consortia involved in GeoEnergy and HydroPower
- National offices and services (SwissTopo, CSCS, SED)

- ✓ LH ETHZ
- ✓ EPFL
- ✓ UNIBE
- ✓ UNIL
- ✓ UNIGE
- ✓ UNINE
- ✓ USI
- ✓ PSI
- ✓ WSL
- ✓ EAWAG
- ✓ HES-SO
- ✓ HSLU
- ✓ HSR

- ✓ AXPO
- ✓ GeoEnergie Suisse
- ✓ BKW
- ✓ ALSTOM
- ✓ SwissTopo
- ✓ Siemens
- ✓ Alpiq
- ✓ UNIBA
- ✓ Sulzer Pumps
- ✓ ewz
- ✓ Sarmap
- ✓ EKZ

## Deep Geothermal Energy & CO2 Sequestration

### WP1 Geo-energies

T1.1 Resource exploration, assessment and characterization
T1.2 Reservoir modeling and validation
T1.3 P&D for reservoir creation
T1.4 Geo-data infrastructure

## HydroPower: usage & infrastructure

### WP2 Hydropower

T2.1 Morphoclimatic controls of future HP production
T2.2 Socio-economic drivers of future HP production
T2.3 HP infrastructure adaptation
T2.4 Environmental impacts of future HP operating conditions
T2.5 Integrated simulation of HP systems operation

### WP3 Innovative technologies

T3.1 Geo-energy technologies
T3.2 Hydraulic machines

### WP4 Integrative activities

T4.1 Risk, safety and societal acceptance
T4.2 Global observatory of electricity resources
T4.3 SCCER-SoE modeling facility

Capacity building, Technology Transfer, Outreach

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