



Brussels, XXX  
[...] (2013) XXX draft

Proposal for a

**RECOMMENDATION OF THE EUROPEAN COMMISSION**

**Providing minimum principles for the exploration and production of hydrocarbons (especially shale gas) by means of high volume hydraulic fracturing**

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**of XXX**

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THE EUROPEAN COMMISSION

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 292 thereof,

Whereas:

Member States have the right to determine the conditions for exploiting their energy resources, with due regard to the need to preserve, protect and improve the quality the environment.

In the current state of technological development, shale gas extraction requires the combined use of high volume hydraulic fracturing and directional (especially horizontal) drilling at a scale and intensity for which there is very limited experience in Europe. This “fracking” technique raises specific challenges, notably for health and environment.

In its resolutions of 21 November 2012 the European Parliament<sup>1</sup> while noting significant potential benefits of possible shale gas and oil production called on the Commission to introduce an EU-wide risk management framework for unconventional fossil fuels exploration and extraction, with a view to ensuring that harmonised provisions for the protection of human health and the environment apply across all Member States.

In its conclusions of 22 May 2013 the European Council stressed<sup>2</sup> the need to intensify the diversity of Europe's energy supply and develop indigenous energy resources to ensure security of supply, reduce the EU's external energy dependency and stimulate economic growth. The Council acknowledged the Commission's intention to assess a more systematic recourse to indigenous sources of energy with a view to their safe, sustainable and cost-effective exploitation while respecting Member States choices of energy mix.

The Committee of the Regions in its October 2013 opinion<sup>3</sup> called for a "clear and legally binding regulatory framework of the EU, preferably in the form of a directive on the exploration and extraction of unconventional hydrocarbons, to provide an adequate guarantee against the risks to the environment and human health resulting from shale gas activities".

In its Communication of 22 January 2014<sup>4</sup> on unconventional hydrocarbon (especially shale gas) exploration and production in Europe, the Commission outlines the potential new

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<sup>1</sup> P7\_TA(2012)0443

<sup>2</sup> 22/03/2013 Nr: EUCO 75/1/13

<sup>3</sup> OJ C 365, 05.12.2013, p. 5.

<sup>4</sup> Not yet published in OJ

opportunities and challenges stemming from unconventional hydrocarbon extraction in Europe as well as the main elements deemed necessary to ensure its safe and secure development. The Communication sets out the need for Recommendation providing minimum key principles aimed at supporting Member States in ensuring that the exploration and production of natural gas from shale formations can be conducted, while ensuring that the climate and environment are safeguarded, resources are used efficiently, and the public is reassured.

At international level, the International Energy Agency developed recommendations for the safe development of unconventional gas. These "Golden Rules"<sup>5</sup> call for a robust and appropriate regulatory regime, careful site selection, adequate project planning, underground risk characterization, robust rules for well design, transparency on operations and monitoring of associated impacts, sound water and waste management and mitigation of air and GHG emissions.

Both general EU legislation and EU environmental legislation apply to hydrocarbons operations involving high volume hydraulic fracturing.

Community legislation obliges Member States to apply existing EU environmental legislation to activities involving high volume hydraulic fracturing, notably (1) The SEA (Strategic Environmental Assessment) Directive 2001/42/EC<sup>6</sup> makes a strategic environmental assessment compulsory for plans and programmes prepared for i.a. energy, industry, waste management, water management, transport or land use and which set the framework for future development consent of projects covered by the EIA Directive or for which an assessment is required under the Habitats Directive 92/43/EEC<sup>7</sup>. (2) The Environment Impact Assessment (EIA) Directive 2011/92/EU requires an EIA for projects involving the extraction of petroleum and natural gas for commercial purposes where the amount of gas extracted exceeds 500 tonnes/day in the case of petroleum and 500.000 m<sup>3</sup> per day in the case of gas. Furthermore, the EIA Directive requires a screening for deep drilling projects and surface installations for the extraction of oil and gas. An environmental impact assessment comprises a public consultation. (3) The Mining Waste Directive (MWD) 2006/21/EC<sup>8</sup> regulates, inter alia, the management of wastes at the surface and in the underground resulting from exploration and production of hydrocarbons using high volume hydraulic fracturing. It requires, inter alia, a waste management plan for extractive waste, prevention of gas emissions, monitoring of the waste facility, and a financial guarantee covering the obligations under the mining waste permit. (4) Directive 2010/75/EU on Industrial Emissions<sup>9</sup> applies to activities listed in Annex I as well as to activities with a technical connection to those. (5) The Water Framework Directive 2000/60/EC<sup>10</sup>

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<sup>5</sup> [http://www.iea.org/publications/freepublications/publication/WEO2012\\_GoldenRulesReport.pdf](http://www.iea.org/publications/freepublications/publication/WEO2012_GoldenRulesReport.pdf)

<sup>6</sup> Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment (OJ L 197, 21.7.2001, p. 30).

<sup>7</sup> Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ L 206, 22.07.1992, p.7).

<sup>8</sup> Directive 2006/21/EC of the European Parliament and of the Council of 15 March 2006 on the management of waste from extractive industries and amending Directive 2004/35/EC (OJ L 102, 11.4.2006, p. 15).

<sup>9</sup> Directive 2010/75/EU of the European parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) (OJ L 334, 17.12.2010, p. 17).

<sup>10</sup> Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (OJ L 327, 22.12.2000, p. 1)

requires notably the operator to obtain an authorisation for water abstraction (unless it is considered that the abstraction will not cause any significant impact) and prohibits the direct discharge of pollutants into groundwater. This Directive requires Member States to ensure that water-pricing policies provide adequate incentives for users to use water resources efficiently; (6) The Groundwater Directive 2006/118/EC<sup>11</sup> obliges Member States to take measures to prevent or limit the input of pollutants into groundwater including those resulting from high volume hydraulic fracturing. (7) Regulation 525/2013/EU and the Effort Sharing Decision 406/2009/EC on the effort of Member States to reduce their greenhouse gas (GHG) emissions up to 2020 applies to fugitive methane emissions provided that the latter are correctly reported in GHG inventories. (8) The REACH regulation 1907/2006/EC and (9) the Regulation on the making available on the market and use of biocidal products (528/2012/EU) apply to the use of chemicals and biocidal products that may be used for fracturing. (10) The Waste Framework Directive 2008/98/EC<sup>12</sup> sets conditions applicable to the reuse of fluids emerging at the surface following high volume hydraulic fracturing and during production. (11) The Environmental Liability Directive (ELD) 2004/35/EC<sup>13</sup> applies to occupational activities listed under Annex III, encompassing related activities such as the management of waste and water abstraction. It requires operators to prevent and remedy environmental damage caused by these activities and to bear the cost of the associated prevention or remediation measures. In order to ensure full coverage of all hydrocarbons activities involving the use of high volume hydraulic fracturing, strict liability should apply to the entire project life cycle.

There are gaps in current EU environmental legislation, in particular related to strategic planning, underground risk assessment, well integrity, baseline and operational monitoring, capture of methane emissions and disclosure of chemicals used.

There is a need to set minimum principles to foster a harmonized approach to regulating activities involving high volume hydraulic fracturing. A harmonized set of rules would advance the level playing field for operators involved, improve investor's confidence and the functioning of the single energy market. Robust and transparent rules would also help alleviate public concerns, and sometimes, opposition to shale gas developments.

It is necessary, therefore, to provide at this stage, a Recommendation in the form of minimum principles to be applied as a common basis for the performance of exploration or production of hydrocarbons by means of high volume hydraulic fracturing. The latter is complementary to the existing Union legislation applicable to these projects.

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<sup>11</sup> Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration (OJ L 372, 27.12.2006, p.19).

<sup>12</sup> Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (OJ L 312, 22.11.2008, p. 3).

<sup>13</sup> Directive 2004/35/EC of the European parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage (OJ L 143, 30.4.2004, p. 56).

HEREBY RECOMMENDS:

## I

### **Purpose and subject matter**

The purpose of this Recommendation is to provide common minimum principles aimed at supporting Member States who wish to carry out hydrocarbon exploration and production by means of high volume hydraulic fracturing, while ensuring that the climate and environment are safeguarded, resources are used efficiently, and the public is reassured.

Member States should apply these minimum principles related to the planning, assessment and permitting of installations, the operational and environmental performance of such installations as well as for their closure, and to public participation and dissemination of information to the public as set out in this Recommendation.

## II

### **Definitions**

For the purpose of this Recommendation:

- a) 'high volume hydraulic fracturing' means the injection of 1000 m<sup>3</sup> or more of water per fracturing stage or of 10 000 m<sup>3</sup> or more of water used for the entire fracturing process into a well.
- b) 'installation' means a facility including directly associated underground structures designated for the exploration or production of hydrocarbons by means of high volume hydraulic fracturing.

## III

### **Strategic planning and assessment of environmental impacts**

1. Before authorising exploration and/or production for hydrocarbon operations, Member States should prepare strategic environmental assessments of such projects with the objective to prevent, manage and reduce impacts and risks for human health and the environment. This assessment should analyse cumulative effects and potential existing and future uses of the surrounding surface and underground area. Due account should be taken of possible cross border effects.
2. Member States should provide for adequate provisions for possible restrictions of activities such as in protected, flood-prone or seismic-prone areas and for minimum separation distances from residential and water protection areas. Member States should establish minimum depth limitations between the area to be fractured and groundwater.
3. Member States should take the necessary measures to ensure that an environmental impact assessment is carried out prior to the start of high volume hydraulic fracturing.

4. Member States should give the public concerned early and effective opportunities to participate in the development of the strategy referred to in paragraph 1 and in the impact assessment referred to in paragraph 3.

#### IV

##### **Exploration and production permits**

Member States should ensure that the conditions of, and the procedures for the granting of, permits are fully coordinated where more than one competent authority or more than one operator is involved or more than one permit is to be granted for a given project stage, or when more than one permit is required under national or Union legislation in order to guarantee an effective integrated approach by all competent authorities in any given Member State for this procedure.

#### V

##### **Selection of the exploration and production site**

1. Member States should ensure that the suitability of a geological formation for the exploration and/or production of hydrocarbons using high volume hydraulic fracturing is determined through a characterisation and risk assessment of the potential site and surrounding surface and underground area.
2. The risk assessment should be based on sufficient data to characterise the potential exploration and production area with the objective to identify all potential exposure pathways in order to enable assessment of the risk of leakage or migration of drilling fluids, hydraulic fracturing fluids, naturally occurring material, hydrocarbons and gases from the well or target formation.
3. The risk assessment should
  - a) be based on best available techniques taking into account relevant results of the information exchange between Member States, industries concerned and non-governmental organisations promoting environmental protection organised by the Commission;
  - b) anticipate the dynamic behaviour of the target formation, of the geological layers separating the reservoir from groundwater and of existing wells or other manmade structures exposed to the high injection pressures used in high volume hydraulic fracturing and the volumes of fluids injected;
  - c) take account of a minimum vertical separation distance between the zone to be fractured and groundwater;
  - d) be updated during operations when new data are collected.
4. A site should only be selected if the risk assessment conducted under this Chapter demonstrates that no direct discharge of pollutants into groundwater will result from high volume hydraulic fracturing.

## VI

### **Baseline study**

Member States should ensure that before high volume hydraulic fracturing operations start:

1. the operator determines the environmental status of the installation site and of its surrounding surface and underground area potentially affected by the activities. The baseline should be determined for:
  - a) quality and flow characteristics of surface and ground water ;
  - b) water quality at drinking water abstraction points;
  - c) air quality;
  - d) soil condition;
  - e) presence of methane and other volatile organic compounds in water;
  - f) seismicity.
  - g) land use;
  - h) biodiversity;
  - i) status of infrastructure and buildings;
  - j) existing wells and abandoned structures.
2. the baseline is appropriately described and reported to the competent authority before operations start.

## VII

### **Design and construction of the installation**

Member States should ensure that the installation is constructed in a way which prevents possible surface leaks and spills to soil, water or air.

## VIII

### **Infrastructure of a production area**

Member States should ensure that

1. operators or groups of operators develop an entire production area in an integrated approach with the objective to prevent and reduce environmental and health impacts and risks.
2. adequate infrastructure requirements for servicing the installation are established prior to production. In cases where the primary purpose of an installation is production of oil by means of high volume hydraulic fracturing, specific infrastructure to capture and transport associated natural gas should be installed.

## IX

### **Operational requirements**

1. Member States should ensure that operators apply best available techniques taking into account relevant results of the information exchange between Member States, industries concerned and non-governmental organisations promoting environmental protection organised by the Commission; as well as good industry practices to prevent, manage and reduce the impacts and risks associated with exploration and production projects.
2. Member States should take the necessary measures to ensure that
  - a) operators develop project specific water management plans with the objective to use water efficiently during the life cycle of a project. The traceability of water flows should be ensured. The water management plan should take into account seasonal variations of water availability and avoid use of water sources under stress. Member States should promote the responsible use of water resources.
  - b) operators develop transport management plans with the objective to minimise emissions to air in general and impacts on local communities and biodiversity in particular.
  - c) operators capture gases for subsequent use, minimise flaring and avoid venting. In particular, operators take the necessary measures so that emissions to air at the exploration and production stage are mitigated by capture of gas and its subsequent use. Venting of methane and other air pollutants should be limited to most exceptional operational safety reasons.
  - d) operators ensure the well integrity through well design, construction and integrity tests. The results of integrity tests are reviewed by an independent and qualified third party with the objective to ensure the operational and environmental safety of a well at all stages of project development and after well closure.
  - e) in case of loss of well integrity or in case of accidental discharge of pollutants into groundwater, operations are immediately stopped and, as a matter of urgency, the operator takes the necessary remedial action.
  - f) operators report to the competent authority immediately in the event of any incident or accident affecting public health and the environment. The report should include the causes of these incidents and accidents, their consequences and remediation measures taken. The baseline study required under Chapter VI should be used as a reference.

## X

### **Use of chemical substances and water in high volume hydraulic fracturing**

1. Member States should ensure that
  - a) the registrant company identifies "hydraulic fracturing" as the use name for the chemical substances that need to be registered under Regulation 1907/2006/EC.
  - b) use of chemical substances for high volume hydraulic fracturing is minimized;



- c) the ability to treat fluids emerging at the surface following high volume hydraulic fracturing is considered when selecting chemical substances for high volume hydraulic fracturing.
2. Member States should encourage fracturing techniques that do not use hazardous chemical substances and are not water based, wherever technically feasible and sound from an environment and climate perspective;

## XI

### **Monitoring requirements**

1. Member States should ensure that the operator regularly monitors the installation and the surrounding surface and underground area potentially affected by the operations during the exploration and production phase and in particular before, during and after high volume hydraulic fracturing.
2. The baseline study required under Chapter VI should form the reference for subsequent monitoring.
3. In addition to environmental parameters determined in the baseline study, Member States should ensure that the following operational parameters are monitored by the operator:
  - a) The precise composition of the fracturing fluid used for each well;
  - b) Volume of water used for the fracturing of each well;
  - c) Pressure applied during high volume fracturing;
  - d) Fluids emerging at the surface following high volume hydraulic fracturing: return rate, volumes, characteristics, quantities re-used and/or treated for each well.
  - e) emissions into air of methane, other volatile organic compounds and other gases that are likely to have harmful effects on human health and/or the environment.
4. Member States should take the necessary measures to ensure that operators monitor the impacts of high volume hydraulic fracturing on integrity of wells and other manmade structures located in the surrounding surface and underground area potentially affected by the operations .
5. Member States should ensure that the monitoring results are reported to the competent authorities.

## XII

### **Environmental liability and financial guarantee**

1. Member States should apply the provisions on environmental liability to all activities taking place at an installation site including those that currently do not fall under the scope of Directive 2004/35/EC<sup>14</sup>.
2. Member States should ensure that a financial guarantee or equivalent covering the permit provisions and potential liabilities for environmental damage is provided by the operator prior to the start of operations involving high volume hydraulic fracturing.

## XIII

### **Inspections and sanctions**

Member States should ensure that the competent authorities organise inspections with the purpose of checking the operational and environmental performance of installations. In case of non-compliance, Member States should provide for effective, dissuasive and proportionate sanctions.

## XIV

### **Administrative capacity**

1. Member States should ensure that the competent authorities have adequate human, technical and financial resources to carry out the duties.
2. Member States should prevent conflicts of interest between the regulatory function of competent authorities and the function of the authorities relating to the economic development of the resources.

## XV

### **Closure obligations**

Member States should take the necessary measures to ensure that a survey is carried out after the closure of an installation with the objective to compare the environmental status of the installation site and its surrounding surface and underground area potentially affected by the activities with the status prior to the start of the operations as defined in the baseline study.

## XVI

### **Dissemination of information**

Member States should ensure that

- a) the operator disseminates publicly information on the chemical substances and the volumes of water that are intended to be used and were finally used for high

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<sup>14</sup> Directive 2004/35/EC of the European parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage (OJ L 143, 30.4.2004, p. 56).

volume hydraulic fracturing of each well. The information provided by the operator should list the name of all additives, their Chemical Abstracts Service (CAS) number, and include the safety data sheet, if available, and the maximum concentration in the fracturing fluid.

- b) The competent authorities should publish on a publicly accessible internet site within 6 months after publication of this Recommendation and in intervals of no longer than 12 months the following information:
  - i. Number of wells completed and planned projects involving high volume hydraulic fracturing;
  - ii. Number of permits granted including operators involved and permitting conditions;
  - iii. the baseline study according to Chapter VI and monitoring results according to Chapter XI (1, 2, 3 b-e).
- c) The competent authorities should also inform the public without undue delay on the following.
  - i. incidents and accidents according to Chapter IX f) ;
  - ii. the results of inspections, non-compliance occurrences and sanctions.

## XVII

### **Review**

Member States are invited to inform the Commission on measures they have taken in response to the Recommendation on an annual basis, and for the first time, by December 2014.

The Commission will closely monitor the implementation of the Recommendation through a publicly available comparison of the situation in Member States in the form of a scoreboard.

The Commission will review the effectiveness of this Recommendation 18 months after its publication.

The review will include an assessment of the implementation of the Recommendation, of the need for updating its provisions and of the need for developing harmonised and legally binding provisions on the exploration and production of hydrocarbons using high volume hydraulic fracturing.

## XVIII

### **Final provisions**

The Recommendation should be published in the Official Journal.

Member States should implement the minimum principles set out in this Recommendation by [6 months from publication date] at the latest.

Done at

*For the Commission*

*Member of the Commission*