

Annex II to decision 1100/2015/NF - Annual Report 2015 of the European Science and Technology Network on Unconventional Hydrocarbon Extraction

Correspondence - 16/03/2017

Case 1100/2015/NF - Opened on 18/08/2015 - Decision on 16/03/2017 - Institutions concerned European Commission (No maladministration found) | European Commission (No further inquiries justified) |

The work produced by the Network's working groups in 2015 is summarised and published in the 'European Science and Technology Network on Unconventional Hydrocarbon Extraction – Annual Report 2015' [1] . [2]

The annual report 2015 is **of a technical nature [3]** and was prepared as a follow-up [4] to the Network's annual conference of 23 February 2016. The report is labelled as a report of the Commission's Joint Research Centre, while four staff members of the Joint Research Centre (who were members of the working groups) and the chairmen and vice-chairmen of the working groups are identified as its authors. While it would appear from the rules governing the Network that the annual report 2015 was subject to the Steering Group's approval [5] , the annual report contains a disclaimer stating that “ *the scientific output expressed [in it] does not imply a policy position of the European Commission* ” [6] . Rather the annual report is described as “ *aim[ing] to provide evidence-based scientific support to the European policy-making process* ” [7] .

In the abstract, the purpose of the annual report 2015 is summarised as follows:

“ The present report firstly summarizes the background for creating the "European Science and Technology Network on Unconventional Hydrocarbon Extraction", based on a Communication from the European Commission to the Council and the Parliament. It further describes the organisation and functioning of the Network as well as the status of the foreseen deliverables of the Working Groups realized in 2015 . ” [8] [9]

Apart from an introduction and a brief description of the organisation and the objectives of the Network, **the main body of the annual report 2015 presents the status of the working groups' deliverables** . In Annexes to the report, the participants of both working groups are listed.

Work done in 2015 by Working Group 1 on exploration and demonstration and production



projects in the EU :

The overall aim of working group 1 was to **collect data** obtained from exploration and possible demonstration and production projects and related research projects carried out in the EU and to carry out a comparative assessment [10] .

i. The first task of working group 1 was to establish a “ *comprehensive list of existing as well as, where relevant, planned projects in the EU* ”.

Based on publicly available information and information provided by the participants, the working group drew up a list of existing and planned unconventional hydrocarbon *wells* in the EU (“the well list”). It is clear from the report that the list is **a first version only** , which is not yet fully comprehensive. [11] The report notes that “ *no assessment was made of the quality of the information received* ” and it states that the list will be further reviewed by the Commission’s Joint Research Centre. [12]

In the list, the working group used 37 **parameters [13]** to characterise the wells. The parameters are **mostly factual in nature** and range from the operator of the well, to the well depth, the dates of well stimulations, the environmental impact assessment/screening year, to incidents per well and other comments. In order to depict the environmental impact of the wells, the working group – under the parameter ‘environmental monitoring data’ – decided to work with two additional worksheets **applying the parameters set out by the Commission in its Recommendation 2014/07/EU** for baseline studies [14] and operational monitoring [15] . [16]

ii. Working group 1 was also tasked with developing a **database** containing certain data for each unconventional hydrocarbons project. This database, the main purpose of which is to “ *aggregate information spread among various files and collate them in a single data repository* ” [17] , is in a **preliminary state [18]** only. The working group used as its **main input the well list and the related environmental data worksheets [19]** (see i. above). [20] The data in the database are broken down into a number of tables. **Essentially, in its current state, the database presents the information contained in the well list in a different format . [21]**

iii. **The database set up by the working group does not contain any “ assessment of data gathered with regard to technically and economically recoverable potential and environmental impacts and risks ” [22] . The assessment will be undertaken by the Commission services.** [23] In addition, the database will, in the future, be transformed into a fully-fledged interactive and geo-referenced online database accessible to the general public. [24] **It also appears that the working group could not** , given the fact that the required assessment has not yet been performed, **undertake the “ comparative analysis of all projects assessed, including, if appropriate, comparison at international level ” [25] and that this will also be done by the Commission services in the future .**

Overview of the work performed by Working Group 1 in 2015:

Deliverables according to Network mandate



Work done by WG 1 in 2015

Work to be performed by the Commission

Comprehensive list of existing as well as, where relevant, planned projects in the EU

First version of a list of existing and planned unconventional hydrocarbon wells in the EU, supplemented by two worksheets on environmental data monitoring (based on parameters in Commission Recommendation 2014/07/EU and Directive 2008/105/EC on environmental quality standards in the field of water policy)

Further development of the list

Database, which is continuously updated, specifying for each project:

- i. Location and operator;
- ii. technical and environmental data available;
- iii. data related to the potential of the reservoir;
- iv. assessment of data gathered with regard to technically and economically recoverable potential and environmental impacts and risks;
- v. occurrences of incidents, their causes, consequences and remediation actions taken (per project);

Preliminary version of a database, indicating information per well on points i.; ii.; iii; and v.

- Assessment listed in point iv.

- Development of database into fully-fledged online database accessible to the general public

Comparative analysis of all projects assessed, including, if appropriate, comparison at international level;

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Task to be performed by the Commission

Presentation of results at the annual conference;

See information published here:

<https://ec.europa.eu/jrc/en/event/conference/uh-network-annual-conference>



Summary of the results in yearly reports.

See annual report 2015:

<https://ec.europa.eu/jrc/sites/jrcsh/files/UH%20Network%20Annual%20Report%202015%20Science%20for%20Policy%20and%20Society.pdf>
[Link]

Work done in 2015 by Working Group 2 on emerging technologies for well stimulation :

The overall aim of working group 2 was **to complement, further deepen and update the Joint Research Centre document of 2013** providing ‘an overview of hydraulic fracturing and other formation stimulation technologies for shale gas production’ **based on practical experience** with these technologies in exploration, possible demonstration and production projects in and outside the EU [26] .

The Joint Research Centre’s 2013 report [27] is of a purely descriptive nature. It describes different fracturing methods, based on information available in the open literature, in databases and on commercial websites. It does not contain any quantified assessment, nor is it based on data. [28] The aim of working group 2 was to underpin the report with data and to update it.

i. The main task of working group 2 was to establish a “ *comprehensive list of emerging technologies used in exploration and possible demonstration and pilot production projects at global scale* ” in order to be able to report on (i) “ *emerging technologies that may be suitable for use in the EU and their possible timeframe for use* ”; and on the (ii) “ *assessment of economic, environmental and climate change related pros and cons in comparison to currently used fracturing techniques* ”.

The working group decided to divide the task into the following **subtasks** : (1) status of the current technologies (baseline); (2) list of emerging technologies; (3) qualification of these emerging technologies with regards to costs, maturity level, pros & cons. [29]

ii. As a baseline and based on a number of key performance indicators (KPIs) [30] , the working group **populated a matrix with available data on existing hydraulic fracturing technologies** . [31] That is, the working group developed a table which provides information on (1) operational experience; (2) technical performance; (3) environmental impact with consideration to : (a) water usage; (b) waste stream; (c) impact on groundwater; (d) impact on surface water; (e) emissions to air; (f) land impact; (g) induced seismicity for water-based hydraulic fracturing, foam-based hydraulic fracturing, hydrocarbon-based hydraulic fracturing, gas-phase hydraulic fracturing and cryogenic hydraulic fracturing. The working group thus carried out **subtask (1)** on current technologies, based on the **limited available data** .

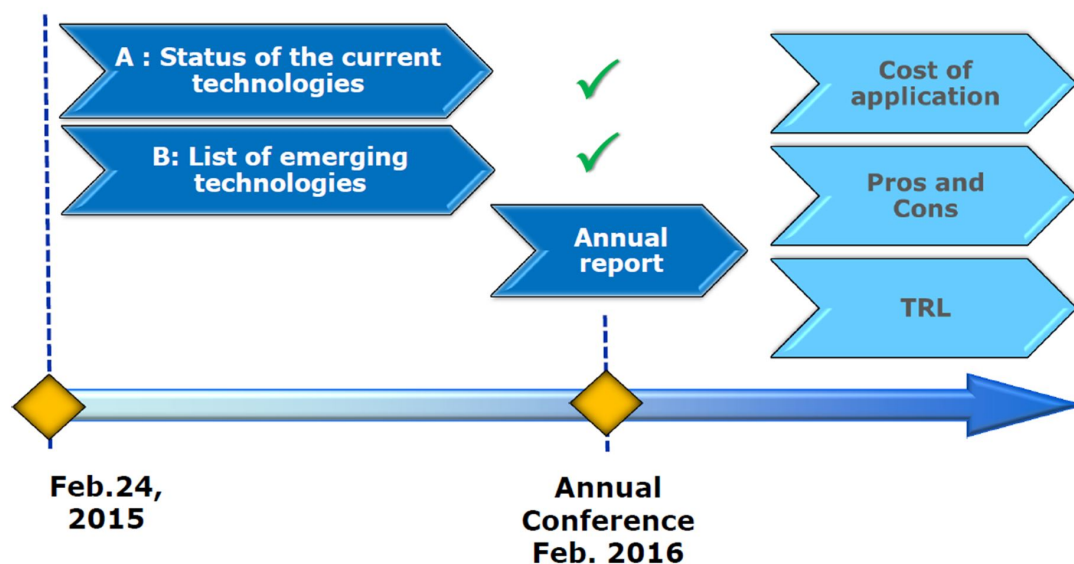
iii. With regard to subtask (2), three Network members provided information on some emerging technologies. The working group collated this information in a matrix (based on the KPIs described above), **clearly identifying for each piece of information who of the three Network members had provided it** . The report clearly states that “ *no assessment was made* ”



of the quality of information provided. The information collected does not represent the view of the Commission. ” [32] **The status of the matrix on emerging technologies is thus rudimentary** . The working group was faced with a **lack of availability of relevant data** , given that “ *it is hardly possible to find any field examples or even pilot tests of the application of such alternative technologies* ” [33] . It concluded that it would be necessary for the future to look into collaborating with research institutions located in Europe and the US. [34]

iv. Working group 2 did not perform subtask (3), that is, **it did not qualify the emerging technologies** with regard to costs, maturity level, pros & cons.

In its annual conference presentation [35] , working group 2 gave the following overview of the work performed and left undone:



Overview of the work performed by Working Group 2 in 2015:

Deliverables according to Network mandate

Subdivision of tasks by the working group

Work done by WG 2 in 2015

Work to be performed by the Commission

Comprehensive list of emerging technologies used in exploration and possible demonstration and pilot production projects at global scale;

(1) Status of the current technologies (baseline);



Matrix populated with limited available data

Further development by the Commission; need for more data

(2) list of emerging technologies;

Collation of information provided by 3 Network members; no quality check of information.

Need for collaboration with EU and US research institutes identified.

Further development by the Commission; need for more data

(3) qualification of these emerging technologies with regards to cost, maturity level, pros & cons.

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Task to be performed by the Commission

Based on this list, a yearly report (first one due on April 2015) on

i. Emerging technologies that may be suitable for use in the EU and their possible timeframe for use;

ii. Assessment of economic, environmental and climate change related pros and cons in comparison to currently used fracturing techniques;

Report covering subtasks (1) and (2); see annual report 2015:

<https://ec.europa.eu/jrc/sites/jrcsh/files/UH%20Network%20Annual%20Report%202015%20Science%20for%20Policy%20and%20Society.pdf>
[Link]

Presentation of results at the annual conference.

See information published here:

<https://ec.europa.eu/jrc/en/event/conference/uh-network-annual-conference>

Conclusions drawn in the annual report 2015 :

Both working groups experienced delays in delivering their work, which was partly due to structural problems within the groups and partly due to the lack of data availability.

Given these limitations, the working groups have performed only part of the tasks as set out in the Network's mandate. Neither group has carried out any assessment of the collected data (beyond the definition of benchmark parameters and KPIs). The tasks that have been performed are in a provisional state only.



The Commission has decided to disband the working groups and to perform the remaining research in-house.

[1] Available at:

<https://ec.europa.eu/jrc/sites/jrcsh/files/UH%20Network%20Annual%20Report%202015%20Science%20for%20Policy%20and%20Society.pdf>
[Link]

[2] See Article 10(2) of the mandate: “ *The working groups shall summarise and present their **results in technical reports** . These reports shall include dissenting views, if expressed. All reports shall be published on the website of European Science and Technology Network on Unconventional Hydrocarbon Extraction.* ” [Emphasis added]

[3] See Article 10(2) of the mandate.

[4] See page 2 of the Network’s mandate: “ *The Network will disseminate the results of its work by: [...] Organising an annual conference in Brussels **followed-up by a yearly report** [...] .* ”
[Emphasis added]

[5] According to page 2 of the Network’s mandate, “ *[the JRC] will in particular support the production and publishing of the Network’s reports, working documents and other results. Any official communication material published externally as well as any preparatory document for meetings of the network (e.g. agenda, presentations, background material) **will be subject to prior agreement by the Steering group** . Other interested Commission services are invited to participate in the activities of the network .* ” [Emphasis added]

[6] Annual report 2015 second cover page.

[7] Annual report 2015 second cover page.

[8] Annual report 2015 second cover page.

[9] This is in line also with the mandate of the Network, which, on its page 3, lists the drawing up of a yearly report on the work done by the working groups among the deliverables for both working groups.

[10] See mandate of the Network page 2.

[11] See, for example the following statements on page 12 of the annual report 2015: “ *Additionally, there were several CBM exploratory wells drilled in France, but which are not yet listed in the database .* ”; “ *Information on tight gas and CBM wells drilled and possibly fractured in the EU is still to be completed and fine-tuned , so as to distinguish between active, closed and planned wells.* ”; “ *At this stage, based on data collected so far , it was partly possible to*



distinguish in the database which wells used high-volume hydraulic fracturing (as defined in EC Recommendation 2014/70/EU). ” [Emphasis added]

[12] Annual report 2015 page 12.

[13] Annual report 2015 page 14.

[14] See point 6.2. of Commission Recommendation 2014/70/EU on minimum principles for the exploration and production of hydrocarbons (such as shale gas) using high-volume hydraulic fracturing, OJ 2014 L 39, page 72.

[15] See point 11.3 of Commission Recommendation 2014/70/EU and Directive 2008/105/EC of the European Parliament and the Council of 16 December 2008 on environmental quality standards in the field of water policy, OJ 2008 L 348, page 84.

[16] Annual report 2015 pages 15 to 17.

[17] Annual report 2015 page 18.

[18] See, for example, annual report 2015 page 3: “ *Currently, a preliminary database on exploration, demonstration and production projects in the EU is gradually populated with incoming new data , obtained from their owners.* ” [emphasis added]; See also annual report 2015 page 25: “ *Beyond the need to keep filling the database with further technical and environmental data, [...].* ”[emphasis added]

[19] Annual report 2015 page 18.

[20] In addition, the working group integrated data collected in Poland through government-funded research, which has been published in two reports. See Annual report 2015 page 19.

[21] See the summary of the status of the deliverables of working group 1 on page 24 of the annual report 2015: “ [...] *the Unconventional Hydrocarbons database that aggregates the information collected in the wells list and environmental worksheets and organise them in a consistent manner having as central unit of assessment, the well [...].* ”

[22] Point iv. of the second deliverable (database) of working group 1.

[23] Annual report 2015 page 25: “ *These tasks will be completed by the Commission services.* ”

[24] Annual report 2015 page 19.

[25] Third deliverable of working group 1.

[26] See mandate of the Network page 3.



[27] Available here:

<http://publications.jrc.ec.europa.eu/repository/bitstream/111111111/30129/1/an%20overview%20of%20hydraulic%20fracturing%20technologies.pdf>
[Link]

[28] See page 4 of the Joint Research Centre's 2013 report: “ *This paper reviews hydraulic fracturing and alternative fracturing technologies, by searching the open literature, patent databases and commercial websites [...].* ”; “ *This report was compiled by and large by accessing available literature [...].* ”; “ *The report does not include full life cycle analysis of cost or environmental impacts, nor any other measure of quantification of advantages or disadvantages of the specific technologies at hand.* ”; “ *In this report, no objective criteria were developed and applied to identify potential advantages and disadvantages of each technique.* ”.

[29] Annual Report 2015 page 4.

[30] The following KPIs were defined: (1) operational experience; (2) technical performance; (3) environmental impact with consideration to : (a) water usage; (b) waste stream; (c) impact on groundwater; (d) impact on surface water; (e) emissions to air; (f) land impact; (g) induced seismicity.

[31] Annual Report 2015 pages 4, 27 and 28.

[32] Annual Report 2015 page 30.

[33] Annual Report 2015 page 4.

[34] Annual Report 2015 pages 4 and 28.

[35] See slide 5 of the presentation, which is available here:

https://ec.europa.eu/jrc/sites/jrcsh/files/3%20WG2_AnnualConference_V3.pdf [Link]