

## **PUBLIC ABSTRACT**

### **M4ShaleGas: Measuring, monitoring, mitigating and managing the environmental impact of shale gas**



The *M4ShaleGas* Consortium

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M4ShaleGas stands for Measuring, Monitoring, Mitigating and Managing the environmental impact of shale gas. The project is funded by the European Union's Horizon 2020 Research and Innovation Programme and aims at addressing the specific challenge related to *understanding, preventing and mitigating the potential environmental impacts and risks of shale gas exploration and exploitation*. The M4ShaleGas project is carried out by 18 European research institutions and is coordinated by TNO-Netherlands Organization for Applied Scientific Research. The consortium studies and evaluates potential risks and impacts of shale gas exploration and exploitation. The general objective is to develop science-based best practice recommendations for minimizing the environmental footprint of shale gas exploration and exploitation in Europe.

Shale gas is – by definition – a natural gas found trapped in shale, a fine grained sedimentary rock composed of mud. Shale gas source rocks are widely distributed around the world and many countries have now started to investigate their shale gas potential. The European Commission's Energy Roadmap 2050 identifies gas a critical energy source for the transformation of the energy system to a system with lower CO<sub>2</sub> emissions that combines gas with increasing contributions of renewable energy and increasing energy efficiency. It may be argued that in Europe, natural gas replacing coal and oil will contribute to emissions reduction on the short and medium terms. On the other hand, scientists forecast that much of the world's known fossil fuel reserves must remain in the ground if global warming is to be limited to 2°C above pre-industrial levels. More localised concerns include potential risks of water contamination and induced seismicity, mainly being associated with hydraulic fracturing operations, as well as social impacts and health effects.

In M4ShaleGas concerns and risks are clustered in the four research areas: subsurface, surface, atmosphere and society. As the European continent is densely populated, it is most certainly of vital importance to understand public perceptions of shale gas and for European publics to be fully engaged in the debate about its potential development.

Europe has a strong need for a comprehensive understanding of potential environmental, societal and economic consequences of shale gas exploration and exploitation. Knowledge gaps include for example the understanding of differences between Europe and North America resulting from differences in geological and geopolitical settings, the description of requirements for quantitative risk assessments and mitigation of risks and impacts that are specific for Europe, or the identification of best practices in North America and Europe. Knowledge needs to be science-based, needs to be developed by research institutes with a strong track record in shale gas studies, and needs to cover the different attitudes and approaches to shale gas exploration and exploitation in Europe. The M4ShaleGas project is seeking to provide such a scientific knowledge base.