

Argument	Comment	Source:
<p>Additional methane-emissions through shale gas extraction and Significant danger potential (for the environment, health and water) of the fracking-technology</p> <p>-contradicts the enacted EU climate and energy package</p> <p>-damages the EU-image as a reliable partner concerning the global climate-change challenge</p> <p>-torpedoes the global leading position of Europe with regard to the efforts connected with the challenges caused by climate change</p> <p>-damages the EU-image as a sustainable, environmental friendly and innovative continent</p> <p>-lowers the living standard in Europe, which >will lower propriety prices and >repel a growing global interest and investment in “environmental unburdened places”</p> <p>-torpedoes the EU efforts to work against the demographic challenge</p> <p>-lowers the quality and price of European goods</p>	<p>The European Union has a certain image in the world. It is the image of a continent that is capable and willing to take the leading position concerning the necessary efforts which are directly connected with the challenges caused by the climate change process.</p> <p>The EU is known as a reliable and responsible partner in those questions. Beyond that, Europe is appreciated worldwide as a continent of knowledge and innovation.</p> <p>The shale gas industry and the fracking technology contradicts all this. It is a technology of the past, not capable of solving the problems of the 21st century.</p> <p>The technical innovations of European engineers and scientists, especially in the field of future energy sources, can help to boost Europe’s economy and energy independence . Fracking technology can not!</p>	<p>Link: http://ec.europa.eu/clima/policies/package/index_en.htm</p>

<p>Unreliable estimated and profitable extractable volumes of shale gas</p> <p>-fast exploration decline of developed fields -decline of exploration volume can shortly be intercepted by more fracking-spots, leading to more costs for infrastructure/exploration and further devastated environment on a large scale</p>	<p>The proposed “profit” is not in proportion to the risks:</p> <ul style="list-style-type: none"> -a large land consumption in a densely populated continent like Europe leads to a bigger loss of already very precious agricultural areas -the immense water consumption contradicts the efforts towards a sustainable and considerate use of water and caricatures the wars which are being already fought worldwide because of this existential good -unanswered questions concerning the liability when an incident occurs (for example: who will pay the damage caused by a lorry full with highly toxic chemicals or radioactive waste water?) -inestimable danger concerning the transport of highly toxic chemicals and waste water on Europe’s streets (even through non-fracking-areas) 	<p>Short study on the uneconomical potential of unconventional gas (good short study, though in German. You might get in touch with the author, Dr. Werner Zittel, zittel@lbst.de. He might be able to provide you with an English Version. Dr. Zittel also worked on the EU-study “Impacts of shale gas...” IP/A/ENVI/ST/2011-07). Link: http://www.energywatchgroup.org/fileadmin/global/pdf/2010-05-18_ASPO_Kurzstudie_Unkonv_Erdgas.pdf</p> <p>EON-presentation “Prospects on unconventional gas in Europe”. Link: http://www.eon.com/content/dam/eon-com/en/downloads/ir/20100205_Unconventional_gas_in_Europe.pdf</p> <p>NY Times article “Insiders sound alarm amid a natural gas rush”. Link: http://www.nytimes.com/2011/06/26/us/26gas.html?pagewanted=all&r=0</p> <p>Financial Post article “Tempering U.S. shale potential” Link: http://business.financialpost.com/2012/08/10/tempering-u-s-shale-potential/</p>
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<p>No shale gas until currently flared gas is not being used economically</p> <p>“Approximately 150 billion cubic meters of natural gas are flared in the world each year, representing an enormous waste of natural resources and contributing 400 million metric tons of CO2 equivalent global greenhouse gas emissions. Environmental degradation associated with gas flaring has a significant impact on local populations, often resulting in loss of livelihood and severe health issues.</p> <p>Gas Flaring in Perspective</p> <p>150 billion cubic meters per year of flared gas is roughly equivalent to ...</p> <ul style="list-style-type: none"> • Gas use in all US residences for a year • 5% of global natural gas production • 23% of US natural gas use • 30% of EU natural gas use • US\$10 Billion lost revenue at \$2.00 per MMBtu • 2.4 Million barrels of oil equivalent per day <p>400 million tonnes per year of CO2 is roughly equivalent to ...</p> <ul style="list-style-type: none"> • Annual emissions from 77 Million cars (34% of US fleet) • 2% of global CO2 emissions from energy sources • US\$6 Billion carbon credit value at \$15.00 per Metric Tonne • 20% of global steel industry CO2 emissions • 35% of global cement industry CO2 emissions • Output from 125 medium-sized coal plants about 63 gigawatts (GW) <ul style="list-style-type: none"> – 63 GW is ~20% of the current US coal fleet – 63 GW is ~67% of India’s current coal fleet” 		<p>GE-study “Flare Gas Reduction” Link: http://www.ge-energy.com/content/multimedia/files/downloads/GE%20Flare%20Gas%20Reduction%2001-24-2011.pdf</p>
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<p>Shale gas industry torpedoed necessary efforts towards</p> <p>-zero-carbon energy mix -incentives to invest in renewables and energy efficiency</p>	<p>Additional alternative innovations to the “main” renewables, i.e. wind and photovoltaic power (examples):</p> <ul style="list-style-type: none"> - Wave power - Tidal power 	<p>http://setis.ec.europa.eu/technologies/Ocean-wave-power</p> <p>Wave power (description, projects and companies): http://en.wikipedia.org/wiki/Wave_power</p> <p>Tidal power (description): http://en.wikipedia.org/wiki/Tidal_power</p> <p>List of tidal power stations: http://en.wikipedia.org/wiki/List_of_tidal_power_stations</p>
<p>Higher GHG-Footprint (20-year-horizon):</p> <p>“Considering the 20-year horizon, the GHG footprint for shale gas is at least 20% greater than and perhaps more than twice as great as that for coal when expressed per quantity of energy available during combustion (Fig. 1a; see Electronic Supplemental Materials for derivation of the estimates for diesel oil and coal). Over the 100-year frame, the GHG footprint is comparable to that for coal: the low-end shale-gas emissions are 18% lower than deep-mined coal, and the high-end shale-gas emissions are 15% greater than surface-mined coal emissions (Fig. 1b). For the 20 year horizon, the GHG footprint of shale gas is at least 50% greater than for oil, and perhaps 2.5-times greater. At the 100-year time scale, the footprint for shale gas is similar to or 35% greater than for oil.”</p>	<p>I’ve been warned that this letter might be a bit of an outlier concerning the higher GHG-footprint.</p>	<p>Methane and the greenhouse-gas footprint of natural gas from shale formations, Robert W. Howarth / Renee Santoro / Anthony Ingraffea, Cornell University, Ithaca, USA. Link: http://www.sustainablefuture.cornell.edu/news/attachments/Howarth-EtAl-2011.pdf</p>
<p>Fracking-Free-Zone-Labels (following the Irish example) as</p> <p>-an indicator of the high living standard of a region -an indicator of the quality of the produced goods of a region -an indicator of the unified resistance of companies, authorities and citizens on a regional level -an incentive for investors (investment in sustainable,</p>		<p>Link: http://frackingfreeireland.org/</p>

future orientated regions)		
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