



**SHale gas
Exploration and
Exploitation induced
Risks**

**Overview of WP7 activities:
Status**

Alexander Garcia-Aristizabal

Second Annual Meeting

Blackpool - June 5-7, 2017



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 640896.

WP7: Multi-hazard and multi-risk analysis

- **Task 7.1. Identification and structuring multi-risk scenarios (AMRA, KeU, KNMI):**
- **Task 7.2. Development of a probabilistic framework for the assessment of impacts associated with shale gas operations adopting a multi-risk perspective (AMRA, KNMI)**
- **Task 7.3. Comparative analysis of the impacts of shale gas operations with the impacts associated to conventional gas and oil sources (KNMI, AMRA, KeU)**

WP7 - Where are we now and What's left to do?

- **Task 7.1. Identification and structuring multi-risk scenarios (AMRA, KeU, KNMI):**
 - A full set of risk pathway scenarios have been identified considering different phases of a project development (Site development; Drilling activities; Hydraulic fracturing; Production; abandonment) -> **Finished.**
 - Causal diagram representation of the scenarios is being used to build logic structures following a bow-tie approach.
-> **Finished.**

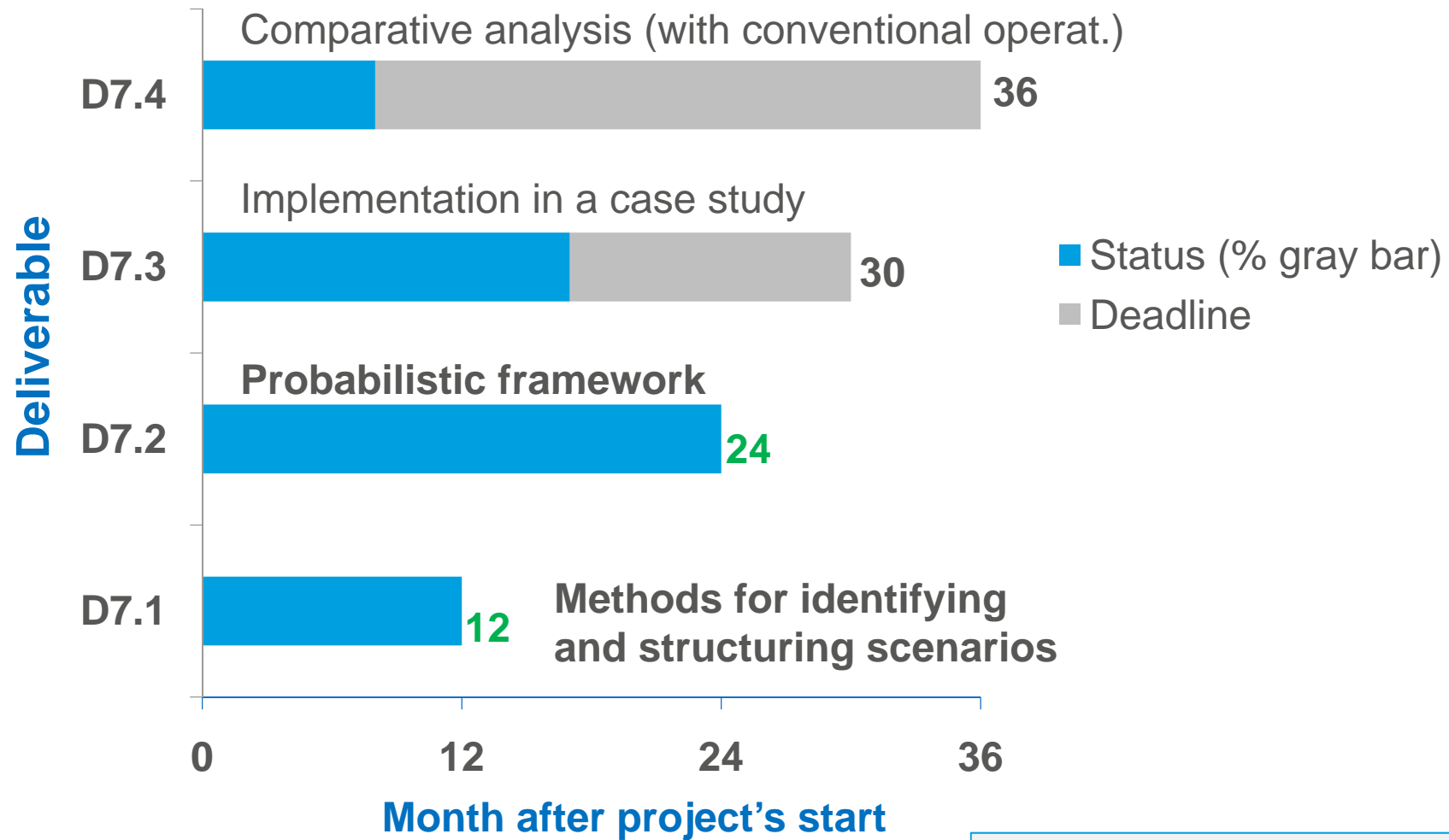
WP7 - Where are we now and What's left to do?

- **Task 7.2. Development of a probabilistic framework for the assessment of impacts associated with shale gas operations adopting a multi-risk perspective (AMRA, KNMI)**
 - A bow-tie approach has been identified as the tool that better adapt for this problem. Different modeling tools have been implemented for performing quantitative analyses.
-> **Finished**
 - Implementation of a virtual site started to be developed.
-> **Under development**

WP7 - Where are we now and What's left to do?

- Task 7.3. **Comparative analysis** of the impacts of shale gas operations with the impacts associated to conventional gas and oil sources (KNMI, AMRA, KeU)
 - The first step is oriented towards highlighting pathways (output from T7.1) that are common to conventional and unconventional developments. -> **Under development**

WP7 products: Status



- One Submitted paper
- One Conference presentation.
- One paper in preparation.

Next steps

- ✓ Implementation of a “**Virtual site**”.
- ✓ Development & integration of “**Integrated Assessment Models**” for dealing with specific scenarios.
- ✓ **Comparative analysis** (conventional & unconventional)

Points for discussion

- ✓ Where now?
- ✓ What's left to do?
- ✓ Next steps
- ✓ Lessons so far - What have we learnt

Lessons so far - What have we learnt

Today's session:

1. **Multi-hazard risk assessment of shale gas operations**
(Alexander Garcia)
2. **Assessing socio-economic impact for unconventional hydrocarbons exploitation** (Raffaella Russo)
3. **Assessing risk pathway scenarios for groundwater pollution: the case of abandoned wellbores** (Andrew Gunning)
4. **Towards the development of a “virtual site” for testing MR modelling capacities** (Paolo Capuano)