



Shale gas environmental impacts: Lessons learned from U.S. practices and recommendations for measuring, monitoring, mitigating and managing impacts in Europe

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Shale gas exploration and development is characterized by specific activities and operations during different stages of development. These operations inevitably lead to an environmental footprint. The location, timing, scale and duration of the footprint can vary, depending on the type of operation. In addition, risks are associated with shale gas operations, which can be described by the combination of the likelihood that incidents might occur and the impact of those potential incidents.

There is an ongoing debate among different stakeholders on the magnitude of footprint, risks and impacts of shale gas development. The debate is particularly focussed on issues regarding the environmental impact of hydraulic fracturing, the role of shale gas in a transition towards a low carbon energy system, and whether the shale gas industry can gain a social licence to operate. In the M4ShaleGas project, the footprints, risks, impacts and public perceptions of shale gas operations have been analysed through literature reviews of current practices in the U.S.A., Canada and Europe, as well as dedicated experimental and modelling studies.

In this study, a public-facing document has been developed with the aim to inform different stakeholders of the main lessons learned by summarizing the key knowledge gaps, best practices, and main recommendations for minimizing and managing the environmental footprint of shale gas exploration and development. The recommendations can be used to focus future research and debate addressing these issues.