

Unconventional Hydrocarbons

The discrepancy between public perception and scientific facts

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Shale Gas Workshop ETH Zürich
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Example of typical media reporting on fracturing

TAGBLATT

St.Galler Tagblatt Online, 14. April 2013 01:33:40

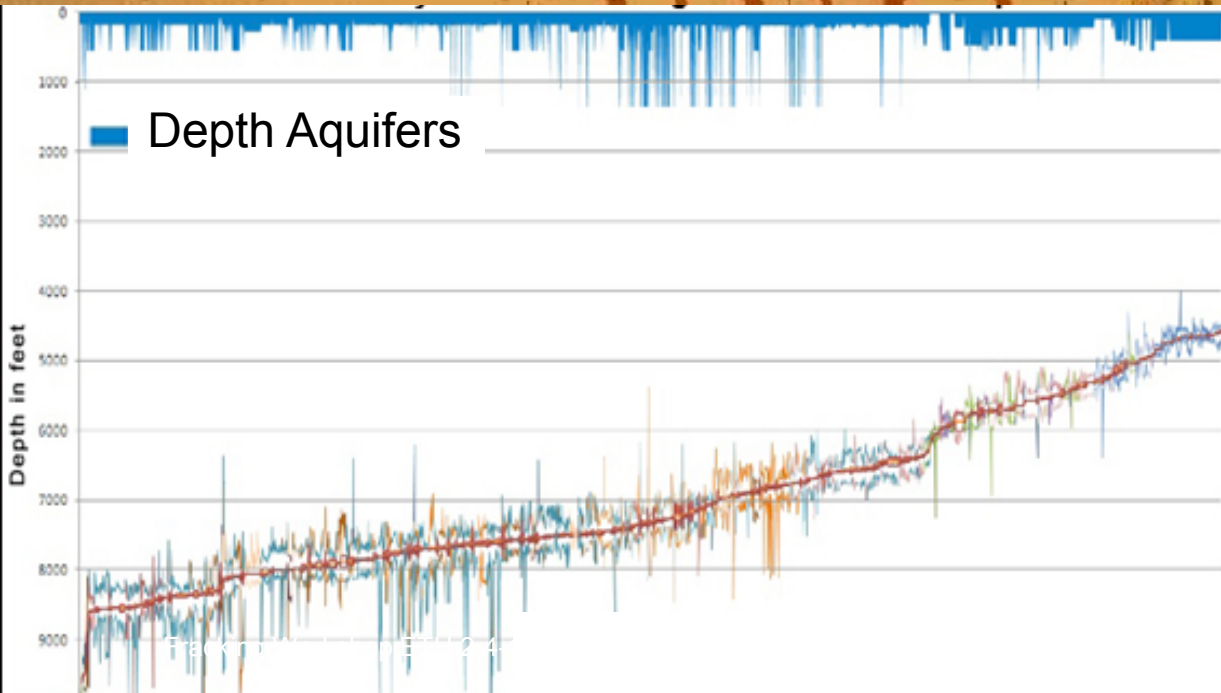
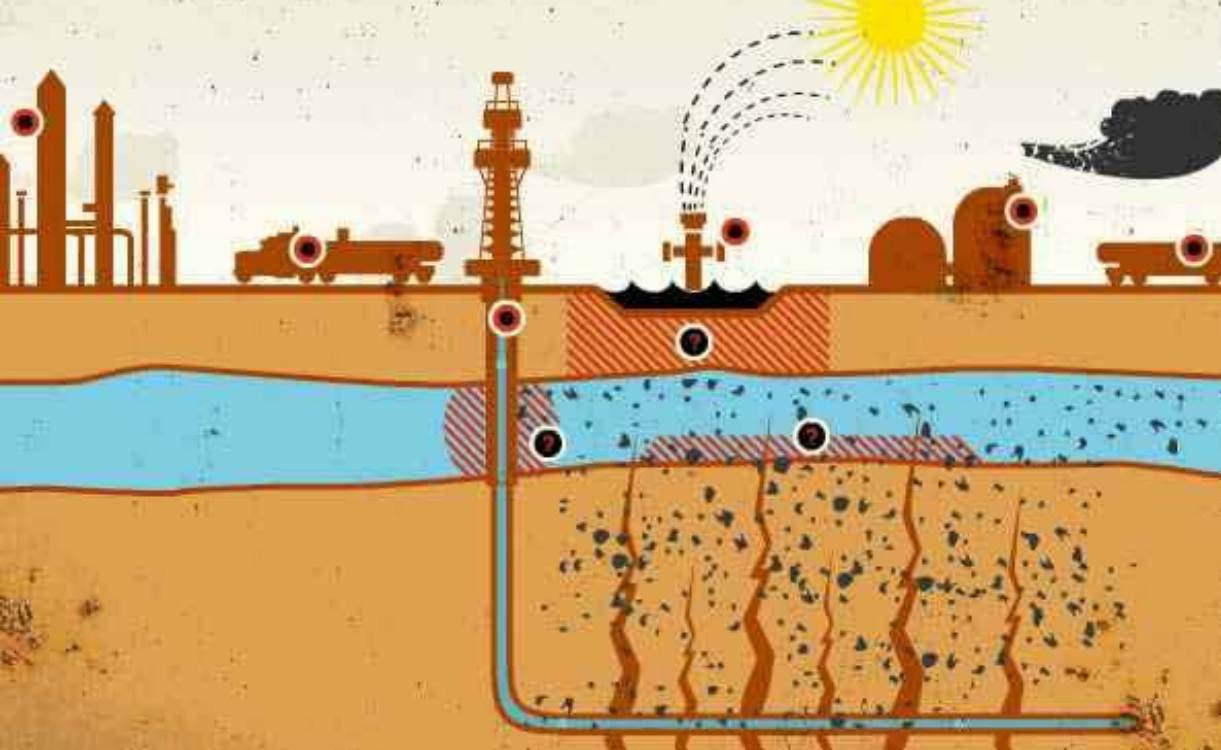
Schweizer Bohrfirma macht Druck auf die Baudirektoren



Sieht aus wie im Krieg. In den USA sind Bohrungen mit Fracking nichts Aussergewöhnliches. In der Schweiz lösen solche Szenarien Angst aus.

Fracking Myth and Reality

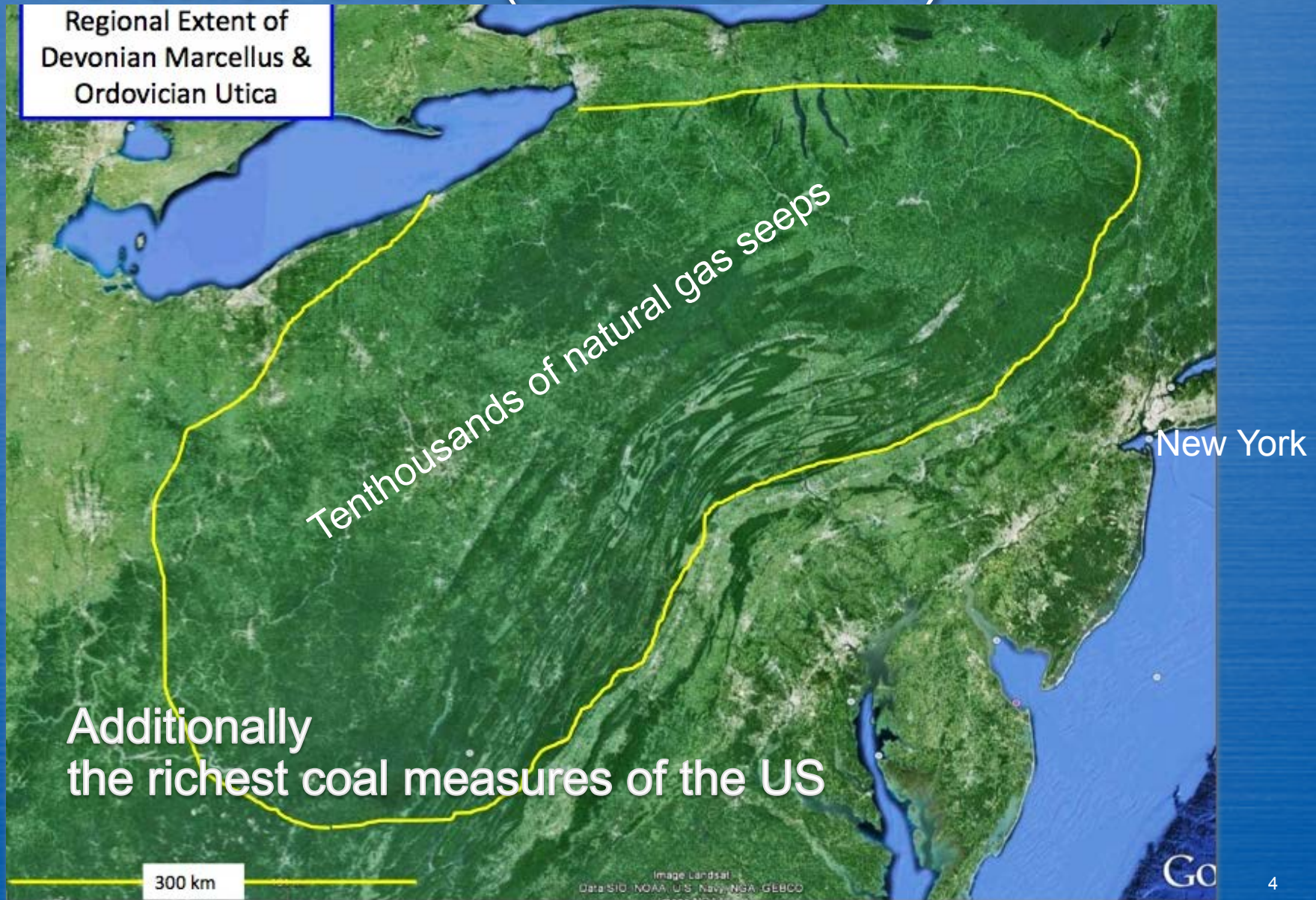
“Gasland” version:
no relationship to reality



Vertical extension of
fracs Barnett shale

Thousands of feet of rock
between fracs and aquifers

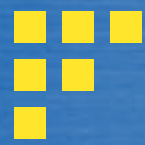
The "Gasgeneration-machine" Marcellus Shale (5x surface CH)



The media-effective gas in the film "Gasland" comes from coal seams and has nothing to do with fracking



Weld County, CO, water well drilled into coal beds!

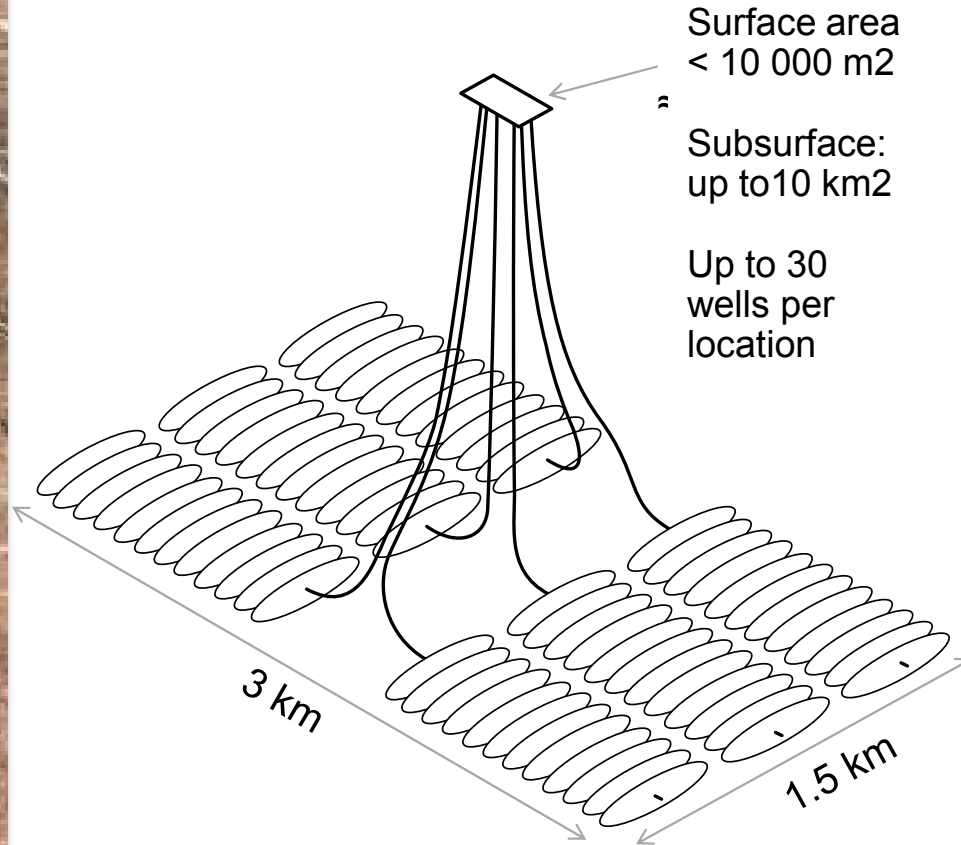


Excessive Land Use

old Method



New Method



Shale Gas Cluster Production Pennsylvania



Horizontal drilling - Typical reach of clusters



Drilling Cluster
3 km horizontal

Deviation
up to 12 km
technically possible



Gas and the global environment



Peking
Summer

Peking
Jan 2013

Fine dust concentrations
(NZZ March 2014)

Beijing:
Few 100 micro g / l
Max: 993

WHO limit: 25
Switzerland: 5-15

Globally 7 Mio deaths/y
from air pollution (WHO)

Coal is globally the
Fastest growing
fossil fuel

India
New and planned
coal power plants



Source:
coalswarm.org



Gas Bubble - good or bad for environment?

1. Abundant worldwide gas reserves are a reality.
World Gas resources will last centuries, not decades.
2. Gas is by far the cleanest fossil fuel
3. Two possible reactions:
 - Lament and ban unconventional gas: resulting in rising CO₂ levels and worse air quality
 - Use gas together with renewables to massively reduce emissions through substitution of coal (and partly oil)

The alternative to gas is COAL - with all consequences



Thank you



The dimensions of the energy challenge

Global Primary Energy demand growth 2002 – 2012

- Growth total + 30 %
- Growth of renewables w.o. hydro + 390 %
- 2012 share of renewables w.o. hydro 2.4%

BUT

- Renewables covered only 6 % of the total growth in energy

Energy demand will \pm double in 50y. Producing then 50% renewable is extremely optimistic.

The other 50% still need to be covered !