

UGEE Research Programme

The Environmental Protection Agency (EPA), the Department of Communications, Energy and Natural Resources (DCENR) and the Northern Ireland Environment Agency (NIEA) has awarded a contract to a consortium led by CDM Smith Ireland Limited, who will carry out a 24-month research programme looking at the potential impacts on the environment and human health from UGEE projects and operations (including construction, operation and after-care).

The Joint Research Programme (JRP), which will be administered by the EPA, is composed of five interlinked projects and will involve field studies (baseline monitoring of water and seismicity), as well as an extensive desk-based literature review of UGEE practices and regulations worldwide.

The JRP has been designed to produce the scientific basis, which will assist regulators – both North and South – in making an informed decision about whether it is environmentally safe to allow fracking. As well as research in Ireland, the JRP will look at and collate evidence from other countries.

NO FRACKING WILL BE UNDERTAKEN AS PART OF THE JOINT RESEARCH PROGRAMME.

Timeline

Public Consultation on the draft Terms of Reference for the proposed research programme	January – March 2013	Completed
Invitation to tender for the 24-month research programme	November 2013	Completed
Award of the contract for the research programme to a consortium led by CDM Smith Ireland Limited	August 2014	Completed
24-month Research Programme	Commenced August 2014	Underway
Publication of the Research outputs	End 2016	

Who is undertaking the research?

The research is being carried out by a consortium, led by the global environmental and infrastructure management firm CDM Smith Ireland Limited. The consortium includes British Geological Survey, University College Dublin, University of Ulster, AMEC, and Philip Lee Solicitors

The Joint Research Programme is funded by the EPA, the Department of Communications Energy and Natural Resources (DCENR) and the Northern Ireland Environment Agency (NIEA). The research programme will be managed by a steering committee comprising the EPA, the Department of Environment, Community & Local Government; DCENR; the Geological Survey of Ireland; Commission for Energy Regulation; An Bord Pleanála; NIEA, the Geological Survey of Northern Ireland and the Health Services Executive.

Contact

For more information or any queries on the UGEE Research Programme, please visit www.UGEEResearch.ie or contact research@epa.ie

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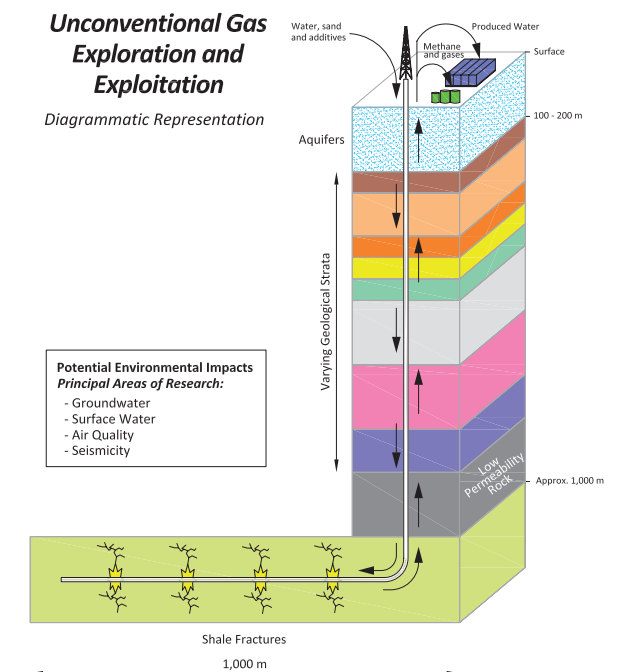
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Unconventional Gas Exploration and Extraction (UGEE) - Joint Research Programme

What is Unconventional Gas Exploration & Extraction?

Unconventional Gas Exploration & Extraction (UGEE) involves hydraulic fracturing (fracking) of low permeability rock to permit the extraction of natural gas on a commercial scale from unconventional sources such as shale gas deposits, coal seams and tight sandstone.



Representation of a typical fracking operation. The shale gas is confined in particular geological layers and extracted by hydraulic fracturing of that rock by pressurised water, sand and some other additives.

Unconventional Gas Exploration & Extraction (UGEE) Joint Research Programme

Project-A1 (Groundwater, Surface Water and Associated Ecosystems)

Baseline characterisation of groundwater, surface water and associated ecosystems is required to enable potential impacts to be assessed. The research covered by this project includes:

- The importance of geology and hydrogeology in environmental protection and considerations of human health (e.g. drinking water).
- Assessment of existing baseline monitoring and recommendations for future development of the baseline monitoring network in order to inform best practice, in the island of Ireland context.
- Increasing geological and hydrogeological knowledge and developing a conceptual understanding, in the context of three case study areas.
- Evaluation of the connectivity between the shale gas source rocks and the groundwater aquifers.
- Evaluation of the water requirements of UGEE projects/operations (for an individual, typical pad and for each permit area) in the context of the three study areas and assess if the local catchments could meet these requirements without adverse environmental impacts.

Project-A2 (Seismicity)

Baseline characterisation of seismicity is required to enable potential impacts to be assessed. The research covered by this project includes:

- A review of records of natural seismicity in the island of Ireland. An assessment of the nature and magnitude of induced seismicity and other activities associated with hydraulic fracturing operations worldwide.
- Review of seismic risk control regimes operated worldwide for UGEE projects/operations and make recommendations

for systems applicable to the island of Ireland, with particular reference to the case study areas.

- Assessment of the capability of existing seismic monitoring network(s) to allow detection and location of seismic events down to low threshold. Recommendations for future development of the seismic monitoring network.
- Assessment of micro-seismic monitoring methodologies enabling real time assessment of seismicity associated with hydraulic fracturing.
- Linking with Project B - Assessment of the success of prefracturing modelling techniques to predict the propagation of fractures and the risk of fractures creating preferential pathways for pollutants.

Project-A3 (Air Quality)

Potential air emissions from UGEE projects/operations may originate from sources, such as:

- Trucks and drilling equipment.
- Natural gas processing and transportation.
- Fugitive emissions.
- Evaporative emissions of chemicals from wastewater ponds.
- Spills and well blow-outs.
- Post operation leakages from well.

Project-A3 will assess the requirements and needs for additional Air Baseline Monitoring (frequency, location and types of pollutants to be covered) in the context of Environmental Impact Statements (EIS). The Environmental Impact Assessment Directive (2011/92/EU) refers to impacts on air such as Air Quality (Pollutants, Suspended Particles); Odour; Noise; Vibration and Radiation.

Existing sources of air pollution will be identified and the components of any existing air pollution identified and quantified. Potential emissions covered include, but are not limited to monitoring requirements under the EIA Directive.

Project-B: UGEE Projects/Operations: Impacts & Mitigation Measures

Research carried out under this project will include the identification and a detailed examination of the potential impacts on the environment and human health, as well as successful mitigation measures to counteract these impacts, associated with UGEE projects/operations that have come to the fore worldwide using published reports and other sources.

The assessment will take into account commercially probable scenarios. Where appropriate, findings will be accompanied by reference to experiences in other countries.

Project-C: Regulatory Framework for Environmental Protection

Best environmental practice for UGEE projects/operations would entail using the most effective techniques in achieving a high general level of protection of the environment and human health as a whole, by demonstrating strict adherence with all relevant environmental legislation.

The European Commission has indicated that Directive 2006/21/EC on the management of waste from the extractive industries applies to shale gas projects using UGEE projects/operations.

As such, Article 4 of Directive 2006/21/EC places an obligation on Member States to ensure that competent authorities follow or are informed of developments in best available techniques.

This project will identify all regulatory requirements, including gaps in existing regulations and best operational practices associated with the establishment and operation of UGEE projects/operations in an island of Ireland context.



WHERE WILL THE BASELINE WATER AND SEISMICITY MONITORING TAKE PLACE?

The baseline monitoring of Water and Seismicity will take place in three case-study areas as illustrated in the map.